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TECHNICAL ASSISTANCE ADMINISTRATION

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TRANSPORTATION IN CENTRAL AMERICA

Report of a Mission appointed by the United Nations  
Technical Assistance Administration and the Secretariat  
of the Economic Commission for Latin America, with the  
collaboration of the International Civil Aviation  
Organization

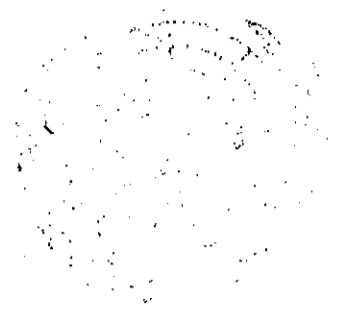
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## FOREWORD

During the Fourth Session of the Economic Commission for Latin America (Mexico City, May-June, 1951), the delegations of Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua expressed the interest of their governments in the "development of agricultural and industrial production and of transportation systems in their respective countries so as to promote the integration of their economies and the expansion of their markets". The Commission agreed (Resolution 9/IV) to request the Secretariat to study, among other things, "the means or plans for the progressive attainment of these objectives".

In fulfillment of this mandate, and bearing in mind at the same time other resolutions approved at the Fourth Session which specifically concern Central American transport problems -Resolution 24 (IV) concerning traffic regulation on the Inter-American Highway, and Resolution 25 (IV) concerning the Free Zone of Colón- the Secretariat began conversations with the Central American governments on the best way of going about the study of transportation in those countries, in relation to their economic development and the possible integration of their economies <sup>1/</sup>. The governments expressed the opinion that, in order to carry out as complete a study as possible, they were willing to request the United Nations Technical Assistance Administration to

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<sup>1/</sup> The general problem of the economic integration of Central America was considered at the First Meeting of the Committee for Economic Co-operation of the Central American Ministers of Economy, held in Tegucigalpa in August 1952. The resolutions arising out of this meeting were based largely on the documentation submitted by the Secretariat of the Economic Commission for Latin America. (See Document E/CN.12/236.)

provide transportation experts to collaborate with the technical personnel of the Economic Commission for Latin America in undertaking the survey.

The Governments also indicated the advisability of discussing the preliminary report of the Mission at a Seminar on Central American Transportation in which experts of the different countries of the region should participate. Accordingly, the governments of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama presented requests for technical assistance for the purpose stated. Upon approval of these requests the Technical Assistance Administration proceeded, in collaboration with the Secretariat of the Economic Commission for Latin America, to appoint the experts and organize the preparatory work of the Mission and the Seminar. The Mission was composed of the following persons:

Julián REY ALVAREZ (appointed by TAA), railroad expert,  
Chief of Mission.

John H. T. CLARKE (appointed by TAA), transportation  
expert, Deputy Chief.

César ELIAS (from ECLA's staff), highway expert.

Marco Antonio RODRIGUEZ MACEDO (from ECLA's staff), maritime  
transport expert.

Jorge CORTES OBREGON (appointed by TAA), inland waterways  
expert.

J. Parker VAN ZANDT (appointed by ICAO), air transportation  
expert.

After preliminary research in the Mexico Office of ECLA, the Mission began its field work on August 31, 1952, and after visiting Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama,



returned to Mexico City on December 18, 1952. During their stay in the Central American countries, the members of the Mission inspected the various means of transport and collected information directly from government departments and private enterprises concerned with transportation problems.

In drafting this report, the Mission consulted with the Transport and Communication Division of the Department of Economic Affairs, United Nations, and was assisted continuously by the economic staff of the Economic Commission for Latin America. On matters of roads and highways, especially the Inter-American Highway, Mr. Edwin W. James, Chief, Inter-American Regional Office, Bureau of Public Roads, United States Government, acted as consultant. On various specific subjects, the Mission was able to consult experts from several international agencies.

The ECLA/TAA Seminar on Transportation was held in San José, Costa Rica, from June 9 to 20, 1953, with the cooperation of the Government of Costa Rica.<sup>1/</sup> The preliminary text of the present report served as a basis of discussion for the Seminar.<sup>2/</sup> This report had been previously submitted to the participants through the Governments of the Central American republics. Bearing in mind the proceedings of the Seminar,<sup>3/</sup> the Mission revised the text of the report, as well as of

1/ The Economic Cooperation Committee of the Ministers of Economy of Central America also sponsored this Seminar. See Resolution 4 (AC.17) adopted by the Committee at Tegucigalpa, August 27, 1952.

2/ Doc. ST/ECLA Conf.2/L.1 (ST/TAA/Conf.5/L.1), May 22, 1953.

3/ See Report on ECLA/TAA Seminar on Transportation in Central America, Doc. ST/ECLA/Conf.2/L.4 (ST/TAA/Conf. 5/L.4).

the recommendations, incorporating any suggested changes that it considered advisable. The final edition and presentation was undertaken by the technical staff of the Economic Commission for Latin America.

In presenting this report to the Governments of Costa Rica, Guatemala, El Salvador, Nicaragua, and Panamá, as well as to the Committee for Economic Cooperation of the Ministers of Economy of Central America - which is to consider those of the Mission's recommendations which may be of collective interest for the Central American countries and which refer to the economic integration program -, the Mission is pleased to acknowledge the assistance and the courtesies extended to it by the above-mentioned Governments and their officials, as well as the cooperation received from the chambers of commerce and industry and public and private transportation organizations. The Mission is also grateful for the cooperation of the Governments, particularly that of Costa Rica, in the holding of the Seminar at San José.

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SYMBOLS EMPLOYED

.. not available  
 -- nil or negligible  
 1949/50 means a fiscal or crop year  
 \$ means U.S. dollars  
 "cents" means U.S. cents

Central American currencies are indicated by their denominations: quetzal (Guatemala); colón (El Salvador and Costa Rica); lempira (Honduras), córdoba (Nicaragua) and balboa (Panama); "centavos" applies to the respective currency.

## INTRODUCTION

The economic integration program of the Central American republics would not be possible without substantial improvement in the means of transport among them. An accelerated rate of economic development in these countries is not feasible unless the domestic transport systems are expanded, and their efficiency increased. Actually, domestic and inter-Central American means of transport are so intimately connected that no clear and precise distinction can be established between one and the other, even though the problem of one may require different kinds of solutions from those of the other: in one case purely national, and in the other requiring the cooperation of the various Central American governments. Nevertheless, the inadequacy and deficiency of the means of transport is an indisputable general characteristic of the region.

At the present time, the Central American republics are determined to carry out new and better defined programs of development and diversification of their economies, not only in order to strengthen and build up their capacity for exporting to the outside world, but also in order to increase the production of essential consumer goods of agricultural origin, and, to some extent, industrial products, as well as to promote intra-Central American trade. At the same time, public works projects are giving rise to the development of construction materials industries and to the use of raw materials previously not considered of great value. Likewise, new and important stimulus is being given to electrification.

/As in the past,

As in the past, transportation is of basic importance for carrying out programs of development. In Central America there has been extension and improvement of means of transportation and communication during the periods of economic growth, related to the development of export products. Expenditures on transportation made it possible to invest large amounts in other fields, particularly in agriculture, as well as to move the new production to larger markets abroad. This development had also the simultaneous effect of creating a greater commercialization of domestically consumed products, and to a certain extent has contributed to the accumulation of additional savings which have been directed into investment later. Transport has brought new consumption needs and new industrial products to the Central American countries, and at the same time has stimulated the establishment of local enterprises, besides bringing clear benefits of a social, political and cultural nature.

Nevertheless, the present conditions of transportation in Central America—in its new stage of economic development—leaves much to be desired. Transport development has been very uneven and has shown a considerable lack of integration, even taking into account the fact that the various national economies are quite similar in their production, if different in population and resources. While one country has a road density of 72 meters of all-weather road per square kilometer of area, another, on the other hand, has scarcely 7 meters per square kilometer. In places where perhaps not one single truck is to be found, one can see the airplane, the animal cart and human bearers. There are means of transportation for moving basic export /and import

and import products, whereas in extensive regions they are lacking --at times completely-- even for transporting basic food products between relatively near zones. There are ports whose use is subject to certain limitations and even discrimination, and others where conditions of operation are antiquated and greatly increase prices and encumber the movement of production. There are navigable rivers and lakes, but very little navigation. There are long coastlines which coastwise vessels ply but seldom. Transportation is almost always inefficient, costly and slow, and suffers from a notable lack of adequate regulation of rates and services. Above all, there is need for a national transportation policy, to consider the problem as a whole and choose the most rational and economical solutions of various possible ones. Nor are there technical and administrative organizations to study and coordinate the various sectors of transportation properly. In short, one finds in each country all the conditions which would make advisable a very detailed and careful evaluation of national deficiencies and needs, with a view to carrying out a coordinated program of investment in transportation, of improvement of services and of fixing of adequate rates.

But since distances between neighboring countries of Central America are so short, and since there exist the possibilities and desirability of increasing trade among these countries as a result of programs of economic integration and enlarging of reciprocal markets, it is obvious that no purely national plan for transport improvement would be as effective by itself as one which would take into account the plans and programs of the neighboring countries, or, better still,

/one forming

one forming part of a general program for all of the Central American countries taken as a group. Inter-Central American coordination of investment in transportation, and of the development of new services and regulation of existing ones, would avoid costly duplications, furnish a continuity which the means of communication now lack, reduce the cost of transport, and ensure that what is done in this field should be an effective complement to improvements in agriculture and industry, where there are also bases of cooperation and integration.

All of this is what makes the study of Central American transport a special case, of the greatest importance for the general economic development of the region, since it permits, on the one hand, the examination as a whole of what now exists, and on the other hand, makes it possible to consider the most advisable solutions to the problems not only from the point of view of a single country, but also of groups or pairs of countries and even of the region as a whole. The solutions which may be agreed on could well bring lead to great reciprocal benefits, thus helping to speed up the economic development of the region and to achieve more orderly progress.

The Mission named by the Technical Assistance Administration and the Economic Commission for Latin America for studying transportation in Central America felt that its first task was to carry out as complete a compilation of facts and figures as was possible in the time assigned to it, with the purpose of describing and analyzing the means of transportation and communication existing in the region, as well as the conditions of efficiency under which they operate. The Mission was

/able to perform

able to perform this task in large part in the field, and for over four months travelled through the six republics in order to complete its information and appreciate the problems at first hand. Moreover, the Mission took account of the partial studies and country studies which various national and international organizations have made in recent years. In this way it was possible to prepare Part I of this Report, which explains the conditions of transportation in each country, and the extent to which it is adapted to economic needs and possibilities. Doubtless much of this information cannot be considered definitive, but only as a preliminary indication of the real facts, since in the field of transportation, perhaps more than in any other field, there is a lack of statistics, or information is contradictory and unreliable.

Part I of the Report deals, country by country, with the means of transportation having to do with international trade—railroads, roads, and highways, road transport services, ports, maritime services, and air transport—and with the means of transportation oriented principally toward domestic activity, treated in the same order. The Mission believed that without this basis of description and analysis of the present situation—which may be highly useful in any general or particular study that might be made in the future—it would not have been possible to go ahead with the suggestion of solutions or the formulation of specific recommendations.

Part II of the Report considers transport problems among the Central American republics and studies them from a functional and  
/regional

regional point of view. The possibilities for extending and integrating transport in Central America are obvious, as much for joining the economies of the countries as for encouraging more trade among them and for establishing bases for future enlarging of regional markets. On these aspects the Mission has made general and specific recommendations for each means of transportation.

One of the principal elements for the integration of transportation in the region has been for several years the construction of the so-called Inter American Highway. This highway has not been finished yet. Important stretches of it are lacking in three of the Central American countries, and their evaluation and investigation has brought the Mission to the conclusion that in the programs of development of the Central American governments, high priority should be given to the completion of this highway and to the improvement of the existing sections. But this is not the only international highway which the Mission has considered important. It was found advisable to recommend the improvement or construction of other international highways which serve two or more Central American countries. One of these is the coastal route from Guatemala to Nicaragua; another is the highway between San Salvador and Puerto Cortés in Honduras. In the same way, others between Guatemala and Honduras, Honduras and Nicaragua, etc., are considered. All of them would have important economic consequences, would help to reduce present transport costs, would provide an outlet for products which now lack adequate markets, and would encourage the development of new zones of production. In conjunction with the need for building new international roads, the Mission makes a number of  
/recommendations



recommendations on the improvement and enlarging of regional road transport services, and on the facilitation of freight and passenger traffic on the existing roads and highways, where the expenditures made in the last few years cannot be fully effective so long as a large number of obstacles which hinder the movement of goods and persons, and which would be relatively easy to eliminate, continue to exist.

The problem of the lack of adequate maritime services for inter-Central American traffic has been of interest for several years. Since sufficient overland communication has not existed up to now, it is noteworthy that maritime communication has not been developed either. The Mission studied the problem and came to the conclusion that there is a basis for establishing certain regular and frequent maritime services between Central American ports, at reasonable rates. In particular, the Mission has emphasized the importance that the future Port and Free Zone of Colón can eventually have as a place for transshipment, storage, packing, processing and even manufacturing of merchandise carried by the great international shipping lines, and which could be re-shipped by means of possible inter-Central American services --or vice versa-- if and when maritime rates applicable to transshipped or re-exported merchandise is more favorable than it now is. These transshipments could not only be made at Colón, but also in those Central American ports which could advantageously become points of concentration or distribution of merchandise. In this respect the Mission also concerned itself with the problem of the simultaneous use of certain ports by two or three countries through suitable agreements. The purpose should be to prevent the carrying out, for reasons of doubtful economic advantage, /of costly

of costly duplications of investments in facilities that already exist or which can be provided at a short distance in a neighboring country. It is a question requiring inter-Central American cooperation for regional planning of ports and their use.

Air transport has increased greatly in the Central American countries and between them and other regions. In the Mission's opinion, there is still insufficient intercommunication by air among the Central American republics. It could be furnished by national airlines, particularly through the extension of domestic services beyond national borders. Likewise, the Mission emphasizes the importance of closer cooperation among the governments in the field of civil aviation.

In dealing in Part III of the Report with the problems of domestic transport which are common to the different Central American republics, and making recommendation thereon, the Mission kept constantly in mind the close relationship existing between programs of domestic transport development and the overall development of inter-Central American transport, since these two aspects of the problem are mutually complementary. Moreover, as long as the development in one country lags behind that achieved in the others, maximum benefit cannot be obtained from the expenditures made in any one country, much less from expenditures on the inter-Central American routes. Thus, for example, the value of an international trunk road cannot be fully exploited if the countries through which it passes do not build the necessary secondary and connecting roads to provide access to that road and to open it to an adequate volume of traffic. The Mission has found that there are

/deficiencies

deficiencies in the technical and economic planning of the road systems and that, in addition, there are zones of great economic potentiality that would vastly benefit from the construction of new roads. In some countries even the maintenance of existing roads is completely inadequate. It was thought advisable to include the general outline of the plan of primary and secondary roads for each country, along with the corresponding estimate of probable cost and an indication of the stages in which the plan could be carried out.

The bad condition of the roads is the principal reason for the high cost of motor transport. Other contributing factors are: the high cost of equipment, fuel, replacement parts and repairs, relatively inefficient and non-economical operation on the part of transport companies, and the lack of an adequate policy of regulation and promotion of services, based on the real necessities and characteristics of motor transport at its present stage of development. In view of these facts, a series of suggestions is offered for the elimination of these negative factors and for the facilitation of domestic freight and passenger traffic.

The railroads, most of which operate only in the countries in which they are based, present a very diverse picture. While some of them are operating rather efficiently, others are in state of deplorable neglect and backwardness. There is a great necessity for improvements of track, equipment and organization, as well as in the quality and extent of service. These needed improvements are dealt with in detail in the Report. In considering solutions to these problems, account has been taken of the need for determining the present

/function

function of the railroads, a function which is greatly different from that which they exercised when they were first built and when there were no other mechanical means of inland transport. In the opinion of the Mission consideration should not be given to the enlargement or expansion of the railroads in general. In view of the difficulties of terrain and the short distances which are characteristic of the region, as well as the nature of the traffic, the Mission believes it advisable to give priority to the development of motor transport. This does not imply, however, that, in certain special cases, extensions or new rail connections are not justified. The study made of the rates now in effect on several railroads has led the Mission to the conclusion that a great deal can be done to fix them at levels which are more reasonable and in better accord with economic requirements and with the nature of the present and potential traffic, as well as with the character of public service which this kind of transport should have.

Central America has few ports which can be classified as first-class, and, in the case of these few, either the administration lacks a clear orientation based on national interest, or there are defects in installation and equipment which render impossible the degree of efficiency required by the demands of present traffic. The Mission has studied these problems to the extent permitted by the scarce data and the limited time available, with the purpose of pointing out the kind of solutions possible to the different problems. Another matter which was considered is national coastwise shipping, and it appears that there are no important reasons why this could

/not be increased

not be increased, especially as an integral part of the local coastal shipping services. River and lake navigation is an economical means of transport for certain kinds of merchandise and it has not yet been sufficiently exploited in the regions of Central America where it can be carried out. The Mission feels that it is urgent to begin a study of the rivers to determine their future navigable extent, in conjunction with other means of transport and in accord with plans for the development of new zones.

Just as inter-Central American air traffic is in need of a series of improvements, domestic air transport within each country —as long as other means of transport are not adequate— could be ampler if more attention were given to the construction and maintenance of airports, to the regulation of services and to the fixing of reasonable rates. Considerable aid could be given in this field by the international organization which deals with civil aviation, and whose experience is at the service of the corresponding national organizations.

A series of recommendations such as those presented by the Mission in its report should point to a series of national transport programs and to a coordinated program for the Central American region as a whole. However, at the present stage of the study of transport in Central America, and because of the need for discussing many of the problems more fully, the Mission believes that the formulation of these programs should be undertaken by the governments themselves at a later stage. The Mission has been able to outline the principal problems, to indicate the kind of solutions which it believes advisable, and in

/many cases

many cases even to propose rather specific solutions. But, in addition to the above reasons, the Mission fully realizes that, although transport is a question of major importance for the development of Central America, there also exist many other needs in other fields (electric energy, agricultural improvements, irrigation, the construction of housing, the building of schools and hospitals, sanitation, etc.) and that, just as some of these needs may be at a given moment more urgent than the question of transport, many of them are related to each other and to transportation. It is obvious that, since transport is a basic and general service, which at the same time results from and has an influence on economic development in its entirety, no transport plans or programs can be formulated except in the closest coordination with the other fields of the economy. In other words, transport is only one aspect of the national economic development and of the economic integration of Central America, and its importance and the feasibility of improving it must be judged by the governments in relation to the rest of their activities.

Any program of investment in and improvement of transportation is costly, and even more so in countries of difficult topographical conditions like those in Central America. According to a preliminary estimate made by the Mission, a program of national and international highways alone, over a period of seven years, would represent a probable total investment by the six Central American republics of a little over 200 million dollars, or an annual average of close to 30 million. And this would not include local roads and other projects connected with the roads. If it is assumed, according to the data

/available

available at present, that the national income of the six republics reaches a total of approximately 1.5 billion dollars, and if it is estimated, moreover, that the annual net investment could reasonably equal 7% of this income --which represents a considerable effort-- new investments of all kinds --public as well as private, in transport as well as in power and in construction, etc.-- could be made in Central America to the extent of a little more than 100 million dollars a year. This does not represent the available funds. But the approximate value of what could be carried out at a more accelerated rate of development than the present one. Now, it is possible that, under these conditions, it may not be possible to carry out a 30 million dollar annual highway program, to which would have to be added the expenditures on ports and shipping services, railroad and motor transport equipment, airports and planes and river navigation. It might be that transport would absorb an excessively high proportion of total possible investment, leaving very scanty resources for other fields of development. The ultimate possibility or impossibility of assigning, say, half of total net investment in Central America to transportation depends on an overall economic analysis which a group of experts specializing in only one aspect of development (transportation) cannot carry out. And it depends also on decisions in regard to priorities which can only be made by the governments in consideration of all the factors, economic as well as social and political, which bear upon this kind of program .

It may nevertheless be stated that the feasibility of a given program of investment in transportation within a general program of

/investment

investment for economic development is greater the higher the degree to which it is well planned and the degree to which it takes account of the present and potential productivity of a certain kind of specific long-term investments in transport. The feasibility of such a program will also be greater in proportion to the attention which is given to the improvement of existing services and to the organization necessary to obtain greater returns from the means of transport which are constructed, with the purpose of increasing the volume of traffic as rapidly as possible. On the other hand, the productivity of investments in transport is not determined only by these investments themselves but also by other complementary investments. A new road in a region heretofore without communication would have no value if at the same time the government and private enterprise did not make investments in the agricultural and mining potentialities of that region or encourage the establishment of industries capable of utilizing the products of the region. The more attention is given to these factors which directly and indirectly raise the productivity of a given investment in transportation, the greater will be the increase in national income, and as a result, in later years, it will be easier to deal with transportation investment needs without draining resources away from other fields of investment.

It should also be noted that the development of transportation has been greater in some countries of Central America than in others and that, although a program, such as, for example, that indicated by the proposed highway plan, represents in its entirety a high proportion of total expenditures in Central America, the situation country by country



country would be different. For example, assuming a total net investment of 7% of national income each year to cover all means, countries like Guatemala and Honduras would be spending for highways alone close to one-half of this sum, which is undoubtedly a heavy expenditure. On the other hand, in Nicaragua, Costa Rica and Panama the highway program would perhaps in no case absorb more than one-third of aggregate investment, and in El Salvador perhaps only one-eighth. Consequently, it would be easier for these latter countries than for the former to carry out the objectives of improving roads and of expanding at the same time other fields of transport, as well as power, agricultural projects, housing, etc.

These figures and those presented in Part III of the Report are merely illustrative of the magnitude of the problems. No attempt whatsoever is made in the Report to draw up definite plans or even goals, since, among other things, there would still be a need for a much more detailed study of the available data on national income, on the one hand, and of the needs in all the other fields of expenditure on the other hand. But the Mission wishes to call attention to the fact that any program of investment in transportation is very costly and requires very careful planning in itself, as well as in relation to and in comparison with the other investment programs.

The Mission hopes that the present Report will provide the Central American governments with more certain bases and factual knowledge for the formulation of national programs as well as programs which may involve the cooperative actions of several of them. At the same time it hopes that the present work will bring about in both official

/and private

and private circles a greater interest in transportation problems and will encourage experts in this field to delve more deeply into its different aspects so that it may be possible to face with greater efficiency the problems which may arise in the future as a result of the general economic development of the region.

PART ONE

THE PRESENT STATE OF TRANSPORTATION  
IN CENTRAL AMERICA

Chapter I

G U A T E M A L A

I. Introduction

Guatemala is the most northern and most heavily populated of the Central American republics. It has an area of 108,889 square kilometers and a population of 2,957,030,<sup>1/</sup> or 27.1 inhabitants per square kilometer. It is located between 13°42' and 17°49' north latitude and 88°10' and 92°30' west longitude. In the east it has a small coastal area bordering on the Atlantic Ocean, and it is completely bounded by the Pacific in the south.

The central and southern parts of the country, which are the most densely populated areas, are very mountainous. The Petén zone, which makes up the entire northern region, is flat country similar to the Yucatán peninsula in Mexico. Its population density is scarcely 0.4 inhabitants per square kilometer, and it is still an undeveloped region. There is another lowland area near the Atlantic coast

1/ Dirección General de Estadística, 1952 data.

/and the region

and the region of Lake Izabal. Here also economic activity and population density (6.2 inhabitants per square kilometer) are less than in the mountainous zones or in the valleys. Its banana cultivations, which became diseased, have been partially replaced by abacá plantations. In the south, on the Pacific coast, there is a belt of lowland from 30 to 60 kilometers wide, which has good quality agricultural lands. However, tropical diseases and problems of a demographic nature have prevented any considerable settlement here. The most important economic activity of this region is stock raising. The country's principal banana and citronella plantations are found in Tiquisate.

The slopes of the Sierra Madre range, beginning in this flat coastal region, form an area of declivities and valleys of from 100 to 1500 meters above sea level. This is one of the richest regions in the country. In the lower sections of this region the chief activities are stock raising and the cultivation of sugar cane and other tropical products. At 600 meters, coffee plantations begin to be important. The population density of the departments located in this zone (Santa Rosa, Escuintla, Suchitepéquez, Retalhuleu and the southern parts of Quezaltenango and San Marcos) varies from 28 to 50 inhabitants per square kilometer.

The highlands, located at somewhat more than 1500 meters above sea level, constitute the most heavily populated part of the country. The mountainous and volcanic chain forms a number of valleys in which the basic foodstuffs of major consumption are grown. The principal cities are also situated in the highlands, and the country's commerce and industry

and industry are concentrated here. The population density in the high lands varies, but, generally speaking, it is more than 50 inhabitants per square kilometer. While in the Departments of San Marcos, Chimaltenango, Sololá, Totonicapán and Quezaltenango it varies from 60 to 100 inhabitants per square kilometer, the figure climbs to 126 in the Department of Sacatepéquez and reaches a peak of 206.8 in the Department of Guatemala, where the capital is located. The seven above-mentioned departments represent 11% of the total area of the country and contain 47% of the total population.

In contrast to the abrupt descent of the terrain on the Pacific side, the altitude in the north and east diminishes gradually, forming numerous valleys of temperate climate. In some regions, such as that of Cobán, Department of Alta Verapaz, there is considerable farming, principally coffee-growing, but the greater part of this area is less well-developed than are the slopes of the Pacific coast. The population density varies from 20 to 30 inhabitants per square kilometer. Subsistence farming and stock raising predominate here.

Until a few years ago, the economy of Guatemala was developing at a relatively slow rate. In the depression of the 30's, many other sectors of the country's economy were affected by the slump in coffee prices, and there was little incentive for new enterprise or even for the further development of coffee-growing. The Second World War hindered Guatemalan development, and it was only in the post-war period that the country began to realize some benefits from new governmental and private initiative in agriculture and industry, as well as in public

/works.

works. The high coffee prices which have prevailed since 1949 have not only been an important stimulus toward the expansion of coffee-growing itself, but have also, through taxes collected by the government, aided official credit programs intended to stimulate agriculture, industry and the importation of capital goods. Nevertheless, the process of development cannot be completely carried out without first overcoming the innumerable difficulties which Guatemala has had to face for many years. Outstanding among these difficulties is the lack of adequate means of communication.

An indication of the low average standard of living of Guatemala's population is the fact that agriculture still represents 56.7% of the Gross National Product (see Table 1), which was estimated in 1947/48 at 335 million dollars. Moreover, more than 70% of the total gainfully employed population of Guatemala was engaged in agriculture. Mining and manufacturing (including small industrial and handicraft activities) amounted to only 13.8% of the National Product and, although they are of some significance in the country, (12.7% of the gainfully employed population), their development may be considered as still incipient. Services (transportation, commerce, professions, etc.) represent a total of 18.2% of the National Product, of which 3.3% corresponded to transportation and of the rest 10% was represented by the government and 1.3% by private construction.

Export crops make up the greater proportion of agricultural production, according to the Agricultural and Livestock Census of 1950. Among these crops, coffee represents a volume of more than 50,000 metric

/Table 1

Table 1

Guatemala: Estimate of the Gross National Product, 1947/48

Source	Millions of dollars	Percentage of total
<u>Agriculture (including fishing and forestry production)</u>	189.8	56.7
Corn.....	45.0	13.5
Coffee.....	26.1	7.8
Bananas.....	18.2	5.4
Beans.....	12.4	3.7
Cattle Raising.....	35.1	10.5
Fishing.....	0.8	0.2
Other agriculture.....	52.2	15.6
<u>Manufacturing and mining</u>	46.3	13.8
Food and beverages.....	16.0	4.8
Textiles.....	8.7	2.6
Lumber.....	4.2	1.2
Other manufacturing, mining, and handicraft.....	17.4	5.2
<u>Private construction</u>	4.2	1.3
<u>Private services</u>	61.1	18.2
Wholesale and retail trade.....	23.5	7.0
Transportation.....	11.0	3.3
Housing.....	17.5	5.2
Other, including professional and domestic services.....	9.1	2.7
<u>Government</u>	33.6	10.0
National.....	30.4	9.1
Municipal and autonomous entities.....	3.2	0.9
<u>Total Gross National Product</u>	335.0 <sup>b/</sup>	100.0

Source: John H. Adler, Eugene R. Schlesinger and Ernest C. Olson, Public Finance and Economic Development in Guatemala, Stanford University Press, 1952, p. 24.

<sup>a/</sup> This estimate of the Gross National Product represents the total of goods and services produced in Guatemala.

/tons,

tons, with a value of 52.8 million dollars, and bananas represent a value of 13 million dollars.<sup>1/</sup> Exports of abacá fiber, chicle, essential oils, etc., are less. The cultivation of export crops is concentrated chiefly in certain regions of the country. Thus, coffee is grown principally in the temperate zone near the Pacific coast, and in the Department of Alta Verapaz, bananas in the Departments of Escuintla and Izabal, and abacá in the last mentioned.

In the production of basic articles for domestic consumption, corn has first place, with an average crop of 365,000 tons annually, valued at approximately 28 million dollars. Next in importance are beans (22,000 tons, valued at 3 million dollars), wheat (17,000 tons, valued at 2 million dollars) and many other agricultural foodstuffs. The most important products for domestic consumption -- corn and beans-- are cultivated throughout the country. Others, such as wheat, are localized in the highlands, above all in the western regions; rice and sugar cane are cultivated chiefly in the tropical Pacific zone.

Cattle --estimated at 902,000 heads in the 1950 Census-- is centered principally on the Pacific coast and in the southeastern region (Departments of Escuintla, Jutiapa, Suchitepéquez, Santa Rosa and Retalhuleu), although considerable quantities are also raised in many other departments. Sheep are raised chiefly in the western part of the highlands.

The country's industrial production consists mainly of cotton textiles, vegetable oils, beer, soap, shoes, leather goods, and cement. There is also an important production of indigenous handicraft

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<sup>1/</sup> Adjusted figures.



articles, especially woven goods. While the handicraft industry is scattered throughout the towns of the highland zone, industrial factories in the strict sense are located chiefly in Guatemala City and its environs and, to a lesser degree, in other cities where certain factories have been established, for example, Quezaltenango, which is a textile center. The great majority of manufactured articles consumed in the country are imported.

Guatemala also has a small mining industry, producing chiefly lead, silver, copper, zinc, chromium and bismuth. The principal mining region is that of Cobán, where zinc and lead are extracted. Next in importance are San Miguel Acatán and San Sebastián, in Huehuetenango (lead), and Jalapa (silver, lead, copper and chromium). Mineral deposits have also been discovered in other parts of the country. All these products are intended for exportation.

"The inadequacy of present facilities for transportation probably constitutes the greatest single barrier to the economic development and the cultural integration of the Republic".<sup>1/</sup> The lack of means of communication, the serious deficiencies of many of those which are now in service, high freight rates and other factors bring about the isolation of many zones, retard the development of others, impose a high cost burden on the distribution of merchandise and limit the economic radius of supply of producers. This encourages the operation of small uneconomic units of production and keeps real income at a lower level than that which would prevail with improved transportation facilities.

<sup>1/</sup> The Economic Development of Guatemala. Report of the Mission of the International Bank for Reconstruction and Development, Washington, 1951, p. 132.

/Although

Although the Bureau of Industry, Commerce and Controls of the Ministry of Economy has ample legal powers in the matter of rates and transport services, in practice the exercise of these powers appears to be limited to the field of urban bus transport. Actually, Guatemala has no official organization which exercises general control over the means of transport, regulates and checks transport services, establishes routes, schedules and rates for road transport and compiles and studies the statistics necessary for an understanding of the needs and tendencies of the traffic. No integral program of economic development can get under way in Guatemala which does not have as a fundamental component a rational and thorough going plan for improving the country's transport facilities.

There are also difficulties --natural, economic and administrative-- which make the construction of good means of transportation more difficult and more expensive. The climatic conditions, the topography, and the nature of the soil in a large part of the country, call for the investment of large sums in the construction of roads. The low level of investment in transport services by both the government and private citizens has been one of the principal causes of the slow advance in this field. In short, the absence of a transport policy and of adequate planning are responsible for the fact that Guatemala's highway system in particular is considered "an overextended, poorly located network of low-grade, narrow roads".<sup>1/</sup>

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<sup>1/</sup> Ibid, p. 133.

II. Means of Transportation for International Trade

The greater part of Guatemala's import and export traffic is by railway. In 1951 a total of approximately 580,000 tons was moved by rail. (See Table 2.) The principal ports -- Puerto Barrios, San José and Champerico--<sup>1/</sup> through which pass almost all exports and the major part of all imports, are connected with the production centers and the principal cities only by rail, except San José, which is also connected by highway;<sup>2/</sup> but whose import and export traffic for reasons which will be analyzed later is handled almost exclusively by rail.

Table 2

Guatemala: International Trade moved by Rail in 1951  
 (in short tons)

Customs	Exports	Imports	Total
Puerto Barrios	274,078	142,844	416,922
San José	20,346	121,904	142,280
Champerico	8,050	3,353	11,403
Ayutla	5	7,544	7,549
Totales	302,479	275,645	578,124

Source: IRCA, Division of Guatemala.

The small volume of overland traffic with Mexico is carried by rail through the border town of Ayutla and, to a lesser degree, by highway, via Puente Talismán. In the trade with El Salvador, in addition to the transit freight on the rail line from Puerto Barrios to San

<sup>1/</sup> See below point 2, "Port and Maritime Situation", of this section, p. 34

<sup>2/</sup> Champerico is also joined to Retalhuleu by a dry-season road. /Salvador

Salvador, there is a relatively minor movement by truck via the Inter-American Highway.

#### 1. Railroads

There are four railroads in operation in Guatemala:

- (1) International Railways of Central America (IRCA), Division of Guatemala;
- (2) United Fruit Company railroads;
- (3) Railroads of the Compañía Agrícola de Guatemala;
- and (4) Verapaz Railroad.

The total length of the railroad network, including the branch lines serving the banana plantations, is 1,156 kilometers. In 1951, rail traffic amounted to 4 million passengers and 1 million tons of freight. (See Table 3.)

- (a) International Railways of Central America (IRCA) Division of Guatemala. This line constitutes the principal transportation system of the country and the most important and extensive railroad network between Mexico and Panama. The company is owned by United States capital, and is closely allied to the interests of the United Fruit Company.

The total extension of the line is 820 kilometers (gauge: 0.914 meters, or 36 inches). This railroad serves the most important coffee regions in the country (Pacific zone) and also the banana plantations (Tiquisate and the Atlantic coast regions), and connects them with Puerto Barrios, San José and Champerico. It likewise connects these ports with the capital and with other departmental capitals (Retalhuleu, Mazatenango, Escuintla, El Progreso, Zacapa, Chiquimula). The Guatemalan network is linked to the El Salvador Division by a line which originates in Zacapa (at kilometer 165 of the Puerto Barrios-Guatemala trunk

/Table 3

Table 3  
 Guatemala: Rail Traffic, 1947/1951

	<u>1946/47</u>	<u>1947/48</u>	<u>1948/49</u>	<u>1949/50</u>	<u>1950/51</u>	% change <u>1950/51</u> <u>1946/47</u>
<u>Export loadings</u> (thousands of metric tons)						
Bananas	389.9	377.4	287.1	272.5	206.6	- 47.0
Coffee	59.6	57.5	64.7	66.7	68.4	+ 14.8
Other	21.4	22.9	19.7	25.9	40.6	+ 89.7
Total	470.9	457.8	371.5	365.1	315.6	- 33.0
<u>Import loadings</u>	268.6	236.7	268.6	312.3	330.1	+ 22.9
<u>Local freight and express</u>	463.6	396.0	272.3	328.8	326.2	- 29.6
<u>Freight and passenger revenue</u> (thousands of dollars)						
	9,583.2	9,996.2	9,016.6	9,826.7	8,946.3	- 6.6
<u>Passengers carried</u> (thousands)						
	4,122.7	3,929.2	4,790.8	3,826.7	3,856.4	- 6.5

Source: Dirección General de Estadística, Guatemala.

line), intended for Salvadorean import and export freight traffic via Puerto Barrios. This connection is also used for passengers<sup>1/</sup> and freight between the two countries, especially for Guatemalan cement, which, until 1952, was being shipped to El Salvador. The trunk and branch lines of the IRCA are:

<sup>1/</sup> In 1951, some 12,000 passengers were carried in trips between stations near the border.

/Trunk lines:

<u>Trunk lines:</u>	<u>Kilometers</u>
Puerto Barrios - Guatemala	317
Guatemala - Ayutla (Mexican border)	286
Zacapa - Salvadorean border	113
<u>Branch lines:</u>	
Santa Maria - San José	33
San Antonio - Palo Gordo	5
Las Cruces - Champerico	30
Ayutla - Ocós	21
San Felipe - Mulua	15
Total	<u>820</u>

Under the terms of existing contracts, the IRCA holds a concession in perpetuity to the Puerto Barrios-Guatemala City line, but the government has the right to expropriate it after April of the year 2003 at a price to be determined by arbitration. The other lines will be turned over to the government without compensation in 2009. The company has the exclusive right to build railroads within a zone of 32 kilometers on either side of its tracks and is exempt from national and municipal taxes as well as from import duties on fuel and equipment.

The Mission traveled over almost the entire network of the IRCA and, although the technical characteristics of the permanent way do not meet present traffic requirements it was observed that the tracks, the structures, the installations and buildings are in good condition. The shops are also well-equipped for repair and maintenance. Locomotives and rolling stock (see Table 4) are in good traffic condition and are safe, but passenger cars, especially second class cars, leave much to be desired in regard to comfort. Sanitary facilities are lacking in stations which serve a large number of passengers. The locomotives

/are not

are not modern and some of them have little tractive force. This raises the cost of traction, which is already high due to the difficult location.

In effect, almost all the regions through which the IRCA lines pass are very mountainous and steep. Only between Puerto Barrios and kilometer 100, in the Atlantic section, is the gradient less than 1.5%. Some level stretches of track are also found in the Pacific section. Throughout all the rest of the system there are numberless curves, reaching a maximum of 19 degree (minimum radius 100 meters), with gradients of more than 3%. One stretch of 100 kilometers on the Puerto Barrios-Guatemala City line has frequent gradients of 3%, climbing from 300 to 1500 meters above sea level. In the Pacific section, between Palín and Escuintla, there is a very difficult stretch which has a practically constant gradient of 3.6% for a distance of 32 kilometers. These conditions not only raised the original cost of constructing the line, but at the present time they are responsible for high maintenance expenses and, especially, for high operating costs; the gradients and the resistance of the curves considerably reduce the hauling capacity of the locomotives and make it necessary to employ double, triple, and even quadruple traction. To illustrate the degree to which the difficult location raises the operating costs of this railroad, it is sufficient to point out that the IRCA's two most powerful locomotives, which can haul 1400 gross tons on a level track, haul only 250 gross tons on the Palín-Escuintla stretch northward and that on the Puerto Barrios-Guatemala City line there are some stretches where the hauling capacity of these locomotives drops to 300 gross tons.

Table 4

Guatemala: Permanent way and Equipment of the  
 International Railway of Central  
 America

Permanent way

Rails, standard type	60 and 70 pounds per yard (29.8 to 34.7 kilograms per meter); length 33 feet (10 meters)
Ballast	Stone and gravel
Ties	Imported creosoted pine and native hardwood
Maximum gradient	3.7%
Maximum curvature	19 degrees
Signals	Hand-operated semaphores

Locomotives and rolling stock

Steam locomotives (fuel oil)	101 (including 41 steam units belonging to the Compañía Agrícola de Guatemala)
Diesel-Electric locomotives of 1250 HP.	6 belonging to the Compañía Agrícola de Guatemala)

Passenger cars

First class	45 (including 11 coach cars)
Second class	66
Combination	6
Baggage cars	25
Box cars	621
Banana cars	989 (including 640 belonging to the Compañía Agrícola de Guatemala)
Livestock cars	79
Tank cars	68
Other types	9
Inspection cars	4

Brakes Westinghouse  
 Repair and rebuilding shops in Guatemala City

Source: IRCA, Division of Guatemala.

/The most



The most effective means of lowering the cost of traction is the replacement of steam by Diesel locomotives, which are much more economical and efficient. Because of their economy and efficiency they have been or are being adopted by many railroads all over the world. With the object of reducing operating costs, the IRCA acquired six Diesel electric locomotives of 1250 HP and put them into operation, but was obliged to withdraw them due to the opposition of the railroad workers union of Guatemala, which alleged that the use of Diesel power would necessitate the discharging of some personnel.

The IRCA moves the greater part of the import and export traffic in Guatemala. Taking as a basis the data for 1951, exports accounted in ton-kilometers for 51% of this traffic (bananas 38%, coffee and other exports 13%), while imports amounted to 33% and local traffic 16%. (See Table 5.)

Table 5

Guatemala: Traffic carried by the International Railways of Central America, 1947-1951  
 (Millions of ton-kilometers)

	1947	1948	1949	1950	1951
Banana exports	161	162	111	126	88 <sup>a/</sup>
Coffee and other exports	23	24	26	27	30
Imports	50	55	64	74	76
Local traffic	49	41	30	38	36
<b>Total</b>	<b>283</b>	<b>282</b>	<b>231</b>	<b>265</b>	<b>230</b>

Source: IRCA, Division of Guatemala.

a/ The decrease in banana exports is largely due to the hurricanes which razed the plantations in the Tiquisate region in 1951.

/Due to the

Due to the increase in operating costs specially in wages and salaries, the net operating income, which was 2,196,293 dollars in 1947, dropped to 951,754 in 1950. In 1951 there was a deficit of 6,865 dollars. (See Table 6.)

b) Railroads of the Compañía Agrícola de Guatemala of the United Fruit Company. These railroads are not public carriers, but limit their activities to transporting crops from the banana plantations and various materials and equipment needed for the operations of these plantations and for the use of their personnel. The lines of the Compañía Agrícola de Guatemala (affiliated with the United Fruit Company) are located in the Pacific region. They have a total extension of approximately ninety kilometers and join with the trunk line of the IRCA at Río Bravo. The United Fruit Company railroads are in the Atlantic region and extend for approximately 200 kilometers. They join the IRCA's trunk line at Bananera.

The IRCA's trains carry freight and passengers on the Bananera-Chiriguá Junction line (36 kilometers) of the United Fruit Company, and also on the Río Bravo-Tiquisate section (26 kilometers) of the Compañía Agrícola de Guatemala.

For the transport of bananas exported by both companies, the IRCA generally uses the locomotives and rolling stock of the Compañía Agrícola de Guatemala. (See Table 4.)

(c) Verapaz Railroad. This railroad once belonged to a private company but is now government property. It serves a part of the important coffee region of Alta Verapaz, using a narrow gauge track (gauge: 0.865 meters, or 35 inches) 47 kilometers long, which runs from Pancajché to

Table 6

Guatemala: International Railways of Central America  
 (Guatemala Division) Statistics as of  
 December 31, 1951

<u>Passengers carried (units)</u>		3,835,000	
<u>Freight</u>	<u>Thousands of short tons</u>	<u>Millions of ton-kilometers</u>	
Bananas	206.6	88	
Coffee and other freight	106.8	30	
Total exports	313.4	33%	118 51.6%
Imports	330.1	36%	76 33 %
Local	301.8	31%	36 15.4%
	945.3	100%	230 100.0%
<u>Gross income (thousands of dollars)</u>			
Freight		\$ 6,111.9	
Passengers		1,497.8	
Express and mail		258.4	
Other		2,481.6 a/	
Total		\$ 10,349.7	
<u>Itemized expenses</u>			
Maintenance of line and structures		\$ 1,748.6	
Maintenance of equipment		1,786.6	
Traffic		31.9	
Transportation		4,074.6	
General		1,189.9	
Other expenses		1,524.9	
Total		\$ 10,356.5	
<u>Net operating income</u>			
		\$ 10,349.7	
		<u>-10,356.5</u>	6.3 Deficit
<u>Employees and workers</u>		5,600	

Source: IRCA, Division of Guatemala

a/ Includes income from port operations.

/Panzós,

Panzós, on the Polochic River. From this point it operates a river and maritime barge service across the Polochic and Lake Izabal, El Golfete and the Dulce River to Livingston and Puerto Barrios. The traffic is very slight, the total movement of freight being at present less than 5000 tons annually, of which a little over 3000 tons are coffee shipments. Passenger traffic is insignificant.<sup>1/</sup>

The Mission inspected this railroad and found it to be in a deplorable state. The track, originally well-constructed, with steel ties, is in very bad condition due to neglect of maintenance for several years. There are three locomotives, of which two are in running condition and one is dismantled. The rolling stock is barely sufficient to make up a train of six or seven cars.

Because of the very bad service of this railroad this natural outlet from the rich Cobán region to the international ports is not utilized as it should be. Both freight and passenger rates are excessive due to the high operating costs. Shipment of lead ore from Cobán, which could make use of the Verapaz railroad system if the rates were reasonable, is made by truck from Cobán to El Rancho (an IRCA station) and is carried from here to Puerto Barrios by rail.<sup>2/</sup>

## 2. Port and Maritime Situation

In order to analyze the effects of the present railway system on the economy of Guatemala, it is necessary to consider the port

<sup>1/</sup> See point 6 (a) in Section III of this chapter, page 91.

<sup>2/</sup> In Part Three of this Report some recommendations are made for the improvement of this waterway and its overland connections with the interior of the country. See especially Recommendation CXXI.

and maritime situation. In Guatemala, as is also the case in El Salvador, control of rail transport, ports, and the principal shipping companies is concentrated in the hands of the same or closely related companies. There is also in Guatemala the circumstance that these transport companies are linked to the United Fruit Company, which owns large agricultural tracts in the country and which utilizes a high proportion of the means of communication for purposes of international commerce. It is therefore convenient to examine the port and maritime situation in order later to study the part played by the transport system in export and import trade.

Guatemala's three principal ports are not controlled by the public authorities, but are privately operated. The IRCA is the proprietor of the port installations at Barrios, including the pier, equipment, warehouses, and access facilities. It is also the proprietor of the San José pier, but this port is operated by the Agencia Marítima Nacional, S.A., a company associated with the Grace Line. The firm Agencias de Champerico S.A., also affiliated with the Grace Line, owns and operates the port of Champerico. The other ports are of minor importance in general and have no significance whatever in international trade.

- (a) Puerto Barrios. Situated 317 kilometers by rail from the capital, this is the only important sheltered port in the country. It is on the southeastern shore of the Bay of Amatique, which permits the entrance and direct mooring to the pier of vessels with a draught of up to 29 feet. The tide is only a few inches, and pilot service is not required,

/although

although it is available if requested. The installations are good and are well-maintained, and its operations are handled efficiently; but the port has three important drawbacks: first, the lack of an approach by highway, which gives the INCA a monopoly of the traffic; second, the inability of the installations to meet the demand for services, and, third, the inadequacy of the customs facilities.

The insufficiency of installations is closely related to the special services provided for the shipment of bananas by the United Fruit Company. The pier is 2400 feet (732 meters) long by 132 feet (40.3 meters) wide, but the berth spaces, which are located at the end where the warehouses stand, measure only 1000 feet (305 meters). Since the berth space facing north is used exclusively for the loading of bananas, there remain only 1000 feet at the disposal of the public. The equipment for loading bananas is excellent, but that which is put to other uses is inadequate. The warehouses, on the contrary, are sufficient for normal traffic. There is one for local traffic and two others, one of which has a capacity of 35,000 bags of coffee, and the other a capacity of 55,000 bags.

The inadequacy of the customs services is a question not only of the scarcity of storage space, but also of the undue use of the customs house for storage. Merchandise is left in the customs house for long periods, and frequently the tax for excess storage time is not imposed. The customs procedures themselves are much too slow. The system is the same that has been followed for years, and the few modifi-

/cations which

cations which it has undergone have not improved it significantly.

Approximately 65% of the country's total maritime imports and exports in 1951 was moved through Puerto Barrios. Exports through this port reached a figure of 274,400 short tons and imports amounted to 196,300.<sup>1/</sup>

In general, the traffic is well-balanced in regard to the relation between the volume of exports and the volume of imports. The largest volume of exports is made up of bananas (around 70%), followed by coffee (about 20%) and minerals (about 6%). However, in value, coffee represents 75% and bananas 11% of the exports. The transit trade with El Salvador amounted in 1951 to 13% of the volume of exports and 17% of the volume of imports.

Maritime service through Puerto Barrios is regular and frequent. In 1951, 341 merchant ships in international service touched port here —an average of 28 ships per month—, the majority of which came from or were en route to New Orleans and New York, some touching other Central American ports. The average tonnage was more than 2200 gross tons. Most of these ships (80% in 1951) belonged to the fruit companies.

(b) San José. Located on the Pacific coast, 120 kilometers by rail and 105 kilometers by highway from the capital, San José is at an open roadstead with a lighterage system for loading and unloading. There is a steel pier, which is 918 feet long (280 meters) and 61 feet wide (18.6 meters) at the head. The port operates 2 tug boats, 7 lighters with an

<sup>1/</sup> Data supplied to the Mission by the IRCA.

/average

average capacity of 45 tons, and 4 steam cranes (three 5-ton cranes and one 15-ton crane). There is one warehouse belonging to the port owners which measures 150 by 200 feet (46 by 61 meters) and a smaller one which is the property of the Guatemalan customs service.

In 1951 the volume of imports passing through San José was 121,904 short tons --mostly fuel-- while its volume of exports was 20,346, according to data supplied by the IRCA. The figures for the fiscal year 1950/51, according to the Bureau of Statistics, were: imports, 186,405 metric tons and exports 17,201 metric tons. As is evident, there is a considerable discrepancy between the volume of imports and the volume of exports. Possibly the IRCA's system of rail rates has something to do with this discrepancy, since these rates tend to channel to Puerto Barrios the shipments of coffee from the regions near Pacific ports. Only 10,461 tons of coffee were loaded at San José in 1951. An average of eleven ships per month called at San José, and in the first few months of 1952 this figure was still lower.

(c) Champerico. This port is located 40 kilometers from the Mexican border and 240 kilometers from Guatemala City by rail. It is connected with the city of Retalhuleu and the main Pacific highway by a dry weather road. Champerico is also an open roadstead having a pier 822 feet long (250.7 meters) by 80 feet wide (24.4 meters) at the head. It operates 2 tugboats, three 34-ton lighters and five cranes (one 25-ton, two 15-ton and two 10-ton). It has a repair shop and two warehouses --one belonging to the port owners and the other to the customs service-- which have a combined storage capacity equal to the present demand.

/In 1951,



In 1951, 7,038 tons of exports (mostly coffee) were loaded at Champerico, and its imports amounted to 3,179 tons. An average of 3.8 ships per month called here, most of which also touched at San José. As in the case of San José, almost all the ships in operation belong to the Grace Line, which, as previously noted, also controls both these ports.

### 3. Services and rates

The community of interests which exists in Guatemala between the railroad, port, and shipping companies on the one hand, and the banana enterprise on the other, has created a transport situation which is not always beneficial to the country's economy, especially in the field of foreign trade. It should be noted that the shipping service for imports and exports is regular and that the warehouse needs for export goods are met satisfactorily by the shipping companies. Likewise, in a general way, the IRCA provides efficient service for the transport of export products to the ports and vice versa. But there are two basic conditions which have an adverse effect upon the established system: the preferential treatment which, for various reasons, is accorded to the shipment of bananas, and the rates system.

In regard to the first point, preference is given to bananas over other traffic in rail transport and in the handling of the ships owned by the fruit companies. Banana trains have absolute priority, and other trains are forced to wait on sidings while they pass. Bananas are also given special space and priority in the ports, often causing delay in the operation of ships and trains engaged in other business. There

/have even

have even been instances in which the loading or unloading of other products has been interrupted in order to expedite banana shipments.

In the matter of preference shown in the ports to ships not belonging to the fruit companies, the Mission was informed that a rational order is not always observed in mooring and unloading and that the ships of certain companies enjoy the privilege of being unloaded before other ships which arrive in port previously to them. In addition to causing material damage, incidents of this sort give rise to resentment and bad relations between the railroads and the fruit and transport companies on the one hand, and the users of the transport services on the other.

The rates system is constructed in such a way that it always favors shipment by way of Puerto Barrios, in spite of the greater distance between this port and the more important centers of production and consumption.

The freight rate on coffee exports to the United States is global and indivisible. It includes, as one unit, the rail freightage, port charges and maritime freight from the station from which it is shipped to the port of destination in the United States. The charges on a ton of coffee from the station in Guatemala via Puerto Barrios or via San José, to the port of destination in the United States, are \$35.60.<sup>1/</sup>

When coffee is shipped to European ports, the rate does not include the maritime freight, and the charges vary according to whether they are for Puertos Barrios or for San José and Champerico. There is a notable difference in the price per ton-kilometer. Thus, from Escuintla to San José --which is a downhill trip-- the rate is 16 cents per

<sup>1/</sup> Hereafter the sign "\$" and the term "cents" will refer to U.S. currency. Other national currencies will be indicated by their specific name.  
/ton-kilometer.

ton-kilometer, while the rate from Escuintla to Puerto Barrios --a more difficult stretch of road with steep gradients and sharp curves-- is 5 cents; from Mazatenango to Champerico it is 10 cents, while from Mazatenango to Puerto Barrios it is 3.9 cents. If it is assumed that the rates charged to Puerto Barrios are sufficient to cover the cost of the service and the return on investment, it is obvious that the rates charged to the nearer ports are excessive. Although some cost elements are fixed, and, therefore, independent of distance, the disparity in rates is so great (see Table 7), and the previously described conditions of terrain are so favorable to the use of the Pacific ports, that, while the Mission could not carry out a detailed study of the costs, it was able to conclude that the guiding principle in the construction of the rate schedule has been the channeling of as much traffic as possible towards Puerto Barrios.

On the other hand, the costs and consequently the port charges in San José and Champerico, are much higher than in Puerto Barrios, (\$5.60 as against \$2.00 per short ton).

The rate on other export products follows the same principle, the charge per kilometer for Puerto Barrios being very low in comparison to that for other ports. Thus, the charges for a ton of cow-hides are 6.2 cents per ton-kilometer, and 9.5 from Escuintla to San José; the rate for cocoa beans is 5.4 from Patulul de Puerto Barrios, and 14.5 from Patulul to San José; the rate for cotton in bales is only 3.6 from Retalhuleu to Puerto Barrios; the rate for lead ore from Rancho to Puerto Barrios is 7, and from San Felipe to Champerico 8.1 cents per ton-kilometer. In the transport of bananas for export, the railroad

Table 7

Guatemala: Rail charges for coffee shipments to Europe  
 (in dollars)

	<u>Kms.</u>	<u>Per ton</u>	<u>Less port charges</u>	<u>R.R. charge</u>	<u>Cents per ton-km.</u>
Guatemala-Barrios	317	21.60	2.00	19.60	6.2
Guatemala-San José	120	14.60	5.60	9.00	6.6
San Fernando-Barrios	370	19.70	2.00	17.70	4.8
San Fernando-San José	56	12.70	5.60	7.10	10.8
Escuintla-Barrios	390	19.60	2.00	17.60	5.0
Escuintla-San José	42	12.60	5.60	7.00	16.0
Mazatenango-Barrios	500	21.40	2.00	19.40	3.9
Mazatenango-Champerico	66	14.40	5.60	8.80	10.0
San Felipe-Barrios	534	21.20	2.00	19.20	3.6

Source: IRCA, Division of Guatemala.

freight rates are not available to the public, but are a matter of agreement between the IRCA and the United Fruit Company. In Guatemala there is the opinion that the IRCA charges the banana company a very low rate, less than the cost of the service; and that consequently it has to seek compensation through high rates for public traffic. From the available data, it is not possible to determine the truth of this statement. This is a special type of transportation in which there are factors which do not exist in other freight movements. The cost of the service rendered to the United Fruit Company by the IRCA would appear to be very low. In the first place, the locomotives as well as the rolling stock used are the property of the Compañía Agrícola de Guatemala and the loading and unloading of the bananas is carried out very rapidly by the specialized personnel of the fruit company. IRCA's only direct expenses are the fuel

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consumed by the locomotives and the salaries of the railroad personnel.

The unfavorable factor in banana transport is that the perishable nature of this product requires more rapid and more careful service than other traffic and that the preference given to banana traffic to achieve this special service causes delays in the transport of other commodities.

In any case, whatever the agreed rates on banana freight, it may be said that the prevailing rates on export traffic are not rational and, in general, may be considered high. Import traffic is subject to a combined rate which includes railroad and port charges. (See examples in Table 8.)

The rates which the IRCA charges in Guatemala are higher than those it charges in El Salvador. Thus, the rate for moving a ton of wheat flour from Puerto Barrios to Guatemala City is 4.2 cents per ton-kilometer, while the rate from Cutuco to San Salvador is 3.6 cents; the rates on wheat are 5.3 and 2.5, respectively, and for cement 5.5 and 3.2 cents, respectively. Part of this difference in rates between the two countries may be due to the fact that in Guatemala costs are higher because of the nature of the terrain and labor benefits. According to data supplied to the Mission by the IRCA itself, the train-running costs in 1951 was 72 cents per train kilometer in the El Salvador Division and \$1.42, or nearly double, in the Guatemala Division. (See Table 9.) Consequently, in comparing the rates of the two countries, the differences in operating costs should be taken into account.

On the other hand, a considerable difference is found between the rates charged by the IRCA for the transport of imported products and those for local transport within Guatemala. Rates per ton-

kilometer are lower for domestic traffic. This suggests that the import rates are high and that the absence of highway competition in the traffic to the ports allows the company to maintain higher rates for import traffic than it charges for local traffic, in which it does have to compete with trucking companies.

Table 8

Guatemala: Rail charges for imported products

To Guatemala	<u>Via Barrios 317 Kms.</u> (from shipboard)		<u>Via San José</u> 120 Kms.	
	(Dollars per ton)	(Cents per ton-Km.)	(Dollars per ton)	(Cents per ton-Km.)
Diesel oil	15.48	5.0	9.00	7.5
Gasoline	16.40	5.2	9.40	7.7
Kerosene	15.30	5.0	10.00	8.3
Wheat flour	13.40	4.3	6.50	5.4
Wheat	16.88	5.3	7.20	6.0
Iron and steel for construction	20.80	6.5	7.20	6.0
Iron bars	19.40	6.2	7.20	6.0
Cement	17.20	5.5	6.40	5.3
<u>Automobiles, assembled, unboxed</u>	<u>Dollars per unit ex-ship</u>		<u>Dollars per unit, including R.R. charges and wharfage</u>	
Up to 500 cu. ft.	102.30		26.80 plus 0.12 per 100 lbs. of weight for wharfage (up to a maximum of 8000 lbs.); 0.45 per 100 lbs. weight in excess of 8000 lbs., unassembled and boxed.	
from 501 to 560 cu.ft.	112.30			
from 561 to 600 cu.ft.	117.80			
from 601 to 660 cu.ft.	125.80			
More than 661 cu.ft.	137.80			
Unassembled and boxed (up to a maximum of 8000 lbs.) a/ b/		0.30 per cu.ft.		

Source: IRCA, Division of Guatemala.

- a/ An extra charge of 40 dollars per unit for "heavy lift" is collected in both ports.  
 b/ Excess weight at 0.45 cents per 100 lbs.

/Table 9

Table 9

Guatemala: International Railways of Central America.  
Breakdown of the cost of train operation.

1946 - 1951  
 (In thousands of dollars)

	1946	1947	1948	1949	1950	1951
Repair of locomotives	408.4	538.8	781.5	835.5	850.9	851.4
Repair of cars	248.2	303.6	367.1	369.5	436.9	420.0
Repair of coaches	108.9	107.7	114.6	146.6	157.0	180.9
Wages of locomotive crews	208.3	385.6	471.6	389.8	436.0	495.7
Fuel	795.3	1,231.2	1,805.9	1,139.0	891.9	853.7
Other supplies for locomotives	43.2	59.9	79.8	83.2	87.8	90.2
Engine house expenses	132.2	158.1	181.3	195.2	231.8	234.5
Trainmen's wages	338.2	438.5	513.1	442.4	520.0	598.5
Other supplies and train expenses	100.2	128.9	160.7	160.1	170.5	176.4
<b>Totals</b>	<b>2,454.9</b>	<b>3,352.3</b>	<b>4,475.6</b>	<b>3,761.3</b>	<b>3,782.8</b>	<b>3,901.3</b>
Train-miles	1,869,014	2,113,927	2,117,514	1,760,001	1,935,208	1,719,930
Train-kilometers	3,007,000	3,401,300	3,407,000	2,831,800	3,113,700	2,767,300
Cost per train-mile(\$)	1.313	1.586	2.114	2.137	1.955	2.268
Cost per train-kilometer (\$)	0.816	0.986	1.313	1.328	1.215	1.409

Source: IRCA, Division of Guatemala.

4. Air transport

Air transport is highly important in Guatemala, in international trade as well as in domestic traffic. The country's international air operations, together with its domestic air service, are concentra-

/ted at the government

ted at the government-owned La Aurora airport, which is located just outside Guatemala City. This airport has an attractive terminal building, already outgrown, and now used exclusively for international traffic. There is an asphalt runway 2,122 by 61 meters (7,000 feet by 200), a paved highway approach, and other installations constructed during the Second World War by the United States Government as a part of the Hemisphere Defense Program. At the same time, this Government constructed two other airports: one in San José, with an excellent asphalt runway 1,580 meters long by 46 (5,200 feet by 150) and another of equal dimensions in Puerto Barrios. The San José airport is not at present used commercially, and the runway at Puerto Barrios, due to lack of maintenance, is beginning to show signs of serious depreciation.

The Empresa Guatemalteca de Aviación (Aviateca) attempted to establish a freight service between Puerto Barrios and San Salvador in the middle of 1952, charging 3.5 to 4 cents per pound (34 cents per metric ton-kilometer, equivalent to 50 cents per ton-mile); but the IRCA raised considerably the wharfage rates on freight destined for air transport, making it impossible for Aviateca to establish a regular service.

The following are the principal companies operating international flights from La Aurora airport:

(a) Empresa Guatemalteca de Aviación (Aviateca), which began major international operations in 1949 and has continued to increase its activities since then, above all in the transport of freight from the United States. In the month of December 1952 alone, Aviateca carried more than 160 tons (350,000 pounds) from New Orleans at an average rate of 12.5 /cents



cents per pound or 16 cents per metric ton-kilometer (23.5 cents per ton-mile). The company has filed an application with the United States Civil Aeronautics Board in the United States to establish a regular freight and passenger service between Guatemala and the United States.

(b) Pan American Airways (PAA), which began its operations in Guatemala twenty-three years ago (March 1930), and which in the latter part of 1951 was offering 42 passenger flights and 5 cargo flights per week from Guatemala City. With 4,555 arrivals and departures, the PAA moved 76% of the passengers who traveled into or out of the country via La Aurora airport in 1951. This airport is the principal center for the company's passengers in Central America.<sup>1/</sup> In cargo transport, it moved 32% of the merchandise arriving at or departing from La Aurora.

(c) Taca International Airlines (TACA), which began regular operations in May 1946. With 20 passenger flights and 2 cargo flights per week, TACA transported 35% of La Aurora's freight and 17% of its passengers in 1951.

(d) Aerovías Sud Americanas (ASA), which began its cargo flights from St. Petersburg, Florida, on a charter basis in 1949 and received a temporary certificate from the United States Civil Aeronautics Board in August 1952, for regular cargo service. It transported 13% of La Aurora's freight in 1951, or the same percentage as Aviateca. About 7% was carried by other companies on unscheduled flights.

<sup>1/</sup> In September 1950 the figures on the movement of PAA passengers departing from or arriving at Central American airports were as follows: Guatemala City, 2,112,914 passenger-miles; San José, Costa Rica, 1,614,267; Managua, 1,535,268; San Salvador, 1,103,323; Tegucigalpa, 564,986.

(c) Resort Air Lines, which in July 1952 initiated tourist flights from New York and Miami to Guatemala City and back.

Passenger fares charged by PAA and TACA, which were the same for points served by both companies, were high in 1952, compared with the fares charged in Mexico and the United States. The rate per passenger-kilometer varied from 5.3 to 5.9 cents (8.5-9.5 per passenger-mile) and up. Thus, the fare from Guatemala City to Mexico City is \$63, or 5.7 cents per kilometer (9.2 cents per mile).<sup>1/</sup>

Air freight rates on large shipments of specific commodities are more reasonable than are passenger fares and compare favorably with those charged in other parts of the world. TACA's average rates, for example, on some merchandise (office equipment, machinery, household appliances, textiles, automobile parts, etc.), with a minimum weight of 100 pounds (45 kilograms), from New Orleans or Mexico City to Guatemala City are 20 cents per metric ton-kilometer (28 to 30 cents per ton-mile). A similar rate prevails for general merchandise weighing more than 3,300 pounds (1,500 kilograms). On the other hand, the express charges for small shipments of general commodities (less than 100 lb.) are rather high.

The main problem of international air freight transport in Guatemala, as in all of Central America, is the scarcity of export

<sup>1/</sup> About the middle of 1952 there was a local strike of the PAA employees in Guatemala and many passengers made the trip by Aviateca, Domestic Division, to Malacatán, near the Mexican border. There they crossed the border and continued on to Mexico City via the Compañía Mexicana de Aviación for a total fare of \$36, or 3.3 cents per kilometer (5.3 cents per mile). The total flying time was 6-1/2 hours as against three hours and a few minutes on the direct route.

freight. In order to get a greater volume of freight for their return flights, TACA and some other companies offer extremely low rates (3 to 5 cents per pound, with no limitation on volume, which is equal to 3.8 to 6.4 cents per metric ton-kilometer, or 5.5 to 9.3 cents per ton-mile) on handicraft products and agricultural products from Guatemala, including bananas. However, the volume of exports of this type of production has not so far been sufficient to increase the return freight in any considerable degree. In the matter of banana exports, in spite of the low rate per unit of weight, it appears that the principal restrictive factor is overland transport to the airport rather than the air freight rates. Bananas are not well handled in truck transport and consequently run the risk of arriving at United States markets in bad condition. It is believed that with a runway adequate for modern cargo planes--near Mazatenango, for example--and easily accesible to independent producers, a substantial tonnage of bananas could be transported to United States markets quite economically.

Coffee, which has a market value per pound several times that of bananas, readily lends itself to relatively small shipments of from 100 to 200 bags, suitable for modern cargo aircraft. In addition, there is an accumulation of interest on the investment while coffee is in transit from finca to consumer, which could be saved by air transport. It has been estimated that, in transport from the coffee-producing region to New Orleans or to any interior point in the United States, a rate of 4 cents per pound, equivalent to five cents per metric ton-kilometer (7.5 cents per ton-mile) could compete with current surface transportation. Here, again, the need is for suitable landing strips near the coffee-growing areas.

## 5. Highways

The international movement of passengers and freight by highway is very limited, considering that Guatemala has direct road connections with Mexico <sup>1/</sup> and El Salvador, and indirect connections with Honduras and Nicaragua. This is probably due, in the first place, to the inferior quality of the roads, and also to the administrative and customs delays which beset international traffic. There are very few operators in the country which engage in traffic with the neighboring countries. The most important of these is Rutas Lima Service, which operates an efficient fleet of seventeen modern buses running to El Salvador and Tapachula and will soon put four more into operation.

The transport of import and export commodities by highway has not yet achieved the importance it should have in Guatemala in view of the favorable conditions which exist there for its development. The production centers and markets are located at short distances from the ports and from bordering countries. Also, in addition to the air traffic mentioned above, several streams of international traffic come together in Guatemala: (a) trade with the west coasts of Mexico, the United States, and Central and South America via the Pacific is carried on through the Guatemalan ports of San José and Champerico (apart from the traffic which passes through the Panama Canal); <sup>2/</sup> (b) through Puerto Barrios, on the Atlantic, pass the exports and imports to and from the

<sup>1/</sup> To Tapachula, which is reached by the Ferrocarriles Nacionales de México.

<sup>2/</sup> This traffic consists in products coming from the eastern coast of the United States and from Europe as well as the small volume of articles coming into Guatemala from the rest of the world.

/eastern

eastern United States and Mexico; (c) Guatemala's overland trade with El Salvador, Mexico, Nicaragua and Honduras passes across the Salvadorean and Mexican borders.

The limitations imposed by the private companies' combined system of maritime navigation, economic and administrative control of the ports, and rail transport, have deprived highway transport in Guatemala of importance and drained it of vitality. If this situation had not existed, Guatemala would not only have a much greater volume of highway transport, but also, as a result of the competition which would have developed, it would enjoy lower operating costs and lower freight rates in general, especially for overland transport.

In spite of the existing difficulties, there is a relatively active movement by highway for purposes of international commerce. Of the present highways, those which are important to this commerce are: the Pacific Highway (Guatemala City-San José); the Inter-American Highway; National Route No. 6W of the Coastal Highway (Escuintla-Ayutla); National Route No. 4 (Guatemala City-Puerto Barrios) and National Route No. 22.

(a) Pacific Highway (Guatemala City-San José). This route, which is probably the most important in the country, begins 4 kilometers from Guatemala City, and connects the capital with Escuintla and the port of San José on the Pacific coast. It covers a distance of 105 kilometers and is also designated National Route No. 3. It is parallel to the railroad line and, with the recent completion of the 19 kilometer stretch between Palín and Escuintla,<sup>1/</sup> it is now completely asphalt-paved. The construc-

<sup>1/</sup> This stretch was officially inaugurated on February 21, 1953. The cost of construction for the 19 kilometers plus 3 additional kilometers of street paving was 741,580 dollars, or an average of 32,812 per kilometer.

tion specifications for this route considered a total thickness of 26.5: 25 centimeters for the base, to be of select material, graded sand, stone chips and asphalt; and a wearing surface of small broken stone 1.5 centimeters thick. The width of the paved section is 6 meters, and the shoulders 1 to 2.5 meters. The road has good horizontal and vertical alignment, easy curves, good visibility, and gentle gradients, although in some stretches near Villanueva the gradient reaches approximately 10%. Almost all the bridges are wide and sturdy, the narrowest being that of Villalobos, with a width of only 4.40 meters. The specifications permit the development of a very active commercial traffic, which is rapidly increasing, not only because it is used for the transport of import products in particular and of export products to a lesser degree, but also because it passes through a zone of considerable importance in agricultural and livestock production and joins the coastal highway, which is highly important to this region.<sup>1/</sup> Guatemalan officials have stated that the government will increase the port facilities at San José so that road transport operators will be able to handle more rapidly and in larger quantities the freight moved through the port. In some sections, beginning at kilometer 10 and at kilometer 18, the pavement of this highway is deteriorating appreciably.

(b) Inter-American Highway (IAH). This route, construction of which began in 1945, has a total length of 510 kilometers and runs from northwest to southeast, from El Ocotal (Mexican border) to San Cristóbal (Salvadoran border). The present state of each section of this highway varies considerably. (See Table 10.)

<sup>1/</sup> See Section III, point 2 (c) of this chapter, p.65.

The initial 40 kilometer section, running along the Mexican border, has not yet been constructed. This constitutes the only obstacle to permanent traffic in the entire region between United States and the northern border of Costa Rica. Of the part already constructed, only 79 kilometers are paved. Of the remaining 390 kilometers, almost all of sections 2 and 3 (kilometer 303 - Sumpango), covering a distance of 265 kilometers, needs to be relocated because of its bad horizontal and vertical alignment and because it is of insufficient width in many stretches. About 60% of section 6 (kilometer 22-Asunción Mita), already relocated should be constructed according to the new alignment.

Table 10

Guatemala: Present condition of various sections of the Inter-American Highway

Section	Kms.	Present condition
1. Mexican border-kilometer 303	40	Impassable
2. Kilometer 303-San Cristóbal	122	All-weather road
3. San Cristóbal-Sumpango	143	All-weather road
4. Sumpango-Guatemala City	37	Paved
5. Guatemala City-Kilometer 22	23	Paved
6. Kilometer 22-Asunción Mita	126	All-weather road
7. Asunción Mita-Kilometer 160	13	Paved
8. Kilometer 160-Salvadorean border	6	Paved
Total	510	

Source: Data gathered directly by Transport Mission.

From the beginning, in 1945, until June 1951, during which period Guatemala received technical and economic aid from the United States, grading work was carried out over 186 kilometers, 65 kilometers were paved and 605 linear feet of bridges were built. The investment /therein

therein was \$9.9 million, of which the United States contributed \$6 million and Guatemala the remainder.

From July 1951 through June 1952, the Guatemalan government carried out by itself 2 kilometers of grading, 16 of paving, 10 of base, and placing of select material in another 10. Minor road maintenance work was also performed. The investment in this period was \$540,000. In brief, the total cost of the Inter-American Highway as of June 1952 had been \$10.3 million. According to information received by the Mission in October 1952, the completion of this highway would require the relocating of 230 kilometers, the clearing of 800 hectares of forest, the movement of 11,400,000 cubic meters of earth for grading, 24,800 linear meters of drainage and the construction of 3,708 linear feet of bridges, in addition to the considerable job of paving, structural excavation, and the building of structures. The estimated cost is approximately \$25 million. For completion of the initial stretch of the Inter-American Highway, including bridges and drainage structures, an estimated total of approximately \$3.5 million would be required.

In spite of the fact that Guatemala's foreign trade with the Central American countries has not yet attained any considerable volume, most of the intra-regional exports and imports for the last five years have been moved by surface transportation, and with the exception of a few commodities --cement, some cattle, a small quantity of lumber and others-- moved by rail, almost all the commodities exported to or imported from the Central American countries (including Panama) have been transported by highway. It is therefore obvious that the Inter-American Highway has acquired great importance in the region, despite the fact that

/it has not



it has not been completed in Guatemala, Costa Rica, and Panama and is not yet completely paved in El Salvador and Honduras, where it is nearly finished. The uncompleted 40-kilometer initial section from the Mexican-Guatemalan border is not only depriving Guatemala and the other Central American countries of valuable overland trade with the United States and Mexico, but is also cutting them off from a very important stream of tourist trade. It is estimated that no less than 10% of the tourists who visit Mexico each year could be attracted to Guatemala by highway, a figure which would represent 10 to 15 million dollars per year.

Negotiations for an agreement on economic and technical cooperation between the United States and Guatemalan governments for purposes of continuing the construction of the Inter-American Highway were interrupted some months ago.

(c) National Route No. 61 of the Coastal Highway (Escuintla-Ayutla). This route is at present a part of the Coastal Highway, which is described below.<sup>1/</sup> It connects the capital with Ayutla, a river port on the Mexican border, and, by a branch road, with Ocosingo, a minor Guatemalan port on the Pacific. This road is now used for the importation from Mexico of silk and cotton fabrics, pewter articles, chinaware, agricultural and industrial machinery, gasoline, kerosene, Diesel oil, etc. Formerly some foodstuffs were exported via this road.

Construction of the Coastal Highway will greatly stimulate international traffic through Ayutla.

<sup>1/</sup> See point 2 (c) of Section III of this chapter, p. 65.

d) Atlantic Highway (Guatemala City-Puerto Barrios). National Route

No. 4. Guatemala has given major importance to the construction of this route, which will connect the capital and the interior of the country with the Atlantic coast and, particularly, with the vital point of Puerto Barrios, which is now reached only by rail. The government decided to construct this road in view of the ever-increasing activity of the port—a fundamental element in the country's economy—and with the object of benefiting the country as a whole through the lower passenger fares and freight rates which are expected to result from highway passenger and freight transport to and from the port. The benefits to be expected from this road would be considerably greater if, by branch roads or in some other way, it could be made to cover a maximum area beyond that served by the railroad. The highway will be first class <sup>1/</sup> and will have a total length of 318 kilometers. It will run parallel to the railroad line between its terminal points. Its approximate cost will be about 20 million dollars.<sup>2/</sup>

There are already in existence 219 kilometers of all-weather road, running between Guatemala City and the point called Los Amates. The locating of this stretch was deficient: bad horizontal and

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- <sup>1/</sup> The specifications are as follows: (a) maximum gradient, 7%; (b) road surface width, 6.70 meters; (c) width including shoulders, 11.00 meters; (d) maximum degree of horizontal curves in mountainous country, 20 degrees; (e) maximum speed specifications for mountainous country, 45 kilometers per hour.
- <sup>2/</sup> According to the estimate of the Comisión de la Carretera del Atlántico (Atlantic Highway Commission) which supplied these data to the Mission, the net cost per kilometer is 40 to 45 thousand dollars on a basis of the average unit cost of the different sections of the Inter-American Highway. The experience gained in the construction of the Inter-American Highway is being utilized in building the Atlantic Highway.

/vertical

vertical alignment, short tangents, numerous curves (some sharp), low visibility, gradients of more than 6% in some sections and varying widths (very narrow in some parts). Although it is an all-weather road, in order to adapt it for use as a part of the new highway it will be necessary to make a complete readjustment of its location, and to effect many improvements on the sections which can be renovated. An estimated three years will be needed for the completion of the highway, beginning in 1953. Approximately one-sixth of the job has now been completed.<sup>1/</sup>

(e) National Route No. 1. This road, which is described below <sup>2/</sup> connects Guatemala City with Puente Talismán, on the Mexican border. Puente Talismán is connected by a 25 kilometer asphalt highway with Tapachula, a Mexican town of relative importance in production and commerce. The greater part of the commodities imported from Mexico via Tapachula is moved by rail to Tapachula and from there, along National Route No. 1, through Malacatán, La Unión, Quezaltenango, etc., to Guatemala City and vicinity.

Even should the Inter-American Highway be completed in the near future, National Route No. 1 would continue to be important, especially the Totonicapán-Quezaltenango-San Marcos-Malacatán-Puente Talismán section, due to its double character as a channel for the development of

<sup>1/</sup> As of November 30, 1952, the following work had been completed: (a) 102 kilometers of right of way cleared; (b) grading of 59 kilometers and re-  
placement of 1,857,000 cubic meters of material; (c) 84,000 linear me-  
ters of drainage. Two bridges and six culverts had been completed, and  
five more bridges and two more culverts were under construction. Expend-  
itures through October 31, 1952 were \$7.24 million, of which 3.9 mil-  
lion had been spent for mechanical and construction equipment.

<sup>2/</sup> See point 2 (d), Section III of this chapter, page 71.

international commerce and for the stimulation of the economic development of the region.

(f) National Route No. 22. This highway, which is at present being improved and completed along its last stretch near the La Paz River, will soon be joined with the Ahuachapán-Las Chinamas-Río de la Paz highway in El Salvador and will form a new link in international communication.

### III. Means of Transport for Domestic Economic Activity

Transportation in Guatemala is basic to its domestic economic activity and to the promotion of a greater development of the country's economy. In the more densely populated part of the country, to the south of a line which can be drawn from Huehuetenango to Cobán and Lake Izabal, the existing routes of transportation are inadequate, and transportation costs are very high. There are many localities which are isolated from the rest of the country within this zone. In the northern part of the country, where the population is still relatively small but where there are possibilities of considerable economic activity, there are practically no roads at all.

There is a great disproportion between the zones of production and the zones of consumption of the basic articles of food. For example, five departments of the northern and northwestern parts of Guatemala --San Marcos, Huehuetenango, Quiché, Alta Verapaz and Baja Verapaz-- produce 40% of the corn crop. (See Table 11.) The excess production of these departments makes up for the deficiency in the zone of greatest consumption, which comprises the City and Department of Guatemala and

/four other

four other departments of the highland area, together containing one-third of the country's population. Almost half of the production of beans comes from seven departments in the northeastern and southeastern zone which form an arc around the Department of Guatemala, and the excess production of these zones is consumed in the Department of Guatemala. More than 80% of the rice crop is produced in the Pacific coastal area, from which the rest of the country is supplied.

Table 11

Guatemala: Production of Various Foodstuffs

(in metric tons)

Department	Corn	Beans	Wheat	Sorghum	Panela <sup>a/</sup>	Sugar
Total	368,993	22,300	16,350	9,701	33,907	34,808
Guatemala	15,756	1,195	—	271	589	1,611
El Progreso	2,937	209	—	13	15	725
Sacatepéquez	5,666	460	—	—	—	957
Chimaltenango	17,893	1,044	1,594	8	6	1,276
Escuintla	19,403	341	—	—	25,741	9,446
Santa Rosa	16,212	2,084	11	355	23	4,241
Sololá	7,609	460	1,073	—	—	525
Totonicapán	6,258	252	2,064	—	—	—
Quezaltenango	23,882	366	4,537	—	—	2,028
Suchitepéquez	13,843	110	—	3	6,550	3,842
Retalhuleu	21,096	100	2	1	957	2,585
San Marcos	29,754	1,174	4,540	3	3	1,072
Huehuetenango	37,977	1,228	2,212	2	4	1,178
Quiché	28,420	1,420	244	194	—	1,038
Baja Verapaz	12,168	580	2	893	3	965
Alta Verapaz	39,828	1,796	2	1	2	502
Petén	4,063	242	—	—	—	224
Izabal	10,346	791	2	—	—	—
Zacapa	8,485	878	—	43	1	965
Chiquimulá	14,109	2,096	—	1,317	3	733
Jalapa	12,638	1,302	61	152	2	382
Jutiapa	20,660	4,172	6	6,445	8	513

Source: Agricultural and Livestock Census, 1950 (Censo agropecuario).

<sup>a/</sup> Unrefined loaf sugar.

/Almost

Almost the whole of the production of sugar comes from the Departments of Escuintla and Suchitepéquez, in the Pacific zone, and is transported to the capital and other urban centers of consumption. The production of panela,<sup>1/</sup> also highly concentrated on the Pacific coast, gives rise to an even more spread-out transportation movement to the rural areas of the highlands.

This movement of goods from zones of production to those of consumption requires modern, plentiful and cheap means of transportation to take the place of those now in use, which frequently are among the most primitive in Central America. A sizeable proportion of the products of small-scale farming and of Indian handicrafts are carried to market on the backs of the mecapaleros,<sup>2/</sup> with a resulting waste of human energy. In some regions neither transportation by road nor even by donkey or muleback is used; men with loads on their backs cover distances up to 200 kilometers, that require fourteen days of travel, including the return trip.

There are three principal means of transportation for domestic commerce: railroads, roads and highways, and air transport. To these can be added, on a smaller scale, transportation on inland waterways, both rivers and lakes.

#### 1. Railroads

As was seen in point 1 of Section II of this chapter, the

<sup>1/</sup> Unrefined loaf sugar.

<sup>2/</sup> Porters or bearers of merchandise are called mecapaleros, a name derived from mecapal, which is a leather band used to hold up the load by suspending it from the forehead of the bearer.

/railroads,

railroads, particularly the IRCA provide daily freight and passenger service along the entire length of their lines. In 1951 the volume of local freight hauled was 301,795 tons (36 million ton-kilometers), compared with an overall total volume of 945,344 tons (230 million ton-kilometers). (See Table 12.) The ton-kilometers hauled in local runs represent 16% of the total. The number of passengers carried in 1951 was 3,800,000, practically the same number as in each of the three previous years. In 1946 the railroads carried 4 million passengers. The decrease is attributed to the growing competition from passenger buses.

Unlike export and import freight shipments, local shipments are subject to kilometer-rates which increase in direct proportion to the distance. This favors short hauls, which normally have a higher operating cost since the terminal charges have to be divided into a smaller number of kilometers. Rates per ton-kilometer are generally somewhat higher in the Atlantic District than in the Pacific (see Table 12), probably because competition from trucking is greater in the latter district.<sup>1/</sup>

Freight rates for local shipments are in general a little above those charged by the IRCA in El Salvador. Nevertheless, bearing in mind what has already been said about differences in costs,<sup>2/</sup> the Guatemalan rates can be considered high, but not excessive.

Passenger service is deficient, especially with regard to speed. The daily passenger train, first class, makes the run from Puerto Barrios to Guatemala City in 9 hours and 40 minutes, and the return

<sup>1/</sup> Guatemala City is the dividing point between the two districts.

<sup>2/</sup> See before, pp. 39-44.

trip in 8 hours and 15 minutes, or at average speeds of 33 and 49 kilometers per hour, respectively. Even taking into account the winding route and the relatively large number of stops, there is no doubt that these speeds can be improved, particularly through the use of Diesel traction. Present passenger rates are kept within the limits set by the concession; that is, 3 cents per mile in first class, and 1.5 cents in second class (approximately 2 cents and 1 cent per kilometer, respectively).

Table 12

Guatemala: Railroad freight rates for local traffic a/

	Atlantic District		Pacific District	
	C.L. b/ Ton-Km.	L.C.L. c/ Ton-Km.	C.L. Ton-Km.	L.C.L. Ton-Km.
Corn	3.0	3.7	2.75	3.4
Fertilizers	2.5	3.7	2.5	3.4
Raw cotton	5.0	6.2	4.5	6.2
Husked rice	3.7	—	3.4	—
Less than 95 miles	—	5.6	—	4.5
More than 95 miles	—	4.5	—	3.7
Lime	3.1	5.0	2.5	—
Guatemalan cement	3.7	—	3.4	—
Beans	3.7	—	3.7	—
Honey	3.7	—	3.7	—
Bricks of all kinds	3.7	5.0	2.8	2.8
Sawn wood or logs	Special rates		2.5	4.5
	<u>Car-Km.</u>		<u>Car-Km.</u>	
Horses and mules				
30-foot car	25		25	
36-foot car	28		28	
Cattle				
30-foot car	22		22	
36-foot car	25		25	

Source: Transport Mission, on data supplied by the IRCA.

Note: The concession contract which the IRCA enjoys fixes the following maximum rates: freight, 20 cents per ton-mile, or 12.5 cents per short ton-kilometer; passengers, 3 cents per mile in 1st class and 1.5 in 2nd class, or 2 cents and 1 cent per kilometer, respectively.

a/ These rates are given in cents per short ton per kilometer, and those corresponding to livestock in cents per car-kilometer.

b/ C.L. Car load

c/ L.C.L. Less than car load.



## 2. Highways and Roads

The total extension of the roads of Guatemala is approximately 6,500 kilometers. Of these, only some 4,300 kilometers are all-weather roads, and only 330 are paved.<sup>1/</sup> In many cases the location and distribution of the roads has not been planned on a technical and economic basis which would provide cheap and efficient commercial transportation, and at the same time would connect the different departmental capitals. Added to this are the mountainous terrain and the difficult climatic conditions of the country, which mean high construction costs and very advanced construction techniques; as a result there is an extensive but inadequate road system, upon which transportation costs are very high.

Guatemala shows a ratio of one kilometer of roads of all kinds for every 462 inhabitants, compared with one kilometer for every 249 inhabitants in El Salvador. There is one kilometer of all-weather road for every 704 inhabitants, while in El Salvador there is one kilometer for every 1,280 inhabitants. There are sixty linear meters of roads of all kinds, and 39 meters of all-weather roads per square kilometer of territory. In El Salvador there are 366 linear meters of roads of all kinds, and 72 meters of all-weather roads per square kilometer.

Guatemala's road system is shown in Appendices I, II and

<sup>1/</sup> In the National Route system there are 3,300 kilometers of all-weather roads, and 440 kilometers of dry-weather roads; in the Departmental and Municipal systems there are 1,065 and 1,730 kilometers of the same categories, respectively.

III at the end of this chapter.<sup>1/</sup> The total length and the passable sections of the National Routes are indicated in the first of these tables; the lengths of the Departmental and Municipal roads are indicated in the second; and the road density and kilometer distances of all-weather roads by departments, are indicated in the third.

Most of the roads are located in the central plateau, the region of greatest population density. The central belt, comprising the Departments of San Marcos, Quezaltenango, Totonicapán, Sololá, Chimaltenango, Sacatepéquez, and Guatemala possesses 37% of the all-weather roads of the entire country; and if one adds to this the narrow belt of roads in the contiguous zone of the Departments of Santa Rosa, Escuintla, Suchitepéquez and Retalhuleu, then this limited central zone possesses 54% of the above total. The three departments which have the highest ratio of roads area are Sacatepéquez, Chimaltenango and Guatemala, which occupy the central part of the plateau region. On the other hand, the extensive Departments of Alta Verapaz and Quiché together have more than 16% of the country's all-weather roads. The Departments of Petén and Izabal, which are the territorial divisions of greatest area, have but 0.6% of the country's roads.

(a) Inter-American Highway. This highway runs through the Departments of Huehuetenango, Quezaltenango, Totonicapán, Sololá, Chimaltenango, Sacatepéquez, Guatemala, Santa Rosa, and Jutiapa. Heavy inter-depart-

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<sup>1/</sup> To describe the road system, the following classifications, in part similar to those used by the Bureau of Roads of Guatemala have been adopted: (a) National Routes, and Departmental and Municipal Roads, according to their importance, (b) Routes in continuous year-round use, and those used only in the dry season, according to their condition.

/mental traffic

mental traffic is carried on along the Inter-American Highway, despite the fact that trucks operate at high cost due to the deficiencies of the highway. Since this is also an international route its description has been given before.<sup>1/</sup>

(b) Pacific Highway (Guatemala City-San José). The main features of this road have already been described.<sup>2/</sup> From Guatemala City to the environs of San José, there are numerous national and privately-owned farms where coffee, sugar cane, corn, beans, tobacco, fruit, livestock, etc. are raised, both for export and domestic consumption. There is a considerable density of traffic on this route, largely of the heavy commercial type.

(c) Coastal Highway<sup>3/</sup>. This highway comprises the greater part of the National Routes designated 6W and 6E, which are at present all-weather routes from Escuintla as far as Ayutla to the west, and as far as Chiquimulilla to the east. In the future it is hoped to extend it from Chiquimulilla as far as Pijije on the Salvadorean border, a section now traversed by a dry-weather road. This constitutes one of the trunk routes of major importance for the country, since, besides its link with a neighboring country, it passes through a farming region of large production and ample potentialities for development.

At the present time 111 kilometers of this highway are paved (from Chiquimulilla to Popoyá, via Escuintla), and other sections

<sup>1/</sup> See Section II, point 5 (b) of this chapter, p. 52.

<sup>2/</sup> See above Section II, point 5 (a) of this chapter, p.51.

<sup>3/</sup> See above Section II, point 5 (c) of this chapter, p.55.

are being graded and graveled. From Popoyá, Route 6W continues through Patulul, Cutzán, San Antonio, Suchitepéquez, San Bernardino, Mazatenango, and Cuyotenango. From here it branches off to San Andrés, San Martín, and Santa Cruz Malúa, continuing to Retalhuleu, from where it goes on to El Acíntal and Colomba, and thence to Coatepeque, Pajapita, and Ayutla. Along the whole stretch from Popoyá, the highway has defective alignment, varying width, excessive and sharp curves, gradients of more than 6%,<sup>1/</sup> and poor visibility, and there are numerous rivers and streams lacking bridges<sup>2/</sup> or culverts, or with bridges either very narrow<sup>3/</sup> or in poor condition,<sup>4/</sup> most of which will have to be rebuilt.

- 1/ Some even exceed 10%, like the hill of Amatón, three kilometers from Popoyá, which exceeds 12%; or the one 6 kilometers from there, which reaches 14%; or the hill of La Ermita, with as much as 16% gradient and sharp curves.
- 2/ (a) From Popoyá to Patulul four bridges must be built (including one on the way out of Patulul) and one rebuilt; (b) between Patulul and San Miguel Panán seven are in very bad condition and should be made into permanent structures; (c) between Nahualate and Mazatenango nine bridges in bad repair should be replaced; (d) between Mazatenango and Ocosito nineteen permanent bridges will have to be built.
- 3/ (a) two kilometers from Escuintla there is a small bridge with a span of no more than four meters and only 380 meters wide; (b) the Pantaleón River bridge is only 480 meters wide and has a span of 28 meters and a wooden floor which must be replaced with one of a permanent material; (c) the Panán River bridge is only 290 meters wide and spans 1180 meters.
- 4/ (a) The Bravo River bridge needs repairs. One of its bases is being undermined and destroyed by the erosive action of the river; to prevent this, the river should be diverted into its original course; (b) the Nahualate River bridge, which was previously destroyed, should be relocated in accordance with the projected route of the new highway; (c) the Panán River bridge mentioned in the previous footnote, also needs repair on its pier bases, which are badly undermined; (d) the suspension bridge over the same Nahualate River (110 meters long), which was finished recently (in 1952), has a sharp curve on its approach which should be eliminated.

/At the present

At the present time the Bureau of Roads is working on the Nahualate-Mazatenango-Retalhuleu-Ocosito section, which has an approximate distance of 37 kilometers. The agricultural region through which this section of the route passes has undergone considerable development in the last ten years. The principal products of San Antonio Suchitepéquez and vicinity are coffee and sugar cane. Sugar cane cultivation has been intensified through private initiative and the cooperation of the producers for the modernization of the large refinery at Palo Gordo, which it is hoped will produce some 300,000 quintals of sugar in 1954, and reach 500,000 subsequently. The transportation of sugar and of other products is at present carried out by railroad from the nearby stations at Mazatenango and San Antonio. Products for export like coffee are shipped from this region to Puerto Barrios. The construction of the paved Coastal Highway (with first-class features) and of feeder roads will permit traffic to reach it immediately as a result of more efficient and rapid transport service, and also of a possible reduction in the present level of freight rate, which is enforced by the railroad.

From Mazatenango to Retalhuleu, and from the latter place to Coatepeque, where the projected route deviates from National Route 6W, there is a great deal of work to be done, and the cost of the highway will be high.<sup>1/</sup> But the agricultural and forestry resources of this

<sup>1/</sup> The government engineers in charge of this project estimate that between Mazatenango and Retalhuleu, where the job of grading will not be of major proportions, the cost will be at least \$25,000 per kilometer, and that between Retalhuleu and Coatepeque, where earth moving as well as drainage will be considerable, it will cost about \$40,000 per kilometer.

/region,

regions, which are at present acquiring great importance, justify the work and expenditure.

If the Coatepeque area,<sup>1/</sup> where there are about twenty national (government) farms and many private ones, approximately 300,000 quintals of coffee are harvested annually, which are shipped out by rail, 20% to Champerico and 80% to Puerto Barrios. In addition, cotton, corn, beans, and livestock are raised, and if prices are favorable, there are great possibilities for increasing production for shipping outside of the region.

Several all-weather roads and many seasonal routes fan out from Mazatenango, Retalhuleu, Coatepeque and other towns located on this highway or near it. They constitute an important road network. This network makes possible today, albeit somewhat inefficiently, the intercommunication of the departments of Suchitepéquez, Retalhuleu, Quetzaltenango, and San Marcos, and of the highland and semi-tropical regions and the ports and inlets of the Pacific coast: Ocos, Champerico, Playa Grande, etc.

National Route 6E, now finished and paved from Escuintla through Taxisco and Guazacapan to Chiquimulilla, passes through a very important farming and livestock-raising area. Its features are similar to those of the Pacific Route on the paved section, but the new pavement is deteriorating badly between Guazacapan and Taxisco, and needs immediate and costly repairs. Between Chiquimulilla and Cerritos there is a badly

<sup>1/</sup> The population of the city itself is about 9,000, and of the entire municipal district, 50,000.

maintained all-weather road of inferior quality. Between Cerritos and Pijijé there is merely a very inadequate "summer" (dry-weather) road. The road linking Chiquimulilla with Cuilapa (50 kilometers) is an all-weather one, but it is of very bad quality and in such a bad state of repair that a total reconstruction and relocation will probably be required.

The construction of the Coastal Highway, to first-class specifications, is one of the most important projects that the Guatemalan government has under way at present, since it has the essential purpose of promoting economic development and transporting important farming, livestock, and forest products from the southern region of the country.

Another important government project, to be started in 1953, is the construction of a first-class highway to connect Quezaltenango and Retalhuleu with the port of Champerico. The idea behind this project is to move a part of the imports and exports to and from the highland zone through Champerico, thus cutting down the inland mileage, reducing the region's dependence upon Puerto Barrios, and stimulating economic development. Despite the obvious advantages that would be derived from reducing the inland transport mileage for exports and imports by more than 70% ---through the use of the ports of San José or Champerico instead of Puerto Barrios--- it must nevertheless be borne in mind that the port facilities and capacity of Puerto Barrios are superior to those of the Pacific ports, and that the Atlantic port's loading and unloading charges are lower. Furthermore, the maritime freight rates from San José or Champerico to the Atlantic ports of the United States

/are generally

are generally higher than from Puerto Barrios.<sup>1/</sup> These factors must therefore be taken into account in calculating possible savings from road transport. They are part of the general problem of railroad freight rates and port charges referred to above.<sup>2/</sup>

Although there are many local farm to market roads throughout the region crossed by National Route 6W, which are used for bringing out the products to be transported mainly by the IRCA, operating costs are generally very high. For instance, there is a road 17 kilometers long from the "Mocá" farm to the nearest railroad station, which is used to transport the 6,500 quintals of coffee produced there. The transportation charge is no less than \$0.10 per quintal, even though the upkeep of the greater part of the road is the responsibility of the farm owners. Thus the ton-kilometer costs \$0.13. This example is typical of many farms on this route and on others in the country. The main problem is the poor quality of the secondary and farm roads, their poor maintenance, and the fact that there are still not nearly enough of them.

The construction of the Coastal Highway will encourage the building of new and better secondary and farm roads connecting with it. Also, when highway transportation in the region is in a position to compete with railroad, the latter will be encouraged to reduce its freight charges and there will be inducement to build new farm roads connecting with the railroad lines.

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<sup>1/</sup> This difference reaches its maximum for coffee: \$14.00 a ton from Puerto Barrios, and \$21.00 from the Pacific ports. This fact alone would be enough to prevent any coffee from being exported from the Pacific ports.

<sup>2/</sup> See Section II, point 3, pp. 39-44.



(d) National Route No. 1 (Guatemala City-Puente Talismán).<sup>1/</sup> This route was considered the most important one in the country before construction on the Inter-American Highway was begun, and some parts of it have been incorporated in the international highway. At the present time certain stretches are being used provisionally (Totonicapán-Los Encuentros; Sololá-Godínez; Patzún-Patzicía) while the location for the new highway is completed. With an extension of 314 kms. passable the year round, this highway connects the capital (Chimaltenango; Sololá, Totonicapán, Quezaltenango, and San Marcos). It traverses regions of economic value, and has an established heavy commercial traffic, in spite of high operating costs. This highway's predominant characteristics are the following: poor horizontal and vertical alignment, numerous sharp curves, many gradients of more than 6%, up to 13% in some places, poor visibility, varying widths, some very narrow sections, and inadequate grading, rolling and surfacing.

(e) National Route No. 5 (Petén Access Highway). This road, to link the Departments of Guatemala and Baja and Alta Verapaz, is considered to have great possibilities as a means of penetrating the Petén. Only 310 kms. are of all-weather road, starting at the capital city and reaching Chapultepec, in Alta Verapaz. In general, the vertical and horizontal alignment is poor; it has many unnecessary curves, some of them very sharp; there is poor visibility, and inclines of more than 6%, which in places attain more than 10% on long narrow climbs. Between Tactic and Santa Cruz Verapaz, and between Santa Cruz Verapaz and Cobán, the alignment is better; between Cobán and Chapultepec there are stretches with

<sup>1/</sup> See above Section II, point 5 (e) of this chapter, p. 57.

/regular

regular alignment and gradients of less than 6%. The last section, between Sacoyón and Chapultepec, is poorly maintained.

The Department of Alta Verapaz, with approximately 20,000 inhabitants, is one of the most important coffee and corn-producing departments in Guatemala, as well as important too in other farming, forest and mining products, and livestock raising. The Tactic-Panzós section of the Longitudinal Mountain Highway, is a branch of National Route No. 5 in this department, and when the section between Panzós and El Estor (on Lake Izabal) is constructed, the valuable production mentioned above can be transported easily and cheaply to the Atlantic.

(f) Atlantic Highway.<sup>1/</sup> Only 219 kms. of this highway have been constructed -- a section from Guatemala City to Los Amates, which has a certain amount of automotive traffic under unfavorable conditions due to high operating costs. The production of the region through which it passes is valuable, but limited by the lack of cheap transportation.

(g) Longitudinal Mountain Highway. National Routes Nos. 7W and 7E. This highway, comprising National Routes 7W and 7E, extends from west to east, and links the Departments of Huehuetenango, El Quiché, Alta Verapaz, and Izabal. It is passable the year round, and connects the port of El Estor (on Lake Izabal) with Cobán (capital of Alta Verapaz), and, by means of National Route No. 5, Guatemala City. Thus, it is for all practical purposes a connection between the capital city and the Atlantic. Its features in large part are similar to those of National Route No. 5, but it should be added that some sections are passable only with difficulty during the rainy season. If it were basically improved and better maintained, this highway could become one of the most

<sup>1/</sup> See above Section II, point 5 (d) of this chapter, p. 56. /important

important trunk routes in the country.

(h) Other highways. National Routes Nos. 15, 10, 11, 18 and 22 also have a certain relative importance. The last one mentioned<sup>1/</sup>, now in process of construction and improvement, will constitute a link in international communication, since it will soon join with the Ahuachapán-Las Chinamas-Río de la Paz highway in El Salvador. The other highways mentioned are appreciably helping the further economic development of the regions through which they pass.

### 3. Public Expenditures on Highways and Roads

The government of Guatemala has been spending approximately 10% of its total national budget on the construction, improvement and maintenance of roads in recent years. Nevertheless, the actual amount of money invested is not very large, considering the high construction and maintenance costs in the country.<sup>2/</sup>

In 1948, 2.2 million quetzales and in 1949, 2.7 million quetzales were spent on national and departmental roads and highways. (See Table 13.) Of these limited totals, in 1948 only 13% was applied to construction as such, and in 1949 only 16%. For this reason, very few kilometers were actually constructed in those years. Of the total, 42%

<sup>1/</sup> See above Section II, point 5 (f) of this chapter, p. 58.

<sup>2/</sup> According to the data from the Dirección General de Caminos, the average cost per km. for grading and surfacing (not including bridges and culverts) in the various projects corresponding to the eastern section of the Inter-American Highway was \$64,236, and on the western section, \$70,125. The cost of the bridges was \$507 per linear foot.

/was used

Table 13

Guatemala: Summary of Expenditures on Roads and Highways, 1948-1950

(thousands of dollars)

	<u>1948</u>	<u>1949</u>	<u>1950</u>
Construction	280.2	438.5	1,470.0
Improvement	68.7	137.0	225.0
Maintenance	1,858.1	2,146.0	1,820.0
Total	2,207.0	2,721.5	3,515.0

Source: Transport Mission, on data supplied by the Dirección General de Caminos.

was used for construction in 1950 -- a still insufficient quantity.<sup>1/</sup> About 80% of the total was spent on maintenance in the first two years mentioned (the absolute figure for this in 1950 was lower). Keeping in mind that at the very least it is necessary to maintain the country's 4,300 kms. of all-weather roads, the annual average of 1.94 million quetzales represents an expenditure of 450 quetzales per km., or, in other words, about 1.5% of the average cost of each km. As long as a substantial improvement in the road system is not achieved, the type and quality of construction of these roads will result in a high cost of maintenance, perhaps no less than 5%. From all the above facts it can be inferred that for some years to come it is probable that maintenance costs alone will require an annual expenditure of almost twice

<sup>1/</sup> This depends on the region in which the road is being constructed. If it is in the highlands, where the average cost per km. can be estimated at \$50,000, only 30 kms. a year could be built with the money assigned for the purpose in 1950. If it is in another area, where the over-all average cost for Guatemala (\$30,000 per km.) can be applied, it would be possible to build 50 kms. a year, but this is still very little for an ambitious program like the one needed.

/the total

the total amount of the 1950 budget for roads. The construction of new roads and the improvement of those already in existence will require the expenditure of extraordinary amounts, taking into account the cost of the projects previously considered and authorized.

#### 4. Road Transport Conditions

The low technical level of the greater part of Guatemala's roads and the high investment and vehicle operating costs, have resulted in a meager development of automotive transportation. In 1951 there were fewer than 15,000 motor vehicles in the entire country (excluding motorcycles and motor-bicycles), divided about evenly between commercial and private vehicles. (See Table 14.) This represents 185 persons per vehicle, and 7 square kilometers of territory per vehicle, as compared with 171 persons and 1.8 square kilometers in El Salvador. The small number of automobiles and trucks is not compensated by a large number of carts, of which there are fewer than 5,000.

Of the total number of vehicles, 70% are registered within the capital and vicinity. There are departments like Izabal, El Progreso, Baja Verapaz, Totonicapán, and Jalapa with less than 50 vehicles, and others like Zacapa, El Quiché, Jutiapá, Sololá, Huehuetenango, and Chiquimulilla with less than 100. (See Table 15.) Of the total number of registered vehicles, 15% appear as "official", indicating a high proportion of government vehicles.

Most of the trucks and buses have been purchased since 1944, and are in acceptable condition, in spite of the existing tendency to overload them and to neglect their upkeep. Their average capacity is 15 tons,

5 tons, but it should be noted that for more economical operation of road transport from 100 to 300 kms., it would be necessary to employ trucks of greater capacity, especially for export and import traffic, but bearing in mind other factors limiting the possibility of carrying on such heavy commerce over long distances. More than 20% of the private cars are pre-war models. The number of trailers in use is very limited.

Table 14

Guatemala: Registered Vehicles in 1951 a/

Type of Vehicle	Number of Vehicles
<u>Motor vehicles:</u>	
Automobiles	6,590
Trucks	3,673
Buses	1,906
Pick-up trucks	951
Jeeps	981
Panel trucks	325
Motorcycles	1,811
Motor-bicycles	1,322
Others (ambulances, hearses, station wagons, etc.)	73
<b>Total:</b>	<b>17,632</b>
<u>Vehicles without motor:</u>	
Bicycles	17,560
Carts of animal traction	4,819
Carriages	33
Carts of human traction	2,864
<b>Total:</b>	<b>25,276</b>

Source: Dirección General de Estadística, Guatemala, Estadística, August 31, 1952.

a/ Excluding Army vehicles.

/Trucks

Trucks or buses with both passenger and freight services transport most of the goods from villages to cities, and imported commodities from commercial centers to important towns in the interior. Rice and sugar are transported in the same way, and coffee too, from the mills to the railroads.

Table 15

Guatemala: Registered Vehicles by Departments <sup>a/</sup>

Department	Number of Vehicles
Guatemala	10,445
Quezaltenango	1,022
Sacatepéquez	569
Suchitepéquez	464
Escuintla	395
Retalhuleu	287
Alta Verapaz	224
San Marcos	199
Chimaltenango	177
Santa Rosa	137
Zacapa	89
El Quiché	78
Jutiapa	73
Sololá	72
Huehuetenango	62
Chiquimula	58
Jalapa	33
Totonicapán	33
Baja Verapaz	36
El Progreso	25
Izabal	12
El Petón	9
Total	14,499

Source: Dirección General de Estadística, Guatemala, Estadística, August 31, 1952.

<sup>a/</sup> Excluding Army vehicles.

/Mechanized

Mechanized transportation by road is carried on principally by small landowners who have one or two vehicles, and drive them themselves. The lack of large, well-organized trucking enterprises can be due to the low margin of profits caused by high operating costs, and to scarcity of capital and credit facilities.<sup>1/</sup> Fear of competition from other operators and also from the buses offering mixed passenger and cargo services has its effect too.

Car and truck prices are very high in Guatemala. The cheapest truck costs \$3,200, and the cheapest type of bus costs \$5,500 with body, and \$3,000 without. The most ordinary private cars cost \$3,000. The main reasons for such high prices are import duties and freight charges. Duties for passenger cars are 20% ad-valorem and for trucks, there is a specific charge of 5 cents per kilogram, in addition to a 5% consular fee. Maritime shipping charges and overland freight charges are also excessive. Shipping an automobile or truck from the United States to Puerto Barrios increases its price from 23% to 25%, and in addition, the railroads charge a rate for shipment to Guatemala City which comes to approximately 18% of the price of a truck and 12% the price of an automobile.

Moreover, accessories, replacement parts, and gasoline are all too expensive. Tires and tubes increase in price at least 35% above their initial price because of freight charges.<sup>2/</sup> Gasoline costs 48

<sup>1/</sup> The purchaser of a truck usually must pay 50% down, and the remainder by installments within a year after purchase.

<sup>2/</sup> The following are the prices for new tires:

700 x 20-10	\$69.16
750 x 20-10	\$82.32
825 x 20-10	\$96.89

/cents per gallon,



cents per gallon, and diesel oil 24 cents per gallon, almost 50% of which is tax (for gasoline, 22 cents per gallon). To this must be added special taxes and other charges for driving, license plates,<sup>1/</sup> brakes, as well as sales and municipal taxes. The lack of capital and credit facilities, and the scarcity of mechanics make for expensive repair and maintenance services.

As a result of these adverse factors, the operating costs of automotive transportation, and the prices charged for this type of service are very high, even though the small enterprises in this business scarcely receive an income large enough to cover expenses, depreciation costs and interest on capital investment, and that only with difficulty. The maximum authorized freight charge for highway transport varies, in relation to road conditions, from 10 to 19 cents per ton-kilometer, although in actual practice the freight charges are at times lower than authorized, particularly in areas of much competition among the trucking companies. (See Table 16.)

The urban passenger transport system is good, particularly in Guatemala City. The vehicles are modern, clean, and well-cared for. Service is frequent and fares are reasonable. The enterprises that offer this service are "combines" under governmental control, and operate under good conditions of organization. The largest one of these,

<sup>1/</sup> Commercial freight vehicles pay an annual fee that varies according to the tare, from \$25 for one-ton trucks to \$118 for 5-ton trucks. Private cars and buses pay according to the number of seats they have, whether they have a radio, etc., the minimum being \$33.

the Auraco Company, owns 202 vehicles of a total of 350. The fares are set by the government at 5 cents for a maximum distance of 7 miles or an average of 3 miles, 15% of which is city tax. Apparently this rate has not changed in the last 20 years in spite of the rise in costs. Urban traffic has increased considerably in recent years: from 13 million passengers in 1943 to 60 million in 1950.

Table 16

Guatemala: Maximum Authorized Freight Charges  
on Roads and Highways

R u n	Distance in Kms.	Quetzales per Ton	Cents per Ton-Km.
Guatemala City-Panzós	265	47.00	18
Guatemala City-Antigua	40	4.00	10
Guatemala City-Escuintla	57	5.00	9
Guatemala City-San José	105	10.00	10
Guatemala City-Jalapa	115	22.00	19
Guatemala City-S. Pedro Pinula	135	13.00	10
Cobán-El Estor	136	16.00	12
Guatemala City-Quezaltenango	195	20.00	10
Quezaltenango-Coatepeque	54	6.00	11
Quezaltenango-Talismán	119	12.00	10
Quezaltenango-Ayutla	87	10.00	11

Source: Ministerio de Economía y Trabajo, Dirección de Comercio e Industria, April 1952.

Inter-city passenger service varies from place to place.

On certain lines, such as the one that goes from Guatemala City to Antigua, the vehicles are modern and the fares are reasonable, but in the provinces many of the vehicles in use are in bad shape. Service is irregular, and fares high. (See Table 17.)

/Table 17

Table 17  
 Guatemala: Inter-city Passenger Bus Fares, 1952

R u n	Distance in Kms.	Fare (quetzales)	Cents per passenger-km.
Guatemala City-Antigua	40	0.50	1-1/4
Guatemala City-Escuintla	57	0.50	1
Guatemala City-Quezaltenango	195	2.00	1
Guatemala City-San José	105	1.00	1
Guatemala City-Jalapa	115	1.50	1-1/4
Guatemala City-Quiché	156	1.50	1
Guatemala City-Huehuetenango	276	3.00	1
Guatemala City-Cobán	210	3.50	1-3/4
Guatemala City-Esquipulas	228	4.00	1-3/4

Source: Ministerio de Economía y Trabajo, Dirección de Comercio e Industria.

### 5. Air Transport

Since the terrain is so mountainous in almost all of Guatemala, and since good highways are so scarce, domestic air transport offers great advantages in comfort and speed. Some regions like the Petén are accessible only by air. What advantages aviation brings to domestic transportation can be appreciated if one considers that from Guatemala City to Quezaltenango the flight is made in 25 minutes, in contrast to the 5 hours or more that are required by highway; to Huehuetenango, the respective times are 35 minutes and 7 hours; to Cobán, 23 minutes and 12 hours; and to Puerto Barrios, 1 hour by plane and 10 by train.

There are some 75 landing fields and runways in Guatemala, of which 60% belong to the government, 2 belong to municipalities, /and the rest

and the rest are privately owned. More or less half of these fields can be used only during the dry season.

Domestic air transport service is a monopoly of the State-owned Empresa Guatemalteca de Aviación (Aviateca), a dependency of the Ministerio de Economía y Trabajo. This company is the successor to Aerovías de Guatemala, which began service in 1940 after the contract with TACA of Honduras was cancelled, and which operated until 1944, when the government took over its operation. TACA began its flights to the Petén region in 1935, bringing out chicle for export. Aviateca was re-organized in April 1952.

Aviateca's domestic services consist of a series of flights every morning (except Sunday) leaving La Aurora airport at Guatemala City for the principal regions of the country, with return flights in the early hours of the afternoon. Thus, people who live in Coatepeque or Retalhuleu, for example, and who wish to fly to Quezaltenango (40 kms. by air), must first fly to the capital, 120 or 145 kms. distant, then fly 115 kms. back to Quezaltenango. This procedure is justified to a certain extent, however, for the greater part of the business and administrative activities of the country are concentrated in the capital city. Furthermore, important economies in operation and maintenance are made possible by concentrating operations in one place.

Air service in the Petén depends on traffic possibilities. During the chicle season, special cargo flights are made from the principal exporting centers in this region, generally to Puerto Barrios (about 230 kms.). Approximately 1,400 metric tons of chicle have been shipped

/annually

annually by air out of the Petén in recent years. However, in 1952, this chicle traffic fell to less than 400 tons, most of which was shipped by the government to Guatemala City for storage.

The equipment used by Aviateca for its domestic service consists primarily of 7 twin-engined DC-3's and C-47's. Most of these were undergoing complete overhaul (after 8,000 hours flying time) at the end of 1952. The company also has a C-46 which it generally uses for international flights, and leased another one of this type at the beginning of 1953. Practically all of the pilots and maintenance personnel are Guatemalans. Many of them were recruited from the ranks of military aviation, and Air Force officers are currently giving their services to Aviateca as co-pilots. Average flying time of pilots is from 80 to 100 hours a month.

Since the flights are principally made in the morning hours, when weather conditions are generally good, the average daily utilization per aircraft is only 4 hours. During the rainy season low clouds and air currents make navigation difficult in the afternoon. Despite the adverse conditions under which the company frequently operates, it has maintained a remarkable safety record.

Passenger fares (including a 6% tax) vary from 4 cents per passenger-km. (6.5 cents per mile) on the Puerto Barrios route, where there is competition from the railroad, to 5.7 cents per km. (9.2 cents per mile), on the mountain route (25 minutes) to Cobán. The rate for the Petén route averages 4.4 cents per km. (7.0 cents per mile). Bearing in mind the nature of the operations in Guatemala, these fares do not appear to be too high.

/A new air

A new air freight rate was established in May 1952, raising the previous one by an average of 10%, based on a charge of 4 cents per pound for all regions of the country. This represents a high unit rate for relatively near points like Cobán and Quezaltenango, where they amount to \$1.22 and \$1.12 per ton-mile (84 and 76 cents per metric ton-kilometer) respectively, while for the Petén the rate averages 34 cents per metric ton-kilometer (50 cents per ton-mile). Competition with the railway is reflected in the charge for cargo in excess of 100 pounds flown from Puerto Barrios to Guatemala City, which is only 2 cents per pound, or 17.8 cents per metric ton-kilometer (26 cents per ton-mile).

Outside of the chicle-gathering season, there is a special rate varying from 10.5 to 14 cents per metric ton-kilometer (15 to 20 cents per ton-mile), and for shipping within the Petén a fixed rate of 3 cents per pound on any item, which is equivalent to an average of approximately 90 cents per metric ton-kilometer (\$1.30 per ton-mile). Although some of these charges seem high,<sup>1/</sup> there are many arguments in favor of a simplified rate structure if one takes into consideration the primitive conditions under which the agents work in many places.

Considerable air transport service is needed in the rich and as yet little-developed regions to the north of Huehuetenango, Quiché, Alta Verapaz, and other departments. Many products from various regions can be shipped by air. A few private operators and air clubs

<sup>1/</sup> In Mexico, for example, on the Líneas Aéreas Mexicanas (LAMSA), the cargo rates vary from 15 to 31 cents per metric ton-kilometer for ordinary and express freight respectively (22 to 45 cents per ton-mile).

/are already

are already extending air transport---on a still limited scale--- to isolated regions, and private landing fields exist on some ranches. But future development of civil aviation is in the hands of Aviateca, the company that has a monopoly of commercial aviation.

What this company has accomplished up to the present time is quite considerable, but a great deal remains to be done to meet the country's air transport needs. On the other hand, if more effective progress is desired, government assistance is indispensable. The airports of La Aurora and Puerto Barrios need a "preventive" maintenance. Many of the provincial airports do not have good landing facilities. This statement is valid not only for isolated localities, but also for fields of importance. Quezaltenango, situated at an altitude of 2,400 meters (7,850 feet), has only one runway 600 meters (2,000 feet) long, and Cobán, at 1,280 meters (4,200 feet) altitude, has a runway 700 meters long with a hill obstructing the approach.

Certain equipment that is lacking --for instance, static-free and ultra high frequency (U.H.F.) radio-- and adequate controls systems at the principal airports, particularly at La Aurora, are badly needed. Much of the navigation equipment is the property of Pan American Airways, and when this company does not have it in service because its planes are not in flight, the safety of the other air operations is thereby reduced.

In addition, it should be pointed out that certain taxes on fuels, replacement parts and accessories, as well as the fees which local pilots are charged for landing at La Aurora, are a hindrance to greater and faster aviation development.

6. Inland Waterways

Estimates as to the extension of navigable inland waterways in Guatemala set the figure at approximately 2,400 kms. Although in number of kilometers this is more than half the total extension of the country's all weather roads (4,300), and more than twice the total extension of the railroad system (1,156 kms.), inland navigation has had very little development. The navigable inland waterways are distributed as follows:

		<u>Navigable Kms.</u>
1. <u>Usumacinta River Basin</u>		1,550
Usumacinta River Tributaries:	780	
San Pedro	150	
Lacantún	150	
Pasión	250	
Salinas	220	
2. <u>Polochic River-Lake Izabal- Río Dulce-Amatique Bay System</u>		250
Polochic River	50	
Cahabón River	70	
Lake Izabal	60	
Río Dulce	45	
Amatique Bay	25	
3. Motagua River		200
4. Sarstún River		50
5. Lake Petén Itzá		40
6. Lake Atitlán		35
7. Chiquimulilla Channel		110
8. Suchiate River		60
9. Nahualate River		25
10. Esclavos River		15
		<u>2,410</u>

(1) Usumacinta River. The Usumacinta is the longest river in Central America. It is formed by the confluence of the Chixoy (or Salinas) and

/Pasión



Pasión Rivers. The source of the Salinas is in the Sierra Madre near the division between the Departments of Huehuetenango and Quezaltenango. It is navigable from the village of Rocnimá on. The Río de la Pasión has its source in the Cocks Comb Hills, and is navigable from El Porvenir on. The Usumacinta forms the border between the Mexican State of Chiapas and the Petén, then continues its course through Mexican territory to its mouth on the Gulf of Mexico. It has a length of 1,126 kms., and is completely navigable from its point of formation as far as the rapids of Tenosique in Mexico. Below these rapids all the way to its mouth it is navigable by boats with a draught of 6 feet. It has an average width of 100 meters, an average depth of 2, and a gentle current. Its main tributaries are the Lacantún, which flows in from the left, and the San Pedro, from the right.

(2) Polochic River-Lake Izabal-Río Dulce-Amatique Bay System. The Polochic River has its source in the Department of Alta Verapaz, flows through a valley situated between the Chama and las Minas mountain ranges, and empties into Lake Izabal, where it forms a delta. Its principal tributary is the Cahabón. It is navigable by small tug-boats and low-draught barges (3 feet) downstream from a place known as Puntarriel, situated a few meters below the confluence of the Cahabón.

Lake Izabal is in the central part of the department that bears its name, between the Santa Cruz and the Mico mountain ranges. The Polochic, Schachó, and Sauce Rivers flow into Lake Izabal, and the Río Dulce drains it. It is 18 meters deep, 48 kms. long and 24 wide.

The Río Dulce serves as an outlet for Lake Izabal; half-way down its course to the sea it widens out into a kind of lagoon or

/lake

lake which is called El Golfete. The San Vicente, Chocón, and Lámpara Rivers flow into the Río Dulce. Before emptying into the Bay of Amatique, it forms a bar which determines the draught of the vessels that can navigate the river.

(3) Sarstón River. Having its source in the Department of Alta Verapaz to the north of the Cahabón, this river forms the border between the Department of Izabal and Belize (British Honduras). It is 120 kms. long, of which 50 kms. are navigable. Its current is slow, and the volume of water it carries is considerable. On the navigable part, its average width is 40 meters, and average depth 2 meters.

(4) Lake Petén Itzá. This lake is located in the center of the Petén. It is 40 kms. long, 20 kms. wide, and is very deep in places. It has several islands, the main one being occupied by the small city of Flores, the departmental capital.

(5) Lake Atitlán. This lake is situated in the Department of Sololá, at an altitude of 1,500 meters above sea level. It is fed by several small streams, but its outlet is unknown. Its maximum length is 26 kms., and its maximum width, 18 kms.

(6) Chiquimulilla Channel. This is actually an inlet of the Pacific, in the southern part of the Department of Escuintla, Santa Rosa, and Jutiapa; it has a length of 100 kms. and it is deep enough for navigation by small boats. There is some cargo movement in canoes, and in a few motor boats.

(7) Suchiate River. The source of this river is in the northern part of the Department of San Marcos, and for much of its course it forms the border with Mexico. It has a length of 150 kms. a width of 40 meters, /and is considered

and is considered navigable from the ranch of Las Margaritas as far as its mouth (60 kms.).

(8) Nahualate River. Its source is in the Department of Totonicapán, and it flows into the Department of Sololá. Its approximate length is 150 kms., of which 25 kms. are navigable.

(9) Esclavos River. Its source is in the Cataguaná Mountains, near Matecuintla in the Department of Jalapa, and then it flows through the Department of Santa Rosa. It forms a large delta, the principal arm of which is the Corregidor River. This river has a certain interest for transportation, since its navigable part joins with the Chiquimulilla Channel.<sup>1/</sup>

In the Ministry of Communications there is no department or section exclusively in charge of problems of inland navigation. The lakes and rivers have not been properly surveyed, and the facts that concern navigation are almost unknown. The waterways now used for transportation are not marked, and nothing is done to keep them in navigable condition.

The boats in use are for the most part canoes, with a few gasoline motor launches as well, either imported or of domestic manufacture with imported motors. Diesel motors are not used, even though they are the cheapest to operate.

<sup>1/</sup> These descriptions were taken in part from Miguel Navarro, Geografía de Centroamérica, and from Síntesis Estadística de Guatemala presented to the Central American Seminar on Agricultural Credit by the Organizing Committee of the same, with the collaboration of the Dirección General de Estadística.

Boat registry is not centralized, and is done by departmental or district agents. But more often, there is no registry at all, and not even estimates have been made as to the volume of traffic on the navigable waterways. There are no regulations governing navigation, salaries, rates, or transport conditions.

Because of the short time that the Mission had at its disposal for study and inspection trips, and because of the few existing facilities for traveling by inland waterways, it was possible to visit only Lake Amatitlán, Lake Atitlán, and the Polochic-Izabal-Río Dulce system.

The Usumacinta River, which with its tributaries constitutes the most important river in the country, is completely separated from all other transportation routes in Guatemala. Thus the development of its large basin is rendered impossible at the present time.

(a) Verapaz Railway and Connecting Services. The navigable waterway that carries most traffic in Guatemala is the Polochic-Izabal-Río Dulce-Amatique Bay System. For many years it has been served by the Ferrocarril Verapaz y Servicios Anexos (Verapaz Railways and Connecting Services), the operations of which were taken over by the government during the Second World War, and continue to be administered by the government. This company provides rail service from Pancajché to Panzós, and boat service from Panzós to Livingston and Puerto Barrios.

With its very much neglected equipment, this enterprise makes a daily combination passenger and cargo trip from Livingston to Puerto Barrios and return, and also one trip weekly upriver from Livingston to Panzós,

ton to Panzós, where the change is made from boat to train. The train then carries the passengers, cargo, and mail as far as Pancajché.

During the coffee-gathering season, from December to March, three monthly trips of 3 barges are made. Each barge carries 750 sacks of 150 pounds net each. During the months from July to October, with coffee from the previous harvest, two such trips are made a month. Thus, according to these figures, the company annually moves some 3,000 tons of coffee from Panzós to Puerto Barrios.

The rate charged for coffee is 9.9 cents per ton-kilometer, and for lead ore, 3.2 cents. Despite the bad service, the rate for passengers is higher than that which the government has set as the maximum for railroads (2 cents per passenger-kilometer in first class). It actually costs \$5.50 per person from Livingston to Panzós (3 cents per passenger-kilometer).

The equipment for river and coastwise navigation consists of one wood-burning paddle steamer, which is totally uneconomical, one Diesel tug-boat used for the Livingston-Puerto Barrios run, and 4 gasoline units, also expensive to run, only 2 of which are equipped to carry passengers. There are also 5 smaller barges, only 3 of which (and in very bad shape at that) were in service at the time of the Mission's visit; the other 2 were undergoing costly and perhaps unjustifiable overhauling. In short, the service is most deficient.

The enterprise is in a bad situation due to the inadequate broken down conditions of the greater part of the equipment it is using. If this natural transportation route is to be used to advance the economic development of this rich region, the first step necessary would be to

/dispose

dispose of almost all of the equipment now in use, and replace it with barges of the same type they are using now, but with greater capacity, if possible.

(b) Lake Atitlán. The Empresa de Navegación Tzanjuyú (Tzanjuyú Navigation Company) operates on Lake Atitlán. Using, old, unsafe, uneconm- ical boats, they offer a tourist and a combination passenger and cargo service between the towns of Tzanjuyú, San Lucas Tolimán, Santiago Atitlán, and San Pedro. The fares vary from 2.0 to 2.3 cents per passenger-kilometer, and for cargo, from 30 to 40 cents per ton-kilometer. The service is very poor. The existing few wharves are old and dilapidated. Nevertheless, until highways are opened up in this region, Lake Atitlán will not lose its importance as a transportation route, and even then, it will continue to have a certain importance for the lakeside population and for tourists.

APPENDIX I

GUATEMALA: ROAD NETWORK. 1. NATIONAL ROUTES

Length in Kilometers

	<u>Total</u>	<u>All Weather Paved</u>	<u>Dry Weather Surfaced</u>	<u>(Dirt)</u>	<u>Total Passable</u>	<u>Impas- sable</u>
1. <u>Inter-American Highway.</u> Mexican- Guatemalan Border- Salvadorean Border	510	80	390	--	470	40
2. National Route 1: Guatemala City-Puente Talismán, Mexico	314	--	314	--	314	--
3. National Route 2: Cuilapa-Asunción-Mita	147	--	147	--	147	--
4. <u>Pacific Highway:</u> National Route 3: Guatemala City (Km.4 I.A.H.)-San José	101	101	--	--	101	--
5. <u>Atlantic Highway:</u> National Route 4: Guatemala City-Puerto Barrios	318	--	246	--	246	72
6. <u>Coastal Highway:</u> National Route 6W: Escuintla-Ayutla	230	46	184	--	230	--
National Route 6E: Escuintla-Chiquimu- lilla-Pijije	110	62	20	28	110	--
7. <u>Mountain Highway:</u> National Route 7W: Santa Cruz-Verapaz- Cuila	256	--	212	44	256	--
National Route 7E: Tactic-El Estor	105	--	105	--	105	--
8. <u>Petén Access Highway:</u> National Route 5: Guatemala City-Salamá- Tactic-Cobán-Chapultepec	310	20	290	--	310	--
9. National Route 8: Malacatán-Ayutla-Ocós	51	--	31	--	31	20
10. National Route 98: Quezaltenango-Retalhuleu- Champerico	84	--	45	39	84	--

/11. National

Length in Kilometers

	Total	All Weather Paved	Weather Surfaced	Dry Weather (Dirt)	Passable	Impas- sable
11. National Route 9N: Quezaltenango-Huehue- tenango-San Pedro Solomá	141	--	123	18	141	--
12. <u>Antigua Highways</u> National Route 10: Pachacali (1,21.3)-Popo- yá (6W, 103.3)	86	19	30	17	66	20
13. National Route 11: Godínez (1,92.2)-Palmira- (6W, 119.6)	38	--	38	--	38	--
14. National Route 12: 12S San Marcos (1,247.7)- Coatepeque (6W, 251.4)	57	--	2	55	57	--
15. National Route 12N: San Marcos-Tacaná (1,247.7)	73	--	23	50	73	--
16. <u>Justo Rufino Barrios High- way: National Route 13:</u> El Rodeo (1,283.6)-Coatepe- que-Nueva Linda (9S, 266)	108	--	75	33	108	--
17. <u>"Chimaltenango-Escuintla" Highway: National Route 14: Chimaltenango (1,46)- Escuintla (3,54.8 and 6,0.0)</u>	52	--	52	--	52	--
18. National Route 15,15: Patzicía (1,63)-Sacapu- las (7W, 300)	142	--	142	--	142	--
19. National Route 16: Cuilapa (2,63)-Chiquimu- lilla (6E, 117.8)	38	--	38	--	38	--
20. National Route 17: El Rancho (4,110)-Salamá (5,138)	61	--	61	--	61	--
21. National Route 18: San José Pinula (2,16)- Atulapa (Hondurean border)	220	--	210	10	220	--
22. National Route 19: Sanarate (4,19)-El Pro- greso (2,128)	90	--	90	--	90	--
23. National Route 20: Santa Cruz (4,157)-Las Minas (Hondurean border)	110	--	75	35	110	--
24. <u>"Copán" Highway: Nation- al Route 21: Vado Hondo (20,210)-El Florido (Hon- durean border)</u>	50	--	22	28	50	--
25. National Route 22	40	--	--	40	40	--
26. National Route 23: Jutiapa (2,118)-Jerez (Salvadorean border)	44	--	--	43	43	1
	<u>3886</u>	<u>328</u>	<u>2965</u>	<u>440</u>	<u>3733</u>	<u>153</u>



APPENDIX II

GUATEMALA: ROAD NETWORK. 2. DEPARTMENTAL AND MUNICIPAL ROUTES <sup>a/</sup>

Department	Length of passable roads (in kilometers)		
	All Weather Roads <sup>b/</sup>	Dry Weather Roads <sup>c/</sup>	Total
1. Alta Verapaz	79.3	36.1	115.4
2. Baja Verapaz	24.2	9.7	34.9
3. Chimaltenango	152.8	14.4	167.2
4. Chiquimula	10.7	82.7	93.4
5. Escuintla	74.1	184.8	258.9
6. Guatemala	90.0	208.4	298.4
7. Huehuetenango	—	7.0	7.0
8. Izabal	9.7	—	9.7
9. Jalapa	25.1	32.2	57.3
10. Jutiapa	18.0	83.5	101.5
11. Petén	1.2	—	1.2
12. Progreso	24.9	7.8	32.7
13. Quezaltenango	84.5	141.4	225.9
14. Quiché	124.5	43.5	168.0
15. Retalhuleu	36.8	80.2	117.0
16. Sacatepéquez	6.7	56.6	63.3
17. Santa Rosa	95.3	158.1	253.4
18. San Marcos	68.8	110.8	179.6
19. Sololá	16.5	84.3	100.8
20. Suchitepéquez	43.5	245.2	288.7
21. Totonicapán	37.2	37.1	74.3
22. Zacapa	40.8	104.7	145.5
Totals:	1,064.6	1,728.5	2,794.1

Source: Transport Mission, based on official data.

- <sup>a/</sup> No departmental or municipal route is paved.  
<sup>b/</sup> All these roads have been graveled in their base and/or with some kind of material capable of withstanding permanent, all year round traffic.  
<sup>c/</sup> All of these roads are dirt, and lack a base and/or surface, except for a few short stretches.

/APPENDIX III

APPENDIX III

GUATEMALA: ROAD NETWORK. 3. ALL-WEATHER ROUTES,  
 DISTRIBUTION BY DEPARTMENT

Departments	Population (in thousands) a/	Area (in sq. kms.)	Pop. density (inhabitants per sq. km.)	All Weather Roads (kms.)				
				A	B	Total	% of total	(meters per sq. km.)
Alta Verapaz	189	8.7	21.7	312.6	79.3	391.9	9.1	45
Baja Verapaz	66	3.1	21.3	134.1	24.2	158.3	3.7	51
Chimaltenango	122	2.0	61.8	175.8	152.8	328.6	7.6	167
Chiquimula	113	2.4	47.5	125.5	10.7	136.2	3.5	54
Escuintla	124	4.4	28.2	206.6	74.1	280.7	6.6	64
Guatemala	441	2.1	207.5	262.2	90.0	352.2	8.2	166
Huehuetenango	199	7.4	26.9	215.7	0.0	216.7	5.1	29
Izabal	55	9.0	6.2	15.6	9.7	26.3	0.6	3
Jalapa	75	2.1	36.4	162.9	25.1	188.0	4.4	91
Jutiapa	139	3.2	43.1	153.5	18.0	176.5	4.1	55
Petén	16	35.8	0.4	0.0	1.2	1.2	0.0	0.03
Progreso	48	1.9	24.8	159.4	24.9	184.3	4.3	96
Quetzaltenango	184	1.9	94.1	198.4	84.5	282.9	6.5	145
Quiché	174	8.4	20.9	178.6	124.5	303.1	7.1	36
Retalhuleu	66	1.9	35.6	55.5	36.8	92.3	2.2	50
Sacatepéquez	60	0.5	129.0	118.6	6.7	125.3	2.9	270
Santa Rosa	110	2.9	37.2	153.2	95.3	228.5	5.4	77
San Marcos	230	3.8	60.7	215.9	68.8	284.7	6.7	76
Sololá	83	1.1	78.1	107.6	16.5	124.1	2.9	117
Suchitepéquez	125	2.5	49.9	95.7	43.5	139.2	3.3	56
Totonicapán	99	1.1	93.7	45.2	37.2	82.4	1.9	78
Zacapa	70	2.7	25.8	125.4	40.8	166.2	3.9	62
República de Gua- temala	2,788	108.9	25.6	3,205	1,064	4,269	100	39

Source: Transport Mission, based on official data.

- a/ Figures from the Census of 1950.  
 A. National Routes  
 B. Departmental and Municipal Roads

Chapter II

EL SALVADOR

I. Introduction

The Republic of El Salvador is the smallest and the most densely populated of the six Central American countries. With an area of 20,877 square kilometers,<sup>1/</sup> it has a population estimated in 1952 at 1,921,339 inhabitants, or 92 inhabitants per square kilometer.<sup>2/</sup> It is the only country in the region which has no Atlantic coastline. Although it is in the tropical zone (it is located between 13°8' and 14°24' north latitude and 90°10' and 87°43' west longitude), its climate is tropical only in the lowlands, along the Pacific coast. On the central plain the climate is semi-tropical and in the mountain zone it is temperate. The rainy season is from May to October, and the dry season from November to April.

Two mountain ranges, running from east to west, divide the country into three well-defined regions: the mountainous northern region, which comprises a third of the country's area; the central plain, which makes up one-half of the national territory, and the southern mountain region, with its coastal zone. The country is divided into 14 departments, of which 3 make up the Western Zone, 7 the Central Zone,

<sup>1/</sup> See Boletín Estadístico, publication of the Dirección General de Estadística y Censos, No. 2, March-April 1952, Table 9, p. 26.

<sup>2/</sup> Ibid., Table 7, p. 23

and 4 the Eastern Zone.

The Western Zone (Departments of Santa Ana, Ahuachapán, and Sonsonate) occupies 20.3 % of the national territory and contains 22.4% of the population, with a density of 101.5 inhabitants per square kilometer. The Department of Ahuachapán, with 75.6 inhabitants per square kilometer, is the most thinly populated department in this Zone.

The Central Zone (Departments of La Libertad, San Salvador, Chalatenango, Cuscatlán, La Paz, San Vicente, and Cabañas) occupies 44.2% of the country's area and has 48.4% of the population. The population density is 100.8 inhabitants per square kilometer. This high figure is greatly affected by the inclusion of the Department of San Salvador, which represents 16.0% of the country's total population and has a density of 350.9. On the other hand, the Department of Chalatenango, in the mountainous region north of the Lempa River, has the lowest population density in the country: 43.5 inhabitants per square kilometer.

The Western Zone (Departments of Usulután, San Miguel, Morazán and La Unión) occupies 35.5% of the country's total area and contains 29.2% of its population, with a density of 75.7 inhabitants per square kilometer.

In the 1950 census, 63.6% of El Salvador's population was classified as rural, and 36.4% as urban.<sup>1/</sup> The gainfully employed population (653,409 in 1950) constituted 35.2% of the total; 63.2% (412,646) of the gainfully employed was engaged in agriculture.

<sup>1/</sup> Classified as urban population were people living in the "capitals of the municipalities".

From 1945 to 1952 there was an annual population increase of 59,600 inhabitants.

The economy of El Salvador is essentially agricultural. The national income estimate made by the Technical Assistance Mission of the United Nations <sup>1/</sup> shows that, in 1950, of a total income of 845.9 million colones, 49.4% originated in agriculture and 7.5% in industry. (See Table 18.) 43% of the agricultural income came from export crops (coffee, cotton, sesame, henequen), 21% from basic food-stuffs (corn, sugar, beans, sorghum, rice), 16% from livestock and milk products and the remaining 20% from fruit, vegetables and other crops and agricultural products.

Table 18

El Salvador: Gross National Product by Activities,  
1946 and 1950

	Millions of colones		Percent of total	
	1946	1950	1946	1950
<u>Gross National Product</u>	434.9	845.9	100.0	100.0
Agriculture	199.9	417.7	46.0	49.4
Coffee	(53.0)	(161.5)	(12.2)	(19.1)
Other products	(146.9)	(256.2)	(33.8)	(30.3)
Forestry and Mining	17.4	30.2	4.0	3.6
Construction	15.0	35.1	3.4	4.1
Manufacturing	46.0	63.5	10.6	7.5
Interest and Rent	25.5	47.7	5.9	5.6
Commercial Services	80.5	153.9	18.5	18.2
Professional Services	11.5	11.6	2.6	1.4
Government	23.0	48.2	5.3	5.7
Other Services	16.1	38.0	3.7	4.5

Source: Feuerlein, op. cit.

<sup>1/</sup> W. F. Feuerlein, Suggestions for the Further Economic Development of El Salvador, Appendix A. p. 8 (Doc. ST/TAA/J El Salvador R.S.)

/In El Salvador

In El Salvador, as in the rest of the Central American countries, the development of transportation has, until recent years, been determined chiefly by the needs of international trade. The system of domestic transportation has been inadequate and in many cases of a primitive nature. But in spite of the fact that the construction of roads and highways is recent, it has preceded what has been done in this field in the other Central American countries, and in the last few years the government has constructed highways which place El Salvador at the head of the six republics in road density as well as in volume of motor vehicle traffic. The Salvadorean economy is based on commercial crops for export and on an industrial development which is beginning to acquire a certain importance.

El Salvador is steadily departing from the kind of subsistence economy characteristic of underdeveloped countries. With this in view, the Salvadorean government has understood the necessity of including among its plans for the country's further development the construction of means of transport which could more effectively serve its purposes.

## II. Means of Transport for International Trade

The international economy of El Salvador is based almost exclusively on one product: coffee. This product accounts for more than 80% of the country's exports. In 1950, coffee represented 19.1% of the gross national product. The domestic transport system was developed with the objective of providing outlets for coffee shipments from the principal

/coffee

coffee-producing areas to the Pacific ports of Cutuco and Acajutla, and through Guatemala to Puerto Barrios on the Atlantic. Most imported commodities follow the same route inland (including the port of La Libertad), to the principal domestic markets.

The coffee-producing areas of El Salvador are connected by rail with both the Atlantic and Pacific coasts. Coffee is grown chiefly in the Western Zone (56% of the total), in the Departments of Santa Ana (30.5%), Ahuachapán (14.5%) and Sonsonate (11.2%).<sup>1/</sup> In the Central Zone about 27% of the total is grown, chiefly in the Department of La Libertad (13.3%), where the railway serves the important coffee-growing Municipality of Quezaltepeque. In Nueva San Salvador (Santa Tecla), Comasagua, Tepecoyo and other coffee-growing regions there is a need for improving roads in order to transport coffee to the railroad line. However, the distances here are relatively short. In the Eastern Zone, which produces only about 17% of the coffee crop, the chief coffee-growing regions --Usulután (9.7%) and San Miguel (5.8%)-- are served by the IRCA.

The same situation generally prevails in regard to other major export products. The railroad passes through the important cotton-producing center of Zacatecoluca, connected by road with Santiago Nonualco, the other cotton municipality in the Department of La Paz. It also touches Usulután and San Miguel, which are also municipal capitals of cotton-growing areas. These last-named areas are also important in the production of sesame, as is Sonsonate, in the Western Zone, which is

<sup>1/</sup> Data from the Agricultural and Livestock Census of 1950, Boletín Estadístico, special number, November 1952.

served by the Salvador Railway Company. San Miguel produces a substantial quantity of henequen. On the other hand, the regions of Chalatenango, producing sesame, and Morazán, which produces henequen, are distant from the railway lines.

#### 1. Railroads

The domestic transport system serving foreign commerce was based in the beginning on rail transport. Even today, in spite of the considerable development which has taken place in road building in the last twenty years, the greater volume of the country's transport is carried by rail. The railroad companies are in control of the port services (except in the case of La Libertad, a port operated by a transport firm controlled by shipping interests). Through a sui-generis freight rate system, with combined rates including rail freight and port charges, they monopolize all import and export traffic passing through the ports with which they are connected.

The railway network of El Salvador is narrow-gauge (0.914 meters) and covers a distance of 602 kms. This system carries 4 million passengers and 500,000 tons of freight annually.<sup>1/</sup> Two railroad companies operate in El Salvador: (a) International Railways of Central America, IRCA, El Salvador Division, with a total length of 458 kms., and (b) The Salvador Railway Co. Ltd. with an extension of 144 kms.

IRCA also operates in Guatemala. It is affiliated with the United Fruit Company and owns the port facilities at Cutuco, which

<sup>1/</sup> Data for 1951. The distribution of these figures is as follows: local traffic 49%, export traffic 11%, import traffic 40%.

/is connected



is connected with San Salvador by a 252 kms. line passing through the cities of San Miguel, Usulután, Zacatecoluca, San Vicente and Cojutepeque. Originating at Soyapango (7 kms. from San Salvador) is a line which passes through Texistepeque and reaches the Guatemalan border (a distance of 147 kms.) There it joins the IRCA's Guatemala Division and continues to Puerto Barrios. From Texistepeque a branch line (59 kms. long) serves the important coffee growing areas of Santa Ana and Ahuachapán.

The Salvador Railway, a British company, serves the country's richest agricultural region, between San Salvador, Santa Ana, and Sonsonate, connecting this area with the port of Acajutla, which it operates together with its subsidiary, Agencia Nacional, Ltda. Its trunk line connects San Salvador with Sitio del Niño (37 kms.); from which two other lines branch out: one going to Santa Ana (40 kms.) and the other to Sonsonate (47 kms.), continuing on to Acajutla (20 kms.).

Both of these railroads have high operating costs for several reasons: (a) the adverse topography of the regions through which they pass (since the steep grades and the sharp curves increase the time required for each run and substantially reduce the tractive force of the locomotives); (b) the inadequacy of the locomotives themselves; (c) the short runs (especially in the case of the Salvador Railway), and (d) the relatively small volume of traffic.

In 1951, the IRCA owned 28 locomotives, 60 passenger and inspection cars and 502 miscellaneous freight cars. The Salvador Railway owned 17 locomotives, 32 passenger and inspection cars, 11 gasoline motor cars and 234 miscellaneous freight cars. (See Table 19.) The Misión

/inspected

inspected most of the IRCA's network and concluded that the line and installations are in good condition. The locomotives and rolling stock are not modern, but are kept in good running condition. On the other hand, the permanent way of the Salvador Railway is in bad condition; long stretches need to be replaced and others repaired. The locomotives are very old models, uneconomical and of little tractive force, which makes the cost of traction excessive (\$ 1.41 per train-km. compared to \$ 0.72 for IRCA), especially considering the fluctuation in the volume of traffic (according to the coffee-gathering seasons) and the directional differences of this traffic.

In 1951 the IRCA moved 401,000 tons. of freight (12% more than in 1950). Of this total, 44% was import freight, 11% was export freight, and 45 % was local traffic. It also carried 2,244,000 passengers (16% more than in the previous year). The Salvador Railway moved 115,400 tons. of freight (9% more than in 1950), of which 23% was import freight, 19% export freight and 58% local freight. It carried 1,872,000 passengers (an increase of 1% over 1950.) (See Table 20).

The movement of passengers between Guatemala City and San Salvador is very slight. The railway connection was made especially for export freight traffic via Puerto Barrios. Passenger service is not direct, and the trip is long and uncomfortable.

The freight rate system is the fundamental problem of Salvadorean rail transport in relation to the country's economy. Since this problem is closely related to the control of the ports by the railway companies, as in Guatemala, it is useful to examine first the port and maritime situation.

Table 19

El Salvador: International Railways of Central America  
and Salvador Railway: permanent way and  
equipment

	IRCA	Salvador Railway
<u>Permanent way:</u>		
Rails, standard type: weight	54, 56, and 70 lbs. per yard	54 and 60 lbs. per yard
Ballast	Volcanic ash and broken stone	light earth about 1 ft. deep, crushed lava
Ties	Native hardwood and imported (creosoted) pine	Native wood
Maximum gradient	3.9%	4.5% Sitio del Niño to Santa Ana. 2.5% Acajutla to San Salvador
Maximum curvature	20°	16°
Signals	Hand-operated semaphores	Hand-operated semaphores
<u>Locomotive and Rolling Stock:</u>		
Steam locomotives (fuel oil)	33	17
<u>Passenger cars</u>		
First class	6	9
Second class	28	19
Combination passenger and cargo	6	--
Gasoline motor cars (passenger)	--	10
Gasoline motor cars (freight)	--	1
Covered freight cars	347	159
Baggage cars	7	4
Cabooses	10	--
Flat cars	54	52
Miscellaneous freight cars	9	--
Livestock cars	36	6
Tank cars	11	6
Work cars	32	13
Inspection cars	20	4
Brakes	Westinghouse	Westinghouse
Repair shops	in Guatemala City	in Sonsonate

Source: IRCA, El Salvador Division, and Salvador Railway.

Table 20

El Salvador: Traffic and Operating Income, International Railways of Central America and Salvador Railway

I R C A		
	1949	1950
<u>Train-kms.</u>	1,042,144	1,127,040
<u>Passengers (units)</u>	1,930,993	2,244,064
<u>Freight (tons)</u>	356,806	401,031
Local	197,198	179,852
Exports	45,720	44,568
Imports	113,888	176,611

Operating Revenue (in thousands of dollars)

Year	Revenue	Operating Ratio	Operating Income
1947	2,350	84	383
1948	2,190	92	169
1949	2,170	98	47
1950	2,400	90	237
1951	2,800	89	320

Cost of Each Run per train-km. (dollars)

1947	1948	1949	1950	1951
0.5518	0.6711	0.7220	0.6642	0.7185

SALVADOR RAILWAY

	1949/50	1950/51
<u>Passengers</u>	1,696,052	1,872,443
<u>Freight</u>	106,626	115,421
Local	64,075	67,370
Exports	25,625	21,469
Imports	16,926	

Operating Revenue (in thousands of pounds sterling)

Year	Revenue	Operating Ratio	Operating Income
1946/47	133.3	92.8	111.6
1947/48	162.7	83.2	27.3
1948/49	288.8	92.6	21.5
1949/50	264.5	101.4	- 3.7
1950/51	302.3	92.5	22.8

Average cost of train runs per train-km. in 1950/51: \$ 1.41

Sources: IRCA and Salvador Railway Co.

2. Port and Maritime Situation

In order of importance on the basis of their respective volumes of traffic, El Salvador's three principal ports are Cutuco, La Libertad, and Acajutla. These ports moved a total of 387,800 tons in 1951. Imports and exports were divided among these ports as follows: Cutuco, 45%, la Libertad, 37%, and Acajutla, 20%. (See Table 21.)

Table 21

El Salvador: Imports and Exports by Customs (Ports) <sup>a/</sup>  
 (in thousands of metric tons)

	<u>Imports</u>				<u>Exports</u>				Total Imp. and Exp.
	La Unión	La Libertad	Sonsonate	Total	La Unión	La Libertad	Sonsonate	Total	
1947	84.8	45.3	9.7	139.8	39.9	12.7	28.4	81.0	220.8
1948	56.8	42.7	13.9	113.4	33.9	15.1	33.1	82.1	195.5
1949	68.7	53.9	20.7	143.3	38.4	16.4	23.2	78.0	221.3
1950	84.8	93.3	30.2	208.3	44.9	19.3	24.1	88.3	296.6
1951	139.4	124.5	56.0	319.9	35.2	12.6	20.1	67.9	387.8

Source: Dirección General de Estadística y Censos, Boletín Estadístico No. 6.

<sup>a/</sup> Data exclude shipments in vessels under 100 tons. Tonnage includes imports, exports, and baggage; excludes mail.

The above-mentioned ports handle the greater part of coffee exports. (See Table 22.) The total volume of maritime imports and exports was 432,133 tons, of which Puerto Barrios handled 44,333.

/Table 22

Table 22

El Salvador: Coffee exports by port of origin and production center,  
October 1943 - October 1949

(metric tons)

Departments where produced	Cutuco	La Libertad	Acajutla	Puerto Barrios	Overland	Total
<u>Total</u>	<u>28,726</u>	<u>14,528</u>	<u>27,928</u>	<u>3,867</u>	<u>8</u>	<u>75,057</u>
Santa Ana	10,013	308	15,557	2,003	--	27,881
La Libertad	758	11,562	5,787	304	--	18,411
Usulután	8,041	186	--	14	--	8,241
San Miguel	4,607	--	--	86	--	4,693
Sonsonate	--	--	5,822	7	--	5,829
San Salvador	881	5,455	739	1,177	8	5,260
Ahuachapán	2,239	--	17	276	--	2,532
La Paz	1,211	17	6	--	--	1,234
San Vicente	976	--	--	--	--	976

Source: Compañía Salvadoreña de Café, Boletín Anual de Estadística,  
September 30, 1949.

Of the three Salvadorean ports, Cutuco, on the Gulf of Fonseca, is the best one in the country, and the only sheltered port which allows the direct mooring of the ships to the pier. It has a concrete pier 125 meters long and sufficient warehouse space for the current volume of traffic, except during the period from December to March, when the high seasonal export traffic causes some congestion. However, it is the port furthest away from the main production and consumption centers. The western coffee belt is at the other extreme of the country, and the leading import center --San Salvador-- is 252 kms. by rail and 185 by road from the port.

/Although

Although the other two ports, La Libertad and Acajutla, are closer to the producing and consuming centers, they have insufficient storage space and high operating costs due to the system of loading and discharging by means of lighters. Acajutla, the westernmost port, is 104 kms. by rail from San Salvador and 85 by road. La Libertad has no railway; it is 36 kms. from San Salvador by road.

The outstanding factor in the Salvadorean port situation from the economic point of view is the close interrelationship of the ports with the shipping companies and with the overland transport interests. The port installations at Cutuco are the property of the IRCA. Those at La Libertad and Acajutla belong to the government, but are leased, in the case of La Libertad, to the Agencia Nacional Salvadoreña, an affiliate of the Grace Line, and in the case of Acajutla to the Agencia Nacional Limitada, a subsidiary of the Salvador Railway. Furthermore since the shipping companies work closely together in a conference system, and the principal lines handling El Salvador's traffic are the United Fruit Company and Grace Line fleets, it becomes more evident how large a degree of control of the transport system for foreign trade is concentrated in the hands of a few interests: these same groups control the overland and maritime transport as well as the handling of port operations of nearly all Salvadorean foreign trade traffic.

Cabotage. Since there are no important towns along the coast, and since the ports, with the exception of Cutuco, are not easily accessible to small craft, there is practically no cabotage in El Salvador.

3. Freight rates

(a) Combined railway-port rates. The fact that the same few interests are in control of the transport network linking the production centers and markets permits a rate structure through which it is possible to exercise a virtual monopoly of import and export traffic. The competition of independent truck transport can thus be eliminated with no sacrifice in transport charges, since what is lost in overland freight rates is amply recovered in port charges. There also exists an agreement between the two railway companies and the trucking firm Agencia Salvadoreña, which serves La Libertad, to charge virtually the same rates (which include port charges) for transporting the more important foreign trade commodities to or from any of the three ports. Through the combination of inland transport with ocean freight rates there is also established a very similar total charge for transport to the chief export markets, or from the principal import markets, in shipments through Puerto Barrios in Guatemala.

Thus, export commodities -- coffee, cotton, sesame -- are subject to the same freight rate from San Salvador to either La Libertad or Cutuco, despite the difference in distances (coffee, \$14.20 per ton; cotton, \$16.00; sesame, \$8.80). As for imports, the charges for cement are \$9.00 per ton; for wheat, \$8.20; for wheat flour, \$10.00; and for iron \$14.00, whether via Cutuco, La Libertad, or Acajutla.<sup>1/</sup> (See rates on coffee, cement and iron in Table 23.)

<sup>1/</sup> The rail freight rates quoted include increases which went into effect in November 1952 for coffee shipments, and in February 1953 for other cargo.



Table 23

El Salvador: Through freight rates (U.S. Atlantic and Gulf ports) for coffee exports and structural iron and cement imports.

(in dollars per short ton)

	<u>Cutuco-Ja Libertad</u> San Salvador	<u>Acajutla</u> Santa Ana	<u>San Salvador</u>	<u>Puerto Barrios</u> San Salvador
<u>Coffee</u>				
Railway or road	14.20	15.60	14.20	18.20
Ocean	<u>21.00</u>	<u>21.00</u>	<u>21.00</u>	<u>14.00</u>
Total	35.20	36.60	35.20	32.20
<u>Cement</u>				
Railway or road	9.00		9.00	15.10
Ocean	<u>17.00</u>		<u>17.00</u>	<u>28.30</u>
Total	26.00		26.00	28.30
<u>Structural iron</u>				
Railway or road	14.00		14.00	17.50
Ocean	<u>22.60</u>		<u>22.60</u>	<u>15.70</u>
Total	36.60		36.60	33.20

Source: Railway and shipping companies.

If the component parts of these freight rates are examined separately, it can only be concluded that they have been constructed in the most arbitrary way. For example, in exporting coffee from San Salvador through Acajutla (combined charge of \$14.20), the rail freightage is only \$2.60 for a run of 104 kms. or 2.5 cents per ton-km., while lighterage and wharfage (\$11.60) amount to 4-1/2 times the freight charges.<sup>1/</sup>

<sup>1/</sup> The same system prevails in La Libertad, in combination with motor transport.

/(See Table 24.)

(See Table 24.) To import cement by the same route, the total charge is \$9.00, the rail freight proportions of this charge being the same as in the case of coffee, but port charges being less: \$6.40 as against \$11.60, or 2-1/2 times the rail freight charge. It may well be asked why the port charges for cement are approximately half the charges for coffee. It is also observed that if the Salvador Railway charged for port services the same rate applied to coffee in Champerico and San José (\$4.60 per ton), and the rest were incorporated into the rail freight charge to comprise the combined rate of \$14.20, the rail freight charge would be higher than the maximum permitted under the terms of the concession contract.

Although it does not seem that the freight charges are high, it is clear that the port charges are arbitrary, since they bear no relation to the actual cost of the services rendered. There are also special circumstances which tend to operate in favor of the railroads at the expense of road transport. Thus, the port areas of Cutuco and Acajutla are inaccessible to trucks. For example, if a customer should desire to move freight by road for export from Cutuco, he would be obliged to turn it over to the IRCA at La Unión, pay the rail freightage to Cutuco, and then pay the charge arbitrarily fixed for port services.

(b) Ocean freight rates. It is no simple matter to determine whether or not ocean freight rates are fair. Even if data were available in regard to all the cost factors, the attempt would still be frustrated, since it is impossible to evaluate the effect which other important external factors, such as subsidies and special privileges would have upon the accounts of most of the

of most of the shipping companies serving the Central American ports.

Table 24

El Salvador: Rail freight rates combined with port charges

(in dollars per short ton)

	<u>Acajutla-San Salvador</u>		<u>Cutuco-San Salvador</u>	
	With port charges	Less port charges	With port charges	Less port charges
<u>Imports</u>				
Cement	9.00	2.60	9.00	3.80
Iron bars	14.00	2.60	14.00	5.40
Wheat	8.20	2.60	8.20	3.80
Wheat flour	10.00	2.60	10.00	3.80
Automobiles	25.00	2.60	25.00	11.00
Trucks	20.00	2.60	20.00	8.40
<u>Exports</u>				
	<u>San Salvador Acajutla</u>		<u>San Salvador-Cutuco</u>	
Cotton in bales	16.00	1.00	16.00	8.80
Sesame	8.80	2.80	8.80	2.30
Coffee	14.20	2.60	14.20	7.70
Coffee, San Salvador-Santa Ana	15.60	4.00		

Source: Salvador Railway Co. and IRCA, El Salvador Division.

On the other hand, more than the real operating cost, the factors determining freight rates are the market value and other characteristics of the freight involved. Consequently, freight rates should have to be judged through comparisons, that is to say: (1) comparing the freight rates on Salvadorean cargo with freight rates considered reasonable in other countries and (2) determining the ratio of the freight rate to the market value of the commodity.

/Regarding

Regarding the first point of comparison, the Flota Gran-colombiana may be used as an example. Although it is in the conference system, this company is owned by many of its users <sup>1/</sup> and, consequently, the freight rates --especially for coffee-- are kept at a level favorable to them. Thus the freight rate for a ton of coffee from Colombian ports on the Pacific to U.S. Atlantic and Gulf ports, is \$20.00 while the Salvadorean freight rate to the same ports of destination is \$21.00 the distance being somewhat greater in the case of El Salvador. It is, then, evident that the freight rate does not place El Salvador in an unfavorable position of competition.

As to the second point under consideration, it can be established that the rate represents scarcely 2% of the market value of coffee, when the latter is \$0.56 per pound.

To sum up, in the case of the principal export commodity, the freight rate in itself is not excessive nor detrimental to business. With reference to imports the situation is different and, as a result, it is very difficult to generalize here, since there are innumerable different classes of commodities and an extremely varied and complex classification system. Freight rates vary greatly: for cement, for example, it is \$17.00 per ton; for automobiles and trucks, \$23.00 per 40 cubic feet plus some "extra charges", and for articles not otherwise specified up to \$70.00. This system of charging according to value and other characteristics is prevalent in all maritime services, it being generally

<sup>1/</sup> Federación de Cafeteros de Colombia, Almacenes de Depósitos, Banco Agrícola y Pecuário de Venezuela, Corporación Venezolana de Fomento, Banco Nacional de Fomento de El Ecuador, etc.

understood that the value of service increases as the value of the commodity at the consuming center.

The same customs practices prevail in Salvadorean ports that are in effect in almost all of Central America, necessitating a double handling of cargo and excessive red tape. Perhaps the situation is still more complicated in El Salvador, since the country has experienced considerable economic development in the last few years, and both customs practices and port installations have remained substantially unchanged since the days when port activity was a fraction of its present volume.

The customs for Acajutla are located in Sonsonate, 20 kms. distant from the port; imported cargo must be transported in sealed freight cars from the pier to the customs. This anomaly causes loss of time, higher costs, and the delay of rolling stock.

#### 4. Air Transport

El Salvador is served by five international airlines offering regularly scheduled flights. It has more international services than any other Central American country. All air operations are centralized at the government-operated National Airport at Ilopango, located 10 kms. east of San Salvador on the Inter-American Highway, at 614 meters above sea level. The main runway, with a usable length of 1600 meters, is built on a rock base, surfaced with crushed stone penetrated with asphalt and sealed. The terminal building is excellent but there are no hangars for the use of international carriers.

Pan American Airways (PAA) was the first and is the largest of the five companies. In September 1952 it was operating 3 to 5 flights

/daily

daily into, and an equal number out of, San Salvador, using DC-4's or Constellations, serving the other Central American countries as well as Mexico, New Orleans, Los Angeles, Miami and Havana.

TACA International Airlines (TACA), the only company operating under the Salvadorean flag, uses three DC-4's and offers 5 mixed passenger and cargo flights weekly to Mexico and New Orleans. Since February 1953, it has established a cargo and passenger service to Panama, and a cargo service to New Orleans on the two days in which it has no passenger service.

The three other carriers --Compañía Real Holandesa de Aviación (KLM), Aerovías Sud Americanas (ASA) and Transportes Aéreos Nacionales de Honduras (TAN)-- have only been in operation a year or two, with two-engined planes and relatively limited schedules.

During July 1952, PAA carried 58% of a total of 2,761 passengers leaving or arriving at the Ilopango airport, TACA carried 38%, and the other two passenger services, KLM and TAN carried 4% together. Of the total cargo of 210,000 kilograms moved in and out of the Ilopango airport during the same month, TACA carried 46%, PAA 41% and KLM, TAN and ASA together the remaining 13%.

Almost the only practical way for travellers to reach El Salvador at the present time is by air. Even from the neighboring capital of Guatemala, 182 air kms. away, the trip by bus takes 8 hours or more, while the railroad --primarily a freight carrier-- requires 24 to 30 hours. By air it is a 35 minute flight. It is not surprising therefore, that air passenger movement at San Salvador has increased 425% in /the last decade,

the last decade, while surface transportation has shown only a 25% increase.

The number of international flights serving San Salvador is now over three times as many as five years ago, and in general larger and faster equipment is employed. In the same five-year period the volume of inbound air freight has increased over 4.5 times to a point where it now represents from 5% to 10% of all imported manufactured articles. If various administrative obstacles to air travel development were removed, and if more air cargo services were available at appropriate rates, there is little question that this proportion would increase very substantially.

Air transport offers numerous advantages to the importer of manufactured goods in El Salvador and also in other Central American countries: (1) the time between placing an order in the United States and its receipt at destination is often reduced from several months to a few days; (2) the elimination of heavy packing required for sea and land shipment saves packing costs, and also shipping charges, consular fees, customs duties, etc., which are sometimes based on gross weight; (3) air transport documents in general are simpler, and customs formalities at airports are also less complicated and are dealt with rapidly; (4) there is much less danger of loss through theft or pilferage since there are no transshipments and since air cargo remains under the constant supervision of the same crew until it arrives at its destination; (5) there is less handling and smoother passage; (6) there being no danger of salt water spray or similar difficulties to provide against, the likelihood of damage or breakage enroute is

/greatly

greatly reduced, and consequently insurance rates are generally lower, while on fragile articles they may be several times less; (7) interest charges while the shipment is enroute are very much reduced, and there is also more likelihood of the entire shipment arriving as a unit (this is particularly important in the case of buses and automobiles); (8) finally, the actual shipping cost by air may be only a little more, or even less, than by surface means. On a shipment of 25 typewriters to San Salvador, for example, the air charge came to \$628, while the comparable ocean shipping charge was \$609. On relatively small shipments of general commodities such as, for example, two bales (about 275 kilograms) of textiles from South Carolina, air rates are considerably less than surface charges.

A brief sample list of some of the articles which are being imported by air in increasing volume is as follows: breeding cattle, household furniture, refrigerators, stoves, washing machines, typewriters, caterpillars, Diesel electric groups, automobiles, chinaware, earthenware, mattresses, office supplies, batteries, tires, radios, phonograph records, medical products, baby chicks, etc.

Cargo rates at El Salvador, on a ton-mile basis, are substantially the same as those prevailing in Guatemala. Thus, for example, PAA rates from Los Angeles, TACA rates from New Orleans, TAN rates from Miami or ASA rates from St. Petersburg, Florida, on shipments of 3300 pounds or more, range between 14 and 20 cents per metric ton-km. (from 20 to 30 cents per ton-mile). The directional differences in air freight movement are a serious handicap. During the month of July /1952,



1952, for example, the ratio by weight of inbound to outbound air cargo at San Salvador was 14 to 1. In an effort to attract return freight, certain carriers, such as ASA, offer northbound rates as low as 4.5 to 9 cents per metric ton-km. (6.5-13 cents per ton-mile). But in spite of these attractive rates, outbound cargo has remained limited.

Unit passenger fares for El Salvador on PAA and TACA do not differ materially from those already described for Guatemala. Fares of other passenger carriers are somewhat less. Between Miami and San Salvador, for example, PAA's current one-way fare is \$102, or 6.2 cents per passenger-km. (10 cents per mile), while TAN's fare is \$85, or 5.2 cents per km. (8.3 cents per mile). TAN also has a round-trip tourist fare (tickets valid for two months) of 3.9 cents per km. (6.25 cents per mile). Thus, passenger fares more in line with conventional levels have begun to be available at San Salvador.

Certain operating restrictions at the airport at Ilopan-go limit air transport activity at the present time. The short length of the principal runway prohibits the use of modern, high speed equipment on both day and night schedules. A development program for the airport is needed, and certain steps could be taken to encourage the expansion of air operations.<sup>1/</sup>

##### 5. Highways

At the present time El Salvador has the best network of roads in Central America. According to the Salvadorean Highway Depart-

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<sup>1/</sup> See Parts II and III of this Report.

/ment, the total

ment, the total length of the road system is 7,700 kms.; but only about 20%, or approximately 1,500 kms. may be considered, because of technical layout and quality of construction, as all-weather roads. The rest is made up of roads which in most cases lack technical specifications in their location, and in which the construction and finish were done using only the natural terrain with no adequate preparation of the base and superstructure. During the rainy season traffic is impossible on these roads.

Of the 1,500 kms. of all-weather roads, 600 are paved, and the rest are made up of roads which in most cases have been graded, graveled, and/or surfaced to accommodate a relatively heavy and permanent traffic.

If the road density of El Salvador is compared with that of countries of greater economic development, it appears to be markedly low, for there is 1 km. of every kind of road for every 249 inhabitants and 1 km. of all-weather road for every 1,280 inhabitants, while in the United States there is 1 km. of road for every 30 persons. In El Salvador there are 366 linear meters of every kind of road and 72 linear meters of all-weather roads for every square kilometer of the country's area, while in the United States for every unit of area there are 620 linear meters of all-weather roads. On the other hand, the Salvadorean indexes are the highest in Central America. Furthermore, there is a relative compensation in El Salvador if the following factors are taken into consideration: (a) The good location of its main roads, which serve all the production areas with relative efficiency through the help

/of secondary

of secondary and feeder roads; (b) the transport service afforded the national economy by the 6,200 kms. of dry-weather roads during the harvest season of some of the most important products; (c) the roads that link the country's capital city with the principal ports, the most important departmental capitals and the neighboring countries; and (d) the existing roads between the departmental capitals and those that connect them with the heavy population centers as well as with the more important agricultural regions in the country.

In Appendix I, at the end of the chapter, there is a list of the network of all-weather roads in El Salvador. In Appendix II another one of nearly all the primary and secondary roads which make up the country's principal road system and most of which are dry-weather roads. Appendix III gives a list of the local roads of each of the six zones into which the road system of El Salvador is divided.

El Salvador is a country which is especially adapted to road transport, since its greatest length from east to west is 255 kms. and from north to south 102 kms. The utilization of roads for traffic with the main ports would have represented a reduction in total transport costs of imports and exports, if the railroads and port companies had not established their combined system which has practically eliminated road traffic with the ports of Cusuco and Acajutla.

The only roads which are important in international trade are the Santa Tecla-La Libertad road for traffic between San Salvador and the latter port; the Inter-American Highway for commerce with Guatemala in the west and with Honduras and Nicaragua in the east,<sup>1/</sup> and the San

<sup>1/</sup> The Military Route (Ruta Militar) San Miguel-Santa Rosa-Inter-American Highway also carries part of this traffic.

Salvador-Puerto Lempira-La Palma-Citalá road for traffic with western Honduras. Besides these, roads with relative current and potential importance are the Ahuachapán-Las Chinamas-Río de la Paz route and the Coastal Highway (under construction), which will contribute to increase substantially the trade with Guatemala.

(a) El Triángulo-La Libertad. In the years 1942-51, 363,143 tons of imports entered through La Libertad, or 21% of the total for this period. Export figures for the same years were 127,757 tons, or 16% of the total. The only means of communication with La Libertad is the road which leads from the port to Triángulo (26 kms.) on the Inter-American Highway, and from here, on this highway to San Salvador, a distance of approximately 10 kms. The average width of the highway is 6 meters, but there are some sections where it narrows to 5.5 and others where it is only 5. Its horizontal and vertical alignment is deficient, with many unnecessary curves (some with a high degree of curvature) and grades which slightly exceed 6%; this has obliged traffic authorities to impose maximum speed limits of 50 and 40 kms. per hour. The pavement is deteriorating in some stretches, and the bridge over the ravine of El Plata-nar needs reconstruction of its pier bases. All these factors are responsible for a high operating cost for trucks --many of them with trailers-- and passenger buses.

(b) Inter-American Highway. The most important route in El Salvador and the backbone of its road system is the Inter-American Highway (307 kms.) which crosses the country from west to east and has a total length of 273 kms. from the Guatemalan border to the point called Sirama, at /the eastern

the eastern end, and continues 34 kms. further northeast as far as the Honduran border. This highway, which from a technical point of view meets the requirements for trade with the neighboring countries, runs lengthwise across the plateau, connecting the important cities of Santa Tecla, San Salvador, Cojutepeque, San Vicente and San Miguel. It is joined directly or indirectly to all the other important national or local roads.

The 273 kms. from the Guatemalan border to Sirama are completely paved, and the bridges and culverts along this stretch are finished. The remaining 34 kms. were to be paved in 1953.<sup>1/</sup> The construction of the road has been carried out according to the specifications officially laid down for all parts of the Pan-American Highway. For most of its pavement bituminous materials have been used, largely asphalt-penetrated macadam. In some stretches these specifications have been exceeded: the width of the tangents has been increased to 7 meters; the horizontal and vertical alignment has been improved and the curves have been widened and superelevated according to the usual technical standards. Other stretches in the eastern section need to be improved in order to eliminate numerous curves and to increase the limited radius of other curves, reduce some grades and diminish the frequency in slope changes. With these modifications a reduction in the operating cost of transport would

<sup>1/</sup> The local office of the United States Bureau of Public Roads estimates that this entire section, which is well located and which runs through a region having gentle slopes as far as the international bridge over the Goascorán River, can be paved at a cost of only \$500,000, since all the bridges and drainage structures have already been permanently erected.

be obtained as well as a greater degree of safety for traffic. (For the length and present condition of the different sections of the Inter-American Highway, see Table 25.)

Table 25

El Salvador: Inter-American Highway

Section	Length in Kms.	Present Condition
1. Guatemalan border-Santa Ana	31	Paved
2. Santa Ana-San Salvador	66	"
3. San Salvador-Cojutepeque	33	"
4. Cojutepeque-Cuscatlán Bridge (Lempa River)	57	"
5. Cuscatlán Bridge-San Miguel	48	"
6. San Miguel-Sirama	38	"
7. Sirama-Hondurean border	34	All-weather (com- pletely graded, graveled and sur- faced)

Source: Transport Mission, from official data.

(c) Northern Highway (San Salvador-Puerto Lempira-Citalá). This route, not yet paved, is especially important because it may constitute the Salvadorean section of a future trans-isthmian highway communicating El Salvador with Puerto Cortés by way of Nueva Ocotepeque, Santa Rosa de Copán and San Pedro Sula in Honduras. At the present time only the Salvadorean section of 96 kms. has been constructed. This section runs to Nueva Ocotepeque, some 10 kms. into Honduras. The specifications of the highway are first class and it has good alignment, widths of 6 and 7 meters, and grades no greater than 6%. It is graded, gravelled and sur-

/faced to its grade

faced to its grade line. It requires widening and better horizontal and vertical alignment along some stretches. There is a regular bus service between San Salvador and San Ignacio, 7 kms. from the Honduran border, and numerous trucks make the trips from the capital to Nueva Ocotepeque. Their return load consists of tobacco, wheat, onions, garlic, livestock and pigs.

6. Road Transport Conditions

In view of the fact that the Inter-American Highway at the present time connects Guatemala City, San Salvador, Tegucigalpa (indirectly), Managua, and will soon also connect San José, it would be logical to expect a rapid development of international passenger traffic. However, the actual situation is very different; the transport services operating on this road are few in number, and very few vehicles are being used. (See Table 26.)

Table 26.

El Salvador: International Highway Transport Services

<u>Service</u>	<u>Kms.</u>	<u>Com-panies</u>	<u>Vehi-cles</u>	<u>Runs</u>	<u>Price in Colones</u>	<u>Cents per Passen-ger-Km.</u>
From San Salvador to:						
S. Cristóbal-Guatemala	265	3	6	2 per day	12.50	1.9
Tegucigalpa (via Goascorán)	369	1	1	3 per week	15.00	1.6
Managua (via Goascorán)	606	1	1	2 per week	30.00	2.0

Source: Transport Mission, from official data.

/The lack

The lack of development of this economical transport system is attributed to a number of factors. Most important among them are uncertainty about the future of the business due to the fact that a given route is not guaranteed or granted exclusively to a particular public carrier, and due also to difficulties such as the legal formalities involved in securing transit permits from two or more countries. The more important companies have not felt that there is enough incentive, and have therefore failed to invest the capital necessary to operate these services on a large scale.

The present services are inadequate and insufficient for the movement of passengers along this route.

It is not possible to make an exact estimate of the total volume of road traffic in El Salvador, since there are no statistics and since it is not even possible to obtain approximate figures. Consequently, it is necessary to rely on observations and deductions of a general nature. Only a small part of the import and export traffic is carried by road, namely, the traffic via La Libertad, handled by the Agencia Salvadoreña, which has its own vehicles besides those which it rents from other firms. In 1951 the total traffic through this port was 98,000 tons.

Since there is only one rail connection between El Salvador and Guatemala, and there is none with Honduras or Nicaragua, international traffic is by sea, road, or air. Little information is available with respect to the total number of trucks used in international traffic, but from the statistics of the customs at El Amatillo (Honduras), La Palma

/(Honduras)



(Honduras) and Candelaria de la Frontera (Guatemala), it is estimated that in 1951 there was a total movement of 10,000 tons of import traffic and 6,000 tons of export traffic. Although this is not an important volume of traffic, it has been increasing for the last 5 years, and it is logical to expect that it will continue to rise.

III. Means of Transport for Domestic Economic Activity

Domestic transport in El Salvador can be summed up into the following activities: (a) transportation of agricultural products (corn, beans, rice, sugar cane, etc.) from the zones of production to local markets or to mills, the most common means of transport being mule or ox-drawn carts; (b) transportation of agricultural products from local markets or centers of production to the population centers, or from one department to another, the principal means being trucks and the railroads, and local passenger buses to some extent; (c) transportation in the opposite direction for the distribution of manufactured products, which uses the same means of transport as (b).

An important part of this movement of goods consists of basic foodstuffs, the production of which is concentrated in certain zones and departments which have to supply the places of greatest population density. For example, two sparsely populated departments--Usulután and La Libertad-- produce about a third of the corn crop (see Table 27), and help to meet the demand in such departments as San Salvador and Santa Ana, where production falls far below consumption requirements. In the case of sorghum a similar situation prevails. As for the bean crop,

/La Libertad

La Libertad and Usulután produce almost half of the country's total, and the other two aforementioned departments are both deficient. San Vicente and Usulután together produce about 40% of the country's rice, and help to supply almost all the other departments.

1. Railroads.

(a) Freight rates. The railroads carry part of the local freight: in 1951 the IRCA carried 180,000 tons of local freight, and the Salvador Railway 70,000. As to the number of passengers, the IRCA carried 2,224,000 and the Salvador Railway 1,872,000 during this period.

Table 27

El Salvador: Production of Basic Foodstuffs by Departments, 1951

(in thousands of quintals)

Department	Corn	Sorghum	Beans	Rice
Santa Ana	241	85	21	6
Ahuachapán	190	119	24	24
Sonsonate	324	114	14	6
La Libertad	312	369	143	48
San Salvador	159	24	11	17
Chalatenango	254	242	25	31
Cuscatlán	181	75	34	33
La Paz	252	158	12	24
San Vicente	273	197	40	61
Cabañas	220	194	21	14
Usulután	782	631	93	128
San Miguel	331	256	15	23
Morazán	141	159	7	8
La Unión	264	239	16	30
<b>Total</b>	<b>4,324</b>	<b>2,862</b>	<b>476</b>	<b>453</b>

Source: Dirección General de Estadística, El Salvador.

/The two companies

The two companies have a policy of low rates in order to compete with highway transportation. The passenger fares on the IRCA fluctuate, according to the run, between 2.5 and 1.6 cents per km. in first class, and between 1.2 and 0.8 in second class; while on the Salvador Railway, which is more strongly affected by highway competition, the fares in motor rail cars (first class) vary from 1.6 to 1.0 cents, and in steam trains (second class) from 0.8 to 0.6 cents. These fares are not high, rather they are less than official maximum limit,<sup>1/</sup> but this is reflected in the low quality of service, especially in second class on the Salvador Railway.

The local freight rates are scaled in proportion to the distance, and in some instances there are special rates also with the object of competing with highway transport.<sup>2/</sup> On the IRCA the kilometer charges fluctuate, according to classification, from 4.8 cents down to 1.9 cents per ton-km. The charges on the Salvador Railway are computed on a more complex basis, and they do not follow the same system of classification as the IRCA, but in those articles which form the greater part of the freight hauled, the charges are more or less equivalent to those of the IRCA. On the run between Santa Ana and San Salvador the rate per kilometer for corn, beans, rice, cement, lime, etc. vary from 3.2 to 1.8 cents.<sup>3/</sup>

<sup>1/</sup> The concession contract for the IRCA fixes a maximum of 2.5 and 1.25 cents per km. for first and second class, respectively.

<sup>2/</sup> The concession fixes a maximum limit on local freight rates as follows: on the IRCA, 6 cents per ton-km.; and on the Salvador Railway, 8 cents.

<sup>3/</sup> Freight rates in effect in December 1951.

(b) Financial Situation of the Railroads

The financial situation of the two Salvadorean railroad companies does not appear to be flourishing. Total income of the IRCA in 1951 was \$2,800,000 (as compared with 2,400,000 the previous year), with an operating ratio of 89 (as compared with 90 in 1950); and the figures for the Salvador Railway during the period 1950-1951 showed an operating income of 302,000 pounds sterling (as compared with 264,000), with operating expenses running to 92% (as compared with 101% in 1950). (See above Table 20).

Undoubtedly operating expenses could be reduced if several improvements were made, particularly if a less expensive means of traction were introduced, with gradual substitution of Diesel-electric for steam locomotives, for hauling both freight and mixed cargo and passenger trains, as well as the use of light motor rail cars, powered with Diesel-hydraulic or mechanical engines, hauling only one or two coaches for rapid passenger and express freight services. Such improvements would pay for themselves in a relatively short time through the savings that would be effected, but they would require a large initial capital outlay, especially in the case of the Salvador Railway, which first of all would have to carry out the complete renewal of its permanent way.

2. Highways and Roads

The road network in El Salvador is the basic transport system for domestic commercial traffic. There are no available statistical data on the movement of passengers and freight on the country's road network, but judging by the number of trucks and buses used for

/this type

this type of transportation (see Table 28), it is estimated that it constitutes the principal means of local transport.

Table 28

El Salvador: Number of Vehicles

Year	Automobiles	Buses	Trucks	Total
1947	3,315	567	556	4,438
1948	3,722	860	1,222	5,804
1949	4,204	1,249	1,718	6,171
1950	6,891	1,132	1,418	7,441
1951	7,627	1,003	2,364	10,954

Source: Ministerio de Economía, Instituto de Estudios Económicos.

(a) Inter-American Highway. This highway has already been considered in detail.<sup>1/</sup> All kinds of locally-produced agricultural, livestock and industrial products are transported on this highway and its branches, and imported commodities are redistributed from the capital city to all the other departments. Moreover, a still small proportion of articles for export is shipped from the production zones to the Inter-American Highway, and thereby to the relatively near railroad station --or in much smaller proportion-- directly to the ports.

(b) San Salvador-Zacatecoluca-San Marcos Lempa Highway. This route crosses a zone of abundant agricultural and livestock production (Departments of San Salvador, La Paz and San Vicente). Beyond Comalapa it

<sup>1/</sup> See Section II, point 5 (b) of this chapter, p.122.

/will form part

will form part of the Coastal Highway, which is now under construction. The highway is 79 kms. long, of which about 65 kms. are paved,<sup>1/</sup> and it has solidly-constructed, relatively wide bridges with a probable weight resistance capacity of 20 tons. At the present time, paving work is going ahead on some stretches, and other stretches are being improved so that their final construction will come up to higher specifications, similar to those for the Coastal Highway project. The large San Marcos Lempa suspension bridge —construction of which was begun in 1948— has a span of approximately 760 meters. Its cost was \$2.3 million and it was dedicated on December 11, 1952.

Because of the results obtained and the importance officially given to the Coastal Highway, and to the irrigation and drainage project which complements the Lempa River hydroelectric project, the government plans to finish the grading and paving from Zacatecoluca to San Marcos Lempa in the near future, as well as to extend this highway, with similar specifications, to Usulután, and from there as far as the San Miguel River (Río Grande de San Miguel). An all-weather road already exists between the city of San Miguel and the San Miguel River, which completes the great circle route formed by this through highway and the Inter-American Highway from this city to San Salvador.

(c) Northern Highway (San Salvador-Puerto Lempira-Citalá).<sup>2/</sup> Besides its importance as an international highway, this route also serves an important agricultural zone, partly also a mining area, between San Salvador and the Lempa River. Beyond the great Río Lempa suspension bridge,

<sup>1/</sup> The first stretch of 56 kms. between San Salvador and Zacatecoluca, and 9 kms. between Zacatecoluca and San Marcos Lempa.

<sup>2/</sup> See Section II, point 5 (c) of this chapter, p. 124.

an area begins in which the predominance of agriculture gives way to stock raising, extending as far as La Palma, at an altitude of 1,200 meters.

(d) Santa Tecla-Sonsonate-Acajutla Highway. This road branches off the Inter-American Highway 10 kms. west of Santa Tecla, which is located 75 kms. from the port of Acajutla. It links the central zone with the Department of Sonsonate and the port of Acajutla, passing through an important farming region, along a route almost parallel to the Salvador Railway. It has good horizontal and vertical alignment, easy curves, grades of less than 6%, and is in a good state of repair.

(e) Santa Ana-Chalchuapa-Ahuachapán Highway. Extending for 35 kms.,<sup>1/</sup> it connects the two important western coffee-growing zones, and has features similar to those of the Santa Tecla-Acajutla Highway. Beyond km. 90 from San Salvador, between Atiquisaya and Ahuachapán, the pavement is deteriorating, despite the fact that it is of recent construction (1950). The apparent cause of this deterioration is the insufficiency of the base and the thin wearing surface.

(f) El Triángulo-La Libertad Highway. It traverses a region of important agricultural and livestock production and has considerable freight and passenger traffic at the present time, despite the deficiencies mentioned in Section II.<sup>2/</sup>

(g) Military Route: San Miguel-Santa Rosa-Inter-American Highway. This is the route generally used by commercial vehicles travelling toward Hon-

<sup>1/</sup> This includes the first 4 kms. of the Inter-American Highway beyond Santa Ana.

<sup>2/</sup> See Section II, point 5 (a) of this chapter, p. 122.

duras or vice versa. Its length is 51 kms. It crosses some farms and stock ranches, and passes close to the gold and silver mines of Montecristo. It has good horizontal and vertical alignment, maximum grades of 6%, easy curves and a general rolling surface width of 7 meters. Only the first 7 kms. are paved, but the rest is well graded, graveled and surfaced, which permits it to withstand heavy traffic the year round. Only a few stretches need improvement and widening at small cost.

(h) Other highways. Among those that have present or potential importance are the following: (a) Sonsonate-Santa Ana; (b) San Juan de los Cedros-Ilobasco-Chorrera del Guayabo (connecting the capital with the water storage works and the hydroelectric plant of the Río Lempa; (c) Ilobasco-Sensuntepeque; (d) Ahuachapán-Las Chinamas-Río de La Paz International Bridge (which will connect with the Cuilapa-Jalpatagua-Río de La Paz highway in Guatemala in the future); (e) Usulután-Santiago de María-Inter-American Highway; (f) Santa Ana-Tezistepeque-Metapán; (g) Soyapango-Suchitoto; and (h) Chalatenango-Puente Lempira.

Among the roads either projected or under construction, of special interest is the Coastal Highway, which will also be an international route. Work has already begun starting from the road between Sonsonate and Acajutla. It will have a total length of 230 kms. from the Guatemalan border to the Río Grande de San Miguel, and will cross a potentially important agricultural area along the Pacific coast, linking it to the port of La Libertad and the San Salvador-Zacatecoluca highway. It will therefore help to increase the production and income of that part of the country.



3. Public Expenditures on Highways and Roads

In the years 1947-1951 the government of El Salvador spent a total of 25 million colones (\$10 million) on roads, or an annual average of 5 million colones (\$2 million), of which 64.5% was applied on construction and the rest on maintenance. During this same period the government of the United States contributed to the construction of the Inter-American Highway an amount equivalent to two thirds of the cost, or approximately 2 million colones. (See Table 29.) The expenditure applied on new construction has been increasing from 2.7 million colones to 4.8 million in 1951 and 6.3 in 1952.<sup>1/</sup> In 1953, 7.2 million colones has been earmarked for the Coastal Highway alone. Also the amounts assigned to maintenance have been increasing: from 1.1 million colones in 1947 to 3.0 million in 1951. However, if one takes into account the fact that improvement work is included in maintenance activities, and that dry-weather roads require preferential attention during a certain time of year, the sums appropriated for these purposes would seem to be insufficient.<sup>2/</sup> Assuming that of the average total expenditure of 1.78 million colones, 50% is used for improvement, then only 890,000 can be applied to the necessary maintenance of the 1,500 kms. of all-weather roads, which comes to 593 colones per km.

<sup>1/</sup> Taking 60% of the total amount appropriated to the Highway Department in that year -- 10,454,310 colones.

<sup>2/</sup> The improvement of existing roads involves frequent and considerable changes in their horizontal and vertical alignment (resulting from considerable or serious defects in their original location), which is costly work requiring high expenditures. Also it means costly work of building the base, and consolidating and resurfacing of the superstructure.

Table 29

El Salvador: Expenditure on Construction and  
 Maintenance of Roads and Highways,  
 1947 - 1951

(in thousands of colones)

Year	Construction		Other Highways	Maintenance	Total Expenditure	
	Inter-American Highway (A)	(B)			(A)	(B)
1947	730	2,190	1,957	1,125	3,812	5,272
1948	243	728	2,278	1,597	4,118	4,603
1949	--	--	1,918	1,617	3,535	3,535
1950	--	--	4,187	1,579	5,766	5,766
1951	--	--	4,833	3,008	7,841	7,841
Total 1947- 1951	973	2,918	15,173	8,926	25,072	27,017
Annual Average	194	584	3,034	1,785	5,013	5,403

Source: Transport Mission, on data furnished by the Dirección General de Caminos.

- (A) Excluding amount contributed by U. S. Government.  
 (B) Including amount contributed by U. S. Government.

It is estimated that this represents only 1.5% of the average cost per km. <sup>1/</sup>

4. Road Transport Conditions

The road network built in El Salvador in the last few years has brought about a rapid development of transportation. Traffic along

<sup>1/</sup> If one conservatively estimates that average cost per km. of the 600 kms. of paved highway at 50,000 colones, and that of the 900 kms. of and/or surfaced roads at 30,000 colones, this gives an average cost per kilometer 38,000 colones for the 1,500 kilometers. From the information gathered in the field and in the offices of the Highway Department about construction costs in various regions of the country, it is estimated that the average representative cost for each region of asphalt-paved highway is 50,000 colones (\$20,000).

Table 30

El Salvador: Automotive Vehicle Traffic in the month of July 1952

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Town	Highway Post	Total number of vehicles during 12 hr. periods over a period of 31 days	Daily average of vehicles during 12 hr. period	Average traffic density: vehicles per hour	Calculated traffic density: vehicles per 24-hour day
Metapán		927	30	2	32
Santa Ana	San Cristóbal	6,889	222	18	233
Santa Ana	San Salvador	33,541	1,082	90	1,136
Santa Ana	Aldea	34,850	1,124	94	1,180
Ahuachapán		7,326	236	20	248
Chalchuapa		17,403	561	47	589
Sonsonate	El Pilar	2,718	88	7	92
Sonsonate	Calle Nueva	12,846	414	35	435
Cojutepeque	No. 35	21,875	706	59	741
Cojutepeque	No. 28	6,330	204	17	214
La Libertad		8,950	289	24	303
Jucuapa	Usulután	130	4	--	4
Jucuapa	Chinameca	817	26	2	27
Jucuapa	San Salvador	845	27	2	28
Usulután		4,220	136	11	143
Santa Tecla	Colón	35,255	1,137	95	1,194
Santa Tecla	San Salvador	40,952	1,321	110	1,387
San Vicente		6,238	201	17	211
La Unión		2,807	91	8	96
San Miguel	Jocoro	7,361	238	20	250
San Miguel	La Unión	6,745	218	18	229
San Miguel	San Salvador	12,681	409	34	429
San Salvador	La Ceiba	70,959	2,289	190	2,403
San Salvador	Mejicanos	34,861	1,125	94	1,181
San Salvador	La Garita	63,707	2,055	171	2,158
San Salvador	Zacatecoluca	28,353	915	76	961
Zacatecoluca		8,413	272	23	286
	Totals	477,999	15,419	1,285	16,190

Source: Transport Mission, from figures provided by authorities in charge of traffic control.

the country's principal highways is heavy, but particularly on the Inter-American Highway in the vicinity of San Salvador. In July 1952 there was an average of 2,100 vehicles a day moving through La Garita, and up to 2,400 at La Ceiba. On the western section of the highway, at Santa Ana, there was a daily traffic average of 1,100 vehicles. On the eastern section, however, the automotive traffic was much less; for example, at San Miguel, a daily average of just over 400 vehicles was registered. (See Table 30).

Among the other highways, special mention should be made of that which runs from San Salvador through Zacatecoluca as far as San Marcoa Lempa, with an average of 961 vehicles a day on the stretch leading out of San Salvador, and 286 at Zacatecoluca. The route going to La Libertad averaged 303 vehicles a day; the Santa Ana-Chalchuapa-Ahuachapán road, 589 a day.

In 1952 there were 11,243 motor vehicles of all kinds in the country, including 856 belonging to the government and 100 trailers. The classifying system used in El Salvador makes it difficult to determine how these vehicles are distributed, but it would seem that approximately half of them are for private and half for public use. (See Table 31.)

Of the total number of motor vehicles in use in 1951, 10,000 had been imported during the previous five years. (See Table 32.) This shows clearly the rapid increase which has come about in recent years in the number of road vehicles. This also explains the fact that the majority of the automobiles in use are in good condition,

/inasmuch

inasmuch as they are generally of recent manufacture. The same cannot be said for trucks, for here there is a noticeable proportion of old and worn-out vehicles in use.

Table 31

El Salvador: Vehicle Distribution by Departments and Types, 1952

<u>Department</u>	<u>Automobiles</u>	<u>Jeeps</u>	<u>Station wagons up to 9 seat capacity)</u>	<u>Station wagons (more than 9 seat capacity)</u>	<u>Pick-ups</u>	<u>Trucks</u>	<u>Trailers</u>	<u>Totals</u>
Ahuachapán	114	68	22	8	68	46	2	328
Cabañas	10	9	3	5	2	10	—	39
Chalatenango	7	1	—	10	—	7	—	25
Cuscatlán	15	7	6	12	8	13	—	61
La Libertad	162	44	69	51	32	86	2	446
La Paz	21	11	8	14	12	36	3	105
La Unión	14	1	3	4	7	14	—	43
Morazán	9	4	—	20	2	8	—	43
San Miguel	154	61	46	56	39	76	1	433
San Salvador	4,123	425	666	443	668	1,205	81	7,611
Santa Ana	616	78	121	116	224	313	7	1,475
San Vicente	33	7	6	19	7	4	—	76
Sonsonate	96	27	20	30	29	37	2	241
Usulután	100	61	14	35	30	75	2	317
<b>Total</b>	<b>5,474</b>	<b>804</b>	<b>984</b>	<b>823</b>	<b>1,128</b>	<b>1,930</b>	<b>100</b>	<b>11,243</b>

Source: Departamento General de Tránsito.

There has been a marked increase in the number of ox-drawn carts during recent years —30,000 units in all— which is not what would be expected of a country that has improved and extended its road network. The ox-carts used in El Salvador have a capacity of roughly one ton, and the prices charged for this transport vary considerably according to the /route,

route, the kind of goods shipped, etc. For a full load from San Salvador to Cojutepeque, the charge is 16.00 colones, and as far as Zacatecoluca, 25.00. Between other points it varies from 0.75 to 1.25 per quintal (45.3 kilograms), according to the distance. Within the city of San Salvador a more or less fixed rate is charged. For example, from the railroad station to any part of the city 6 colones is charged for transporting a cart-load of firewood. A cart for the distribution and sale of charcoal may be rented for 4 colones a day. Sand is also transported by carts, the price of the material plus transportation being 2 to 3 colones per load. Although it is evident that the cost of cart transportation varies considerably, an average of about 18 Salvadorean centavos per ton-km. seems roughly correct.

Table 32

El Salvador: Automotive Vehicles Imports, 1947-1951

<u>Year</u>	<u>U n i t s</u>			<u>Value (in thousands of dollars)</u>		
	<u>Automobiles</u>	<u>Trucks, Station wagons and buses</u>	<u>Total</u>	<u>Automobiles</u>	<u>Trucks, Station wagons and buses</u>	<u>Total</u>
1947	494	866	1,360	800	1,070	1,870
1948	735	849	1,584	1,274	1,185	2,459
1949	796	786	1,582	1,496	1,236	2,732
1950	1,152	1,808	2,960	1,830	1,932	3,762
1951	1,199	1,502	2,701	1,973	2,621	4,594

Source: Dirección General de la Renta de Aduanas, Sección de Estadística.

/The cost

The cost of motor vehicles and accessories is high in El Salvador. An ordinary 5 ton truck <sup>1/</sup> has a dealer's price of 9,500 colones (\$3,800), that is to say, approximately 80% more than in the United States. The higher price is due to the freight rate, commission, and customs duties (10%). Lower price range automobiles sell for around 6,000 colones (\$2,400). Gasoline costs 1.24 colones (\$0.50) a gallon, half of which is accounted for by taxes of various kinds. A gallon of Diesel oil costs 0.45 colones (\$0.18), and 70% of this is tax. The cost of imported passenger buses with body is also very high. The cheaper passenger buses of the most usual type, practical though somewhat uncomfortable, cost about 19,000 colones (\$7,600). This high cost means that the operators prefer to buy the chassis and then put on a body manufactured in the country. These usually offer little comfort to the passengers, and are uneconomical because of their poor construction.

Another expensive item is tires. Size 7.50 x 17 costs 150 colones (\$60), and size 8.25 x 20, 300 colones (\$120). The scarcity of replacement parts and deficient repair service—which is mainly due to the lack of means for training mechanics—explains the fact that vehicles frequently are out of service for periods much longer than necessary. In general, the average life of a vehicle in El Salvador is 5 or 6 years, as compared to a life of 7 or 8 years in the United States and other countries.

<sup>1/</sup> The term "5-ton" refers to the maximum effective capacity of the vehicle. In the classification system of the manufacturer, these trucks are referred to as "2-ton".

/There are no

There are no regulations concerning highway freight rates. These depend on the various factors of free competition, not only among different truck owners, but also between these and the railroads. The main ones are: (1) Seasonal traffic: as the greater volume of traffic occurs between December and March (the harvest season) and the demand for trucking service is then greatest, the freight charges rise during this period and fall during the rest of the year. (2) Competition from the railroads: in those areas where there is rail service the charges are lower. (3) Highway and road conditions: as operating costs increase with bad road conditions, the charges are higher on unpaved roads.

Highway freight charges are not ordinarily published, but several examples picked up on the spot may give an idea of what they are: they vary from 4 to 5.4 cents per ton-km. on paved roads, to 11 cents on unpaved roads. (See Table 33)

Table 33

El Salvador: Highway Freight Rates in 1952

Highway or Road	Rate per ton	Centavos of colón per ton-km.	U. S. cents per ton-km.
San Salvador-Sonsonate (paved, railroad available) 65 kms.	7.50	11.5	4.6
San Salvador-San Miguel (paved, railroad available) 140 kms.	14.00	10	4
San Salvador-Zacatecoluca (paved, railroad available) 56 kms.	7.00	13.4	5.4
San Salvador-La Libertad (paved, no railroad) 36 kms.	3.50	10	4
San Salvador-Santa Ana (paved, railroad available) 65 kms.	7.50	11.5	4.6
San Salvador-Cabañas (not paved, no railroad) 40 kms.	11.00	28	11.2

Source: Transport Mission, based on information gathered directly from private transport operators.

/Trailers



Trailers are not very common, although great savings in operating costs could be made through their use. There are only 100 vehicles of this type in the country.

The use of Diesel motors has not become widespread owing to the high initial cost of trucks of this type, to the higher tax to which they are subject, and to the lack of specialized technical services which would be required.

As a general rule, transport operators own only a few vehicles each and sometimes a single one. There are only a few companies with a large fleet of trucks, and there is vigorous competition among them, which results in low rates. Except in a few cases, producers and merchants prefer to utilize these public road transport services, for they are cheaper than using their own vehicles. Ordinary trucks operating as passenger vehicles are often found in intercity areas.

There is a marked tendency among operators to overload their vehicles, which gives rise to frequent damage and breakdowns. The lack of weighing stations along the roads and highways makes it difficult to enforce traffic regulations governing weights. This results in cut-throat competition as well as in irregular and inefficient service. Perhaps herein lies the cause for the increase in the use of animal traction, even though the cost of transportation by ox-cart is estimated approximately at 0.50 colones per ton-km. (\$0.20).

All of these difficulties and disadvantages contribute toward making the trucking business a very risky one in El Salvador. In

/general,

general, the rates now charged do not yield a return adequate to the capital invested. On the other hand, however, it would not be beneficial to the country for the rates to be raised. Therefore, a solution will have to be sought which will not only provide an improvement in service, but also take into account in a satisfactory way the financial situation of the operators.

Passenger bus services are regulated insofar as fares and routes are concerned,<sup>1/</sup> and for this reason a regular and efficient service is provided. There are 300 intercity bus services now operating, using 900 vehicles, including the "rapid services",<sup>2/</sup> which use 7-passenger automobiles in direct trips between important towns. The most common type of bus used has a seating capacity of 20 to 25, and furnishes not only passenger service, but also carries the various articles which the passengers bring with them to market -- grain, fruit, vegetables, fowl, etc. -- and all kinds of merchandise brought back on the return trip. These mixed passenger and freight vehicles fill a special need in the rural areas, and offer a highly useful service. The main objection to them is the poor safety and hygienic conditions brought about by putting together passengers, animals and freight. There are few localities where roads exist that do not have bus service. Bus fares, averaging less than 1 cent per passenger-km., are reasonable, especially taking into consideration the high operating costs. (See Table 3/4.)

<sup>1/</sup> Decree No. 161, Reglamento de Transportes para Autobuses).

<sup>2/</sup> "Rapid service" fares run 20% to 40% higher than those charged by ordinary passenger buses.

/The disadvantages

The disadvantages of these services are their irregularity, the excessive number of passengers, and the bad condition of the vehicles in general.

Table 34

El Salvador: Intercity Passenger Bus Fares, 1951

<u>From San Salvador to:</u>	<u>Kilometers</u>	<u>Fare</u>	<u>Per Passenger-Kilometer</u>	
			<u>colones</u> (centavos)	<u>Dollars</u> (cents)
Santa Tecla	10	0.20	0.02	0.0075
La Libertad	36	1.00	0.03	0.01
San Vicente	60	1.00	0.015	0.005
Zacatecoluca	56	1.00	0.02	0.0075
La Herradura	61	1.00	0.015	0.005
Santa Ana	66	0.75	0.01	0.005
Ahuachapán	101	1.50	0.015	0.005
Sonsonate	65	1.00	0.015	0.005
Acajutla	87	1.50	0.015	0.005
San Miguel	138	2.00	0.015	0.005
Usulután	110	2.00	0.02	0.0075
La Unión	184	3.00	0.015	0.005
Teotepique	41	3.00	0.07	0.03
Quezaltenango	27	0.50	0.015	0.005
Chalatenango	78	1.50	0.02	0.01
Sensuntepeque	90	2.50	0.025	0.01
Citalá	96	3.50	0.035	0.015

Source: Servicio de Transportes Interurbanos. Fares and number of vehicles. Dirección General de Minas, Comercio e Industria, San Salvador, September 19, 1951.

Urban services cannot be compared with interurban services.

In San Salvador there are about 200 old buses in bad condition. They sometimes belong to the drivers themselves, who are organized into cooperatives. In 1951 these services carried a daily average of 162,545

/passengers

passengers (approximately 50 million passengers a year). The reason advanced to justify the poor passenger service is the low fare charged: 7 centavos, which is 2.8 cents. Before the war, the fare was 5 centavos. This fare is far out of balance with present costs, since operating costs have gone up 200%. The government is studying the problem in order to find a solution which will protect both the interests of the public and of the operators.

City taxi service is satisfactory, and the vehicles are in good condition, but the fares are high. As the rates are not displayed in any way in the taxis, there are often abuses in the amounts charged.

There are few regulations and little official control over highway transport in El Salvador. Passenger fares and routes are fixed by the Dirección General de Minas, Comercio e Industria, and the inspection and licensing of vehicles is controlled by the Departamento General de Tránsito of the Ministry of Defence; but there is no control whatsoever over freight transport, nor is there an organization in charge of coordinating the road and highway transport system with the other systems. Neither is there any organization of truck operators trying to develop the industry and ready to discuss transport problems with the government and other trucking companies. There is no automobile association. There is, however, an organization of bus drivers, but its activities are limited to discussion of labor and wage problems. There is no compulsory vehicle, passenger, or freight insurance.

APPENDIX I

EL SALVADOR: ROAD NETWORK. 1. ALL-WEATHER ROADS

Roads	Length in Kilometers		
	Total	Paved	Graveled and Surfaced
1. Inter-American Highway (I.A.H.): (Guatemala lan border-San Salvador-Hondurean border)	307	273	34
2. Santa Ana-Ahuachapán	35	35	—
3. Santa Ana-Sonsonate	45	10	35
4. Sonsonate-Ahuachapán-Las Chimamas-Río Paz <sup>a/</sup>	59	—	59
5. Santa Ana-Tezistepeque	17	—	17
6. El Congo-Iago Coatepeque	8	8	—
7. Coatepeque towards Izalco	18	—	18
8. Junction Km.19 West I.A.H.-Sonsonate	43	43	—
9. Junction Km.27 Highway No.8-El Bebedero	3	—	3
10. Sonsonate-Acajutla	22	22	—
11. Junction Km.17 Highway No.10-Los Cóbano	9	—	9
12. El Triángulo-La Libertad	27	27	—
13. San Salvador-Puerto Lempira-La Palma-Citalá <sup>b/</sup>	96	5	91
14. San Salvador-Quetzaltepeque (Detour Highway No.13)	13	—	13
15. San Salvador-Zacatecoluca-San Marcos Lempa	79	65	14
16. San Salvador-Planes de Renderos	10	10	—
17. Soyapango-Tonacatepeque-Suchitoto	38	—	38
18. Junction Km.12, East, I.A.H. -Apulo	6	6	—
19. Junction Km.42 Highway No.15-La Herradura	19	10	9
20. San Rafael Cedros-Ilobasco-Chorrera del Guayabo <sup>c/</sup>	50	—	50
21. Ilobasco-Sensuntepeque	32	—	32
22. Junction Km.56, East, I.A.H.-San Vicente	2	2	—
23. Usulután-Santiago de María-El Triunfo	35	22	13
24. Berlín-Santiago de María-Jucuapa-Chinameca	25	—	25
25. Berlín-Mercedes Umaña-Km.10, East I.A.H.	12	0.5	11.5
26. Nueva Granada-Km.105, East, I.A.H.	4	—	4
27. Jucuapa-San Buena Ventura-Km.114, East I.A.H.	4	—	4
28. Chinameca-Nueva Guadalupe-Km.118, East I.A.H.	4	—	4
29. San Miguel-San Jorge	26	—	26
30. San Miguel-El Amate	13	—	13
31. San Miguel-Río de San Miguel-El Delirio	16	—	16
32. Military Route: San Miguel-Santa Rosa Km.204, East, I.A.H.	51	7	44
33. Santa Rosa-Nueva Esparta-Polorós	24	—	24
34. Sirama-La Unión	8	8	—
35. "Military Route"-San Francisco Gotera	13	—	13
	<u>Totals: 611,173</u>	<u>553.5</u>	<u>619.5</u>

Source: Transport Mission, from official data.

a/ International route to Guatemala

b/ International route to Honduras

c/ Links the I.A.H. with the Río Lempa hydroelectric plant

APPENDIX II

EL SALVADOR: ROAD NETWORK. 2. PRIMARY AND SECONDARY  
 DRY-WEATHER ROADS, OR ROADS PASSABLE WITH  
 DIFFICULTY THE YEAR ROUND

<u>Roads</u>	<u>Length in Kms.</u>
1. El Congo-Izalco	12.0
2. Santa Ana-San Luis	15.0
3. Detour of Santa Ana-Ahuachapán road to San Sebastián	2.6
4. El Refugio-El Arado	5.0
5. Atiquizaya-San Lorenzo	8.4
6. Atiquizaya-Turín	1.3
7. Chalchuapa-Las Cruces	9.0
8. Ahuachapán-San Ramón-Apaneca	15.0
9. Ahuachapán-Tacuba-San Francisco-Méndez	42.0
10. Ahuachapán-Cashal	8.0
11. Tacuba-Ataco	18.0
12. Detour of Ahuachapán-Sonsonate road to Salcoatitán	0.9
13. Ataco-Barra de Santiago	31.0
14. Ataco-Jujutla-Gaymango	22.0
15. Apaneca-Santo Domingo	28.0
16. Salcoatitán-Santa Catarina Masahuat	6.0
17. Sonsonate-Santo Domingo	10.1
18. Juayúa-La Majada-Los Naranjos	12.0
19. Santa Ana-Metapán	47.0
20. Armenia-San Julián	17.9
21. Detour of Inter-American Highway-Sonsonate to Caluco	2.2
22. Sonsonate-Nahuilingo	1.9
23. Acajutla-Metalillo-La Hachadura	42.0
24. Detour of Inter-American Highway-Sonsonate to San Julián	7.7
25. Atiquizaya-El Refugio-El Salitrero	10.0
26. Ahuachapán-Apunía	10.0
27. Detour of Santa Ana-Ahuachapán road to El Porvenir	13.0
28. Chalchuapa-El Trapiche	1.5
29. Detour of Inter-American Highway to El Porvenir	2.3
30. Ahuachapán-Los Ausoles	4.0
31. Sonsonate-San Antonio del Monte	1.2
32. Detour of San Salvador-Puente Lempira road to Paisnal	6.4
33. Zaragoza-San José Villanueva	5.0
34. Detour of San Salvador-Zacatecoluca-Lempa road to San Pedro Masahuat and San Miguel Tepezontes	19.4
35. Detour of San Salvador-Zacatecoluca-Lempa road to San Pedro Nonualco	17.0
36. Detour of San Salvador-Zacatecoluca-Lempa road to San Juan Talpa and Olocuilta	10.0
37. La Cuchilla-Las Hojas	17.2

/38. Detour

<u>Roads</u>	<u>Length in Kms.</u>
38. Detour of San Salvador-Estero de Toluca road to Casa Piedra	0.5
39. Detour of Inter-American Highway to Opico and Tacachica	26.0
40. San Juan Opico-San Matías-Quezaltepeque	14.3
41. Ciudad Arce-Zapotitán	4.0
42. Sitio del Niño-Quezaltepeque	11.2
43. Santa Tecla-Quezaltepeque	22.0
44. Mejicanos-San Juan Los Planes	12.0
45. Ilopango-Asino	6.5
46. Detour of Inter-American Highway to San Martín	0.5
47. Detour of San Salvador-Zacatecoluca-Lempa Road to Texacuango and Analquito	12.1
48. Chinamequita-Comalapa	13.0
49. La Libertad-Comalapa	35.0
50. Los Aguilares-Suchitoto	2.0
51. San Salvador-Huizúcar	16.0
52. La Joya-Huizúcar	13.5
53. Santa Tecla-Jicalapa	44.8
54. Detour of Santa Tecla-Jicalapa road to Comasagua	3.0
55. Ateos-Jayaque	13.3
56. Ateos-Tepecoyo	7.3
57. Detour of Inter-American Highway-Sonsonate to Sacacoyo	3.0
58. Detour of Santa Tecla-Jicalapa road to Jayaque	1.0
59. Juan Higinio-Chiltiupán	10.7
60. Detour of Santa Tecla-Jicalapa road to Tamanique	10.2
61. Detour of Inter-American Highway to San Antonio Abad	3.1
62. Detour of Inter-American Highway-La Libertad to Santa Tecla	2.5
63. San Salvador-El Ángel	16.0
64. Detour of San Salvador-Zacatecoluca-Lempa road to Tecoluca	4.0
65. Santo Tomás-Asino	6.0
66. Mejicanos Cuscatancingo	1.5
67. Olocuilta-Plan de las Delicias	10.5
68. Chuchucato-Talnique	14.2
69. Tepecoyo-Las Tinieblas	9.7
70. Santa Tecla-San Jerónimo-San Juan Los Planes	10.0
71. La Libertad-El Zunzal	9.2
72. Zacatecoluca-Baños Ichanmichen	1.4
73. San Juan Nonualco-Cantón El Chile	10.0
74. Zacatecoluca-El Caballito	--
75. Chalatenango-Las Vueltas-Ojo de Agua	24.0
76. Hacienda Amaya-Nueva Concepción-Río Lempa	36.0
77. Chalatenango-Las Flores-Arcatao	32.0
78. El Limón-Petapa-Hondurean border	40.0
79. Río Grande-Dulce Nombre de María-Hondurean border	48.0
80. Río Grande-El Paraíso-Tejutla	14.0
81. El Salitre-La Reina	6.0
82. Metayate-Agua Caliente	12.0
83. San Rafael-San Francisco Morazán-Tremedal	12.0
84. Tejutla-San Juan-Hondurean border	36.0

/85. El Morrito

<u>Roads</u>	<u>Length in Kms.</u>
85. El Morrito-La Laguna-Hondurean border	24.0
86. Barcoje San Cayetano-Bosque-San Francisco Lempa-Potonico	16.0
87. San Francisco Lempa-Azacualpa-La Muca	12.0
88. La Cruz-El Gramal-Potonico	12.0
89. El Gramal-San Antonio Los Ranchos-Cancasque	12.0
90. Chalatenango-San Miguel de Mercedes-Río Lempa	20.0
91. Aracateo-Nombre de Jesús-Chorrera del Guayabo Dam	10.0
92. Detour of Puente Lempira-Citalá road to Tejutla	1.0
93. Detour of San Rafael Cedros-Ilobasco road to Tejutepeque	10.0
94. Ilobasco-Cinquera	16.0
95. Sensuntepeque-Puerto San Pedro	16.0
96. Sensuntepeque-La Providencia	22.0
97. Detour of Sensuntepeque-La Providencia road to Puerto Santa Lucía	20.0
98. Sensuntepeque-San Ildefonso	20.0
99. Detour of Ilobasco-Chorrera del Guayabo road to Poza del Silencio	10.0
100. El Sillero-Río Lempa	21.6
101. Suchitoto-Los Aguilares	21.0
102. San Martín Montepeque	16.0
103. Detour of Inter-American Highway to San Pedro Perulapán	4.0
104. Cojutepeque-Lago de Ilopango	9.0
105. San Ramón-San Vicente	21.0
106. San Ramón-Analquito	5.0
107. Detour of Cojutepeque-Lago de Ilopango road to San Cristóbal	5.5
108. Santa Cruz Michapa-Tenancingo	20.5
109. Detour of San Rafael Cedros-Ilobasco road to El Rosario	6.0
110. Detour of Inter-American Highway to Santo Domingo and San Sebastián	5.0
111. San Vicente-Verapaz-Guadalupe-El Chile	21.0
112. San Vicente-San Sebastián	14.0
113. Apastepeque-San Ildefonso	29.0
114. Detour of Ilobasco-Sensuntepeque road to Santa Clara	24.0
115. San Vicente-San Nicolás Lempa	29.0
116. Tecoluca-El Payón	13.0
117. Detour of Inter-American Highway to La Laguna and Santa Clara	5.0
118. Usulután-Jucuarán-El Espino	35.0
119. Inter-American Highway-Jucuapa-Usulután	21.9
120. Usulután-Puerto Parada	11.0
121. Usulután-San Dionisio	9.0
122. Jiquilisco-Puerto El Triunfo	8.0
123. Valle San Juan-San Francisco Javier	8.4
124. Berlín-Cantón Linares	20.0
125. Berlín-Mechotique	17.0
126. Berlín-Loma Alta	13.0
127. Antiguo Santiago de María-Jucuapa	8.9
128. Estanzuelas-San Juan Nuevo Edén	27.0

/129. Detour



<u>Roads</u>	<u>Length in Kms.</u>
129. Detour of Inter-American Highway to Lolotique	2.5
130. Chapeltique-Sesori	15.6
131. Ciudad Barrios-Carolina	14.0
132. Detour of Ciudad Barrios-Carolina road to San Luis de la Reina	8.6
133. El Palmital-La Poza	6.5
134. Gualache-San Francisco Javier	9.0
135. Santa Elena-California	10.8
136. Carolina-Hondurean border	7.0
137. San Luis de la Reina-San Gerardo	10.0
138. Inter-American Highway-Estanzuelas	11.0
139. Berlín-San Agustín	12.0
140. San Agustín-Valle San Juan	9.0
141. Inter-American Highway-Chapeltique	16.0
142. Inter-American Highway-El Volcán de San Miguel	8.0
143. Chinamaca-San Jorge-San Rafael Oriente	18.0
144. Usulután-El Amate	20.0
145. El Delirio-El Cuco	23.0
146. Detour of San Miguel-Usulután road to El Delirio	12.0
147. Detour of Inter-American Highway to San Alejandro	10.0
148. San Francisco Gotera-Jocoro	12.0
149. San Francisco Gotera-Chapeltique	24.0
150. San Francisco Gotera-Jocoaitique	32.0
151. Detour of Inter-American Highway to Playa El Tamarindo and El Faro	22.0
152. La Unión-Conchagua	6.0
153. La Unión-Cutuco	2.5
154. La Unión-Playitas	10.0
155. La Unión-Amapalita	4.0
156. Gotera-Cacaopera	12.0
157. El Sauce-Concepción de Oriente	17.0

Source: Dirección de Caminos, Ministerio de Fomento y Obras Públicas.

APPENDIX III

EL SALVADOR: FEEDER ROADS

FIRST ZONE: Departments of Ahuachapán,  
 Santa Ana and Sonsonate

	Length in Kms
Santa Ana-Flor Amarilla	5.0
Santa Ana-Potrerrillos	5.0
Santa Ana-Tres Caminos	9.0
Santa Ana-Piedra Pacha	6.0
Santa Ana-Loma Alta	5.0
Detour of Inter-American Highway to El Cristo	12.0
Detour of Inter-American Highway to San Juan Buena Vista	7.0
Detour of Inter-American Highway to Las Aradas	7.0
Detour of Inter-American Highway to El Jocotón	6.0
Detour of Inter-American Highway to El Limón	8.0
El Congo-San Juan Opico	10.0
Atiquizaya-Peñance-Tapacum	8.0
Chalchuapa-Guatemalan border	21.0
Ahuachapán-Ishapuco	8.0
Ahuachapán-Agua Shuca-El Arenal	9.0
Turín-Santa Rita	8.0
Detour of Acajutla road-La Hachadura	20.0
Detour of Apaneca road-Santo Domingo to Salcoatitán	4.0
Las Cruces-Buenos Aires	6.0
Agua Caliente-Guarnevia	7.0
Detour of Santa Ana road-Metapán to San Antonio el Pajonal	20.0
Metapán-La Majadita	8.0
Metapán-Ostúa	12.0
San Luis-Los Apoyos	10.0
Armenia-Los Mangos-La Preza	12.0
Detour of El Bebedero road-San Julián to los Lagartos	4.0
San Julián-Cuisnahuat	8.0
San Isidro-Izalco	20.0
Detour of Sonsonate road-Acajutla to Salinas de Ayacuchapa	14.0
San Luis Nancintepeque	14.0
San Julián-Ishuatán	8.0
Armenia-Azacualpa-Guayabo	10.0
Agua Caliente-TeXistepeque	13.0
TeXistepeque-Masahuat	8.0
Santa Ana-La Parada	20.0
Apaneca-Laguna Verde	6.0
Turín-Buena Vista-San Juan de Dios	12.0
Ahuachapán-Acacalio-Santa Rosa	8.0
Ahuachapán-Palo Pique	9.0
Ahuachapán-El Playón	3.0

/Atiquizaya-

	<u>Length in Kms.</u>
Atiquizaya-San José	6.0
La Puerta-Tacuba	4.0
Izalco-Cruz Verde-Talconunca	5.0
Armenia-El Cerro	12.0
Santa Ana-Primavera	6.0
Santa Ana-La Montañita	15.0
Santa Ana-Empalizada	3.0
Callejón del Diablo-Aldea San Antonio	1.0
El Portezuelo-Pinalito	11.0
Chalchuapa-Guachipilín	10.0
Izalco-Cruz Grande	5.0
Santa Ana-El Pinalito	20.0
Santa Ana-Palo Campana	23.0
Apaneca-La Malinche	4.0
Detour of Inter-American Highway to Los Conacastes	6.0
Atiquizaya-El Naranjo	8.0
San Julián-Peña Blanca-El Balsamar	6.0
El Chapín-El Jocotón	4.0
Ahuachapán-Chapilapa	6.0
Ahuachapán-La Labor	8.0
Turín-Cuyanaczul	6.0
Apaneca-El Saltillal	5.0
Ahuachapan-El Arenal	2.0
Santa Ana-Las Canoas	3.0
	<hr/>
	Total (First Zone) 569.0
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SECOND ZONE: Departments of San Salvador,  
 La Libertad and La Paz

San Salvador-San Antonio Abad	2.5
La Calavera-San Antonio Abad	4.1
Detour of Inter-American Highway to San Antonio Abad	3.0
San Salvador-Chantecuan	2.5
Mejicanos-Zacamil	3.0
Mejicanos-San Roque	3.0
Mejicanos-Chancala	3.0
Mejicanos-Delicias del Norte	2.0
Mejicanos-San Miguel	2.0
Mejicanos-Ayutuxtepeque	2.0
Mejicanos-Cuscatancingo	2.0
Villa Delgado-Cantón La Cabaña to the junction with the Inter-American Highway-Tonocatepeque	8.0
Villa Delgado-Arenal-El Callejón	9.0
Villa Delgado-San Laureano	4.0
Villa Delgado-Cantón Milingo-Cantón Chaquíte	2.0
Villa Delgado-Paleca-Río Urbina	1.0
Cuscatancingo-San Salvador	1.0

/Cuscatancingo-

	<u>Length in Kms</u>
Cuscatancingo-Apopa	1.5
Cuscatancingo-Villa Delgado	1.0
Cuscatancingo-Nejapa	1.5
Ayutuxtepeque-Apopa	1.0
Ayutuxtepeque-Los Llanitos	4.0
Ayutuxtepeque-La Trinidad	3.0
Ayutuxtepeque-El Zapote	4.0
Tonacatepeque-El Rosario	4.0
Tonacatepeque-Las Flores	6.0
Tonacatepeque-El Tránsito	4.0
Tonacatepeque-El Sauce	4.0
Tonacatepeque-Malacoff	4.0
Tonacatepeque-La Fuente	5.0
Tonacatepeque-La Unión	8.0
Tonacatepeque-Veracruz	10.0
Guazapa-Cantón Nance Verde-San José Guayabal	4.5
Guazapa-Cantón Loma de Ramos-San Lucas	11.0
Guazapa-Cantón San Jerónimo-San Cristóbal	8.0
Guazapa-Zacamil-Railroad station	4.0
Guazapa-Cantón Calle Nueva-Apopa	6.0
Guazapa-Nejapa	3.0
Detour of Inter-American Highway to Cantón La Palma	4.0
San Martín-Cantón El Sauce	4.0
San Martín-Cantón La Flor	3.0
San Martín-Cantón Las Delicias	4.0
San Martín-Cantón San José	8.0
San Martín-Cantón El Rosario	3.0
Cantón San José-Delicias	2.0
Cantón Rosario-Oratorio de Concepción	5.0
San José-San Bartolomé Perulapia	3.0
Cantón El Rosario-Malacoff	3.0
Apopa-El Angel	2.6
Apopa-Guadalupe	8.1
Apopa-Las Delicias	7.1
Apopa-Suchinango	7.1
Apopa-Joya Grande	7.6
Apopa-San Nicolás	5.9
Nejapa-Cantón Galera Quezada	3.0
Nejapa-Cantón Conacaste	3.0
Nejapa-Cantón Salitre	5.0
Nejapa-Cantón Camotepeque	8.0
Nejapa-Cantón Tutultepeque	8.0
Nejapa-Cantón El Bonete	8.0
El Paisnal-Quezaltepeque	5.0
El Paisnal-San Pablo-Taeachico	10.0
El Paisnal-Nueva Concepción(southwest bound)	10.0
El Paisnal-Nueva Concepción (north bound)	12.0
El Paisnal-La Reina	12.0
El Paisnal-Suchitoto	10.0
El Paisnal-San Matías	8.0

/Ilopango-

	<u>Length in Kms.</u>
Ilopango-Cantón San Bartolo	6.0
Ilopango-Cantón Apulo	3.0
Ilopango-Cantón Changgallo	4.0
Aguilares-Cantón Las Tunas	4.0
Aguilares-Cantón Las Pampas	2.0
Aguilares-Los Mangos-El Paisnal	4.0
Santo Tomás-El Ciprés-Las Casitas-El Guaje	5.0
Santo Tomás-El Carmen	3.0
El Terreno-Soyapango	3.0
Chaltepe-Caña Brava	4.0
Cantón Porvenir-Potreriillos	3.0
Santo Tomás-Caña Brava	3.0
Santo Tomás-Cantón Potreriillos	6.0
Panchimalco-Los Palones	3.0
Panchimalco-Los Planes de Renderos	4.0
Panchimalco-El Guayabo	8.0
Panchimalco-El Cedro	13.0
Panchimalco-La Loma y Media	10.0
Panchimalco-Quezalapa	4.0
Panchimalco-Amayo	13.0
Panchimalco-Las Delicias	24.0
Panchimalco-Córdoba	11.0
Panchimalco-Los Troncones	9.0
Panchimalco-San Isidro	6.0
Panchimalco-Azacualpa	9.0
Panchimalco-Los Pajales	8.0
Panchimalco-Panchimalquito	12.0
Santiago Texacuangos-Asino	7.0
Santiago Texacuangos-Joya Grande	6.0
Santiago Texacuangos-Chaltipa	8.0
Santiago Texacuangos-Río Grande	7.0
Detour of San Salvador road-Zacatecoluca to Santiago Tex.	6.0
Santiago Texacuangos-El Morro	5.0
Santiago Texacuangos-Finca Santa Rosa	4.0
Santiago Texacuangos-El Morro (by way of the cemetery)	2.0
Santiago Texacuangos-Cantón La Cuchilla	8.0
Rosario de Mora-Huizúcar	3.0
Rosario de Mora-Loma y Media	2.0
Rosario de Mora-San Ramón	3.0
San Marcos-San José Ahuatitán	10.0
San Marcos-Casa de Piedra	7.0
San Marcos-Planes de Renderos	3.0
San Marcos-Cerro Amatepec	1.5
San Marcos-Caserío El Pepeto	1.0
San Marcos-Caserío Jiltepeque	0.9
San Marcos-Loma Larga	4.0
Guadalupe-El Mangal	3.0
San Marcos-Casa de Piedra (by way of Los Planes de Renderos)	6.0
Planes de Renderos-Loma Larga	3.0
Planes de Renderos-Cantón Cerro Amatepec	3.0

/Planes de

	<u>Length in Kms.</u>
Planes de Renderos-Caserío Jiltepeque	2.0
Planes de Renderos-Caserío El Pepeto	2.5
Nueva San Salvador-Cantón Alvarez	2.0
Nueva San Salvador-El Limón	5.0
Nueva San Salvador-El Sacasil	8.0
Nueva San Salvador-El Matazano	4.0
Nueva San Salvador-El Progreso	12.0
Nueva San Salvador-Las Granadillas	6.0
Nueva San Salvador-Los Amates	8.0
Nueva San Salvador-Los Pajales	32.0
Nueva San Salvador-Victoria	4.0
Nueva San Salvador-El Triunfo	30.0
Nueva San Salvador-Loma Larga	12.0
Nuevo Cuscatlán-San José Villanueva	13.0
(Antiguo) San Salvador-Santa Tecla	2.0
Huizúcar-Cantón Tilapa	12.0
Huizúcar-Imequiles	4.0
Huizúcar-San Juan Buenavista	16.0
Huizúcar-La Lima	8.0
Huizúcar-Nazareth	16.0
Huizúcar-Ojo de Agua	12.0
Teotepeque-Finca Los Trozos	16.0
Teotepeque-Cantón Los Izotes	20.0
Teotepeque-Mizata	24.0
Teotepeque-El Nispero	18.0
Teotepeque-Sihuapilapa	24.0
Chiltiupán-Tamanique	8.0
Chiltiupán-Teotepeque	5.0
Chiltiupán-Port of La Libertad	16.0
Jicalapa-Cantón La Perla	4.0
Jicalapa-Cantón La Argentina	4.0
Jicalapa-Cantón El Tablón	4.0
Jicalapa-Chiltiupán	8.0
Colón-Cantón El Cobanal	5.0
Colón-Cantón Las Moras	2.0
Colón-Cantón El Botoncillal	3.0
Colón-Cantón Las Angosturas	3.0
Colón-Cantón El Capulín	2.0
Comasagua-Cantón El Tránsito-Caserío Margarita	2.0
Comasagua-La Cumbre	4.0
Comasagua-Cantón Conacaste	4.0
Comasagua-La Shila	12.0
Jayaque-Cantón La Labor	10.0
Jayaque-Cantón Las Flores	11.0
Jayaque-Juan Higinio	4.0
Jayaque-La Gloria	3.0
Jayaque-Santa Inés	3.0
Jayaque-Finca El Valor	3.0
Quezaltepeque-Cantón San Juan Los Planes	12.0

/Quezaltepeque-

	<u>Length in Kms</u>
Quezaltepeque-Cantón Macance	10.0
Quezaltepeque-El Señor	3.0
Quezaltepeque-San Francisco	8.0
Quezaltepeque-Sitio de los Nejapas	12.0
Quezaltepeque-Cantón Segura	16.0
Quezaltepeque-Tacachico	12.0
Quezaltepeque-Las Mercedes	10.0
Quezaltepeque-Girón	6.0
Quezaltepeque-Platanillos	4.0
Quezaltepeque-El Puente	4.0
Quezaltepeque-Primavera	3.0
Quezaltepeque-Santa Rosa	4.0
Villa de La Libertad-Cantón El Cimarrón	7.0
Villa de La Libertad-Tepeagua	5.0
Villa de La Libertad-San Diego	8.0
Villa de La Libertad-San Dieguito	13.0
Villa de La Libertad-La Cangrejera	20.0
Villa de La Libertad-Buenos Aires	11.0
Villa de La Libertad-San Rafael	6.0
Villa La Libertad-Majahual	10.0
San José Villanueva-Las Dispensas	3.0
San José Villanueva-El Matazano	5.0
San José Villanueva-Tula	4.0
San José Villanueva-Santa Emilia-Tula	4.0
San José Villanueva-El Escalón	3.0
San José Villanueva-Huizúcar	0.2
San José Villanueva-Escalón al Banco	3.0
San José Villanueva-Puerta Azul	4.0
Sacacoyo-Cantón La Montañita	2.0
Sacacoyo-Cantón Ticuma	2.0
Sacacoyo-Cantón Carrizo	3.0
Antiguo Cuscatlán-Monserrat	2.0
Zaragoza-Cantón El Zaité	3.0
Zaragoza-Cantón Asuchillo	4.0
Zaragoza-Cantón La Pilona	1.0
Zaragoza-Río San Antonio	1.0
Zaragoza-La Vuelta del Corralito	2.0
Tacachico-Cantón San Isidro	13.0
Tacachico-Cantón Mogotes	12.0
Tacachico-Cantón Obraje Nuevo	10.0
Tacachico-San Juan Opico	2.0
Tacachico-Atiocoyo	10.0
Tacachico-El Tránsito	9.0
Tacachico-Los Mangos	1.0
Ciudad Arce-Cantón Las Acostas	5.0
Ciudad Arce-Las Cruces	4.0
Ciudad Arce-Santa Rosa	6.0
Ciudad Arce-La Chilla	5.0
Ciudad Arce-El Espino	4.0

/Ciudad Arce-

	<u>Length in Kms.</u>
Ciudad Arce-Cantón Caña de Tarro	5.0
Ciudad Arce-Cantón San Andrés	6.0
Ciudad Arce-Cantón Las Lomas	10.0
Ciudad Arce-El Conacaste	8.0
Ciudad Arce-La Esperanza	2.0
Ciudad Arce-La Joyita	2.0
Ciudad Arce-La Reforma	3.0
Ciudad Arce-Zapotitlán	5.0
Ciudad Arce-Veracruz	8.0
Ciudad Arce-Caserío Los Mangos	3.0
Ciudad Arce-Caserío San Pedro	2.0
San Juan Opico-Cantón Agua Escondida	8.0
San Juan Opico-Chanmico	10.0
San Juan Opico-El Mutazano	11.0
San Juan Opico-Sitio Grande	12.0
San Juan Opico-Las Granadillas	14.0
San Juan Opico-Las Delicias	16.0
San Juan Opico-El Jabalín	15.0
San Juan Opico-Belén	17.0
San Juan Opico-Sitio del Niño	9.0
San Juan Opico-San Felipe	6.0
San Juan Opico-Minas de Picmo	7.0
San Juan Opico-La Encarnación	9.0
San Juan Opico-El Castillo	12.0
San Juan Opico-Nombre de Dios	11.0
San Juan Opico-Buena Vista	10.0
San Juan Opico-San José La Cueva	12.0
San Juan Opico El Carmen	13.0
San Juan Opico-Barranca Honda	11.0
San Juan Opico-Los Amates	3.0
San Juan Opico-Tehuicho	5.0
San Juan Opico-San Antonio	9.0
San Juan Opico-San Pedro Mártir	8.0
San Juan Opico-San Pedro Oriente	5.0
San Juan Opico-Lomas de Santiago	7.0
Tamánique-Chiltiupán	16.0
Tamánique-Comasagua	16.0
Tamánique-Port of La Libertad	8.0
Villa de San Matías-Cantón El Jocote	3.0
Villa de San Matías-Santa Rosa	8.0
Villa de San Matías-Masajapa	2.0
Villa de San Matías-El Jícaro	2.0
Villa de San Matías-Santa Teresa	12.0
Villa de San Matías-Las Anonas	8.0
Villa de San Matías-La Loma	3.0
Tepecoyo-La Javia	4.0
Tepecoyo-El Carrizo	4.0
Tepecoyo-San Antonio	5.0
Tepecoyo-Los Laureles	5.0

/Tepecoyo-



	<u>Length in Kms.</u>
Tepecoyo-El Guamo	6.0
Tepecoyo-El Zacamil	3.0
Tepecoyo-Caserío El Masugo	2.0
Talnique-Cantón Las Quebradas	4.0
Talnique-Cantón San Carlos	4.0
Talnique-Victoria La Peña	6.0
Cantón Penitente Abajo-Cantón Penitente Arriba	3.0
Cantón Penitente Arriba-Liévano	3.0
Cantón Amayo-Liévano-Tepechame	8.0
Zacatecoluca-Cantón Uluapa	3.0
Zacatecoluca-Piedra Grande Arriba	4.0
Zacatecoluca-San Rafael-Santa Lucía	4.0
San José-San Juan Nonualco	2.0
San Sebastián-Las Tablas-Escobal	20.0
Zacatecoluca-Cantón El Socorro	4.0
Zacatecoluca-Tienda El Espino	4.0
Zacatecoluca-San Marcos-San José de la Montaña	24.0
Zacatecoluca-San Francisco-Los Reyes	12.0
Zacatecoluca-Cantón Buenavista-Cantón Pineda	2.0
La Joya-Cantón Amatal	2.0
Zacatecoluca-Santa Lucía-El Carmen	2.0
Piedra Grande-Santa Lucía	2.0
San Rafael-Cantón San Lucas	3.0
San Marcos-Cantón El Desplomado	10.0
San Juan Nonualco-Cantón El Golfo	10.0
San Juan Nonualco-Tehuiste Arriba	9.0
San Juan Nonualco-El Pajal-Tehuiste Arriba	2.0
San Juan Nonualco-Tierra Colorada	3.0
San Juan Nonualco-Las Piedronas	3.0
San Juan Nonualco-Santa María Ostuma	1.5
San Juan Nonualco-Guadalupe Jerusalem	0.5
San Rafael Obrajuelo-La Palma	4.0
San Rafael Obrajuelo-La Longaniza	4.0
San Rafael Obrajuelo-San Jerónimo	6.0
San Rafael Obrajuelo-San Pedro Mártir-El Carago	4.0
Santiago Nonualco-La Herradura	20.0
Santiago Nonualco-San Francisco Porfiado	24.0
Santiago Nonualco-San Sebastián	16.0
Santiago Nonualco-San Pedro Nonualco	14.0
Cantón Amulunco-San Francisco Hacinda	4.0
Detour of Santiago Nonualco road-San Pedro Nonualco to Cantón Chancuyo	4.0
Detour of Santiago Nonualco road-San Pedro Nonualco to Santa Cruz Chacastal	4.0
Santiago Nonualco-San José Loma	9.0
Santiago Nonualco-Cantón Las Animas	14.0
San Pedro Nonualco-San Ramón	4.0
San Pedro Nonualco-El Roble	6.0
San Pedro Nonualco-La Carbonera	4.0

/San Pedro

	<u>Length in Kms.</u>
San Pedro Nonualco-Lazareto	3.0
San Pedro Nonualco-La Comunidad	6.0
San Pedro Nonualco-El Espino	4.0
San Pedro Nonualco-Hacienda Vieja	8.0
Santa María Ostuma-Paraíso de Osorio	4.0
Santa María Ostuma-San Pedro Nonualco	4.0
Santa María Ostuma-Cojutepeque	8.0
Santa María Ostuma-Verapaz	8.0
Santa María Ostuma-San Juan Tepezontes	4.0
El Rosario-Cantón El Pedregal	6.0
El Rosario-San Pedro Masahuat	8.0
El Rosario-Río Miraflores	1.5
El Rosario-Santón El Cerro	2.0
Paraíso de Osorio-Cojutepeque	2.0
Paraíso de Osorio-Santa María Ostuma	2.0
El Rosario-San Juan Tepezontes	5.0
San Juan Tepezontes-San Antonio Masahuat	2.0
San Juan Tepezontes-Cantón La Loma	4.0
San Juan Tepezontes-Santiago Nonualco	7.0
San Juan Tepezontes-San Pedro Nonualco	6.0
San Juan Tepezontes-San Emigdio	2.0
San Pedro Masahuat-Cantón La Sábana	3.5
San Pedro Masahuat-Cantón Barahona	5.0
San Pedro Masahuat-Las Delicias	5.2
San Pedro Masahuat-El Paredón	3.2
San Pedro Masahuat-Buena Vista	2.5
San Pedro Masahuat-San José	12.0
San Pedro Masahuat-El Porvenir	20.0
San Pedro Masahuat-Las Isletas	27.0
San Pedro Masahuat-Las Hojas	28.0
San Miguel Tepezontes-Laguna de Ilopango	2.0
San Miguel Tepezontes-Paraíso de Osorio	6.0
San Miguel Tepezontes-San Francisco Chinameca	4.0
Olocuilta-Panchimalco	6.5
Olocuilta-Panchimalquito	4.0
Olocuilta-San Francisco Chinameca	2.0
Olocuilta-Cantón Santo Tomás	8.0
Olocuilta-Cantón San José Buenavista	2.0
Olocuilta-San Antonio Girón	8.0
San Emigdio-San Miguel Tepezontes	4.0
San Emigdio-Santa Cruz Analquito	1.5
San Emigdio-Lago de Ilopango	5.0
San Antonio Masahuat-Cantón La Loma	4.0
San Antonio Masahuat-Belón	8.0
San Antonio Masahuat-La Estancia	9.0
Tapalhuaca-San Francisco Chinameca	4.0
Tapalhuaca-San Pedro Masahuat	4.0
Tapalhuaca-Cuyultitén	2.0
San Juan Talpa-Veracruz	6.0

/San Juan

	<u>Length in Kms.</u>
San Juan Talpa-Tobalón	3.0
San Juan Talpa-Comalapa	3.0
San Juan Talpa-Tajualaya	10.3
Cuyultitán-Tapaahuaca	2.0
Cuyultitán-La Farranca	2.0
Mercedes La Ceiba-Santa María Ostuma	1.5
Mercedes La Ceiba-Guadalupe	1.0
Mercedes La Ceiba-Jerusalem	<u>0.5</u>

Total (Second Zone) 2,394.0

THIRD ZONE: Department of Chalatenango

Detour of Chalatenango road-El Coyolito a los Cobanitos	10.0
San Francisco Morazán-Río Grande Tejutla	8.0
Guarjila-San Isidro Labrador	8.0
Corral de Piedra-San Isidro Labrador	6.0
Cayucc-San Antonio Lempa	12.0
Puente-Sumpul-San Antonio La Cruz-Chorrera El Guayabo	12.0
Nueva Trinidad-Maniquil-San Antonio La Cruz	<u>8.0</u>

Total (Third Zone) 64.0

FOURTH ZONE: Departments of Cuscatlán,  
Cabañas and San Vicente

Detour of Ilobasco road-Cinquera to Jutiapa	20.0
Oratorio-San José Guayabal	2.0
Detour of Cojutepeque road-El Lago to the outlet of Lake Ilopango	3.0
Detour of Inter-American Highway to Tenancingo	12.0
Detour of Inter-American Highway to Valle Jiboa	4.0
Detour of Inter-American Highway to Tepetitán	3.0
San Vicente-Parras Lempa	28.0
Detour of Inter-American Highway-San Sebastian to San Esteban	4.0
Puente Cuscatlán-San Ildefonso	10.0
Cinquera-Suchitoto	12.0
Detour of Inter-American Highway to San Felipe	6.0
San Isidro-Jiboa	3.0
Ilobasco-Azacualpa-San Francisco-Santa Rosa La Maraña	<u>31.0</u>

Total (Fourth Zone) 138.0

FIFTH ZONE: Departments of Usulután and  
San Miguel

Usulután-El Cerrito	6.0
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/Usulután-

	<u>Length in Kms.</u>
Usulután-Obrajuelo	6.7
Santiago de María-El Cementerio-California	4.0
Santiago de María-Batres-La Loma-Los González	3.0
Santiago de María-Cantón El Tigre	11.0
Santiago de María-Las Riveras	3.0
Santiago de María-Marquezado-Batres	4.0
Santiago de María-Cantón La Peña	8.0
Santiago de María-Batres-El Santo	3.0
Santiago de María-Joya-El Garbato	4.0
Santiago de María-Marquezado-Cantón El Tigre	4.0
Detour of Santiago de María road-Usulután to Las Barrancas	2.5
Santiago de María-Cantón San Fernando	4.0
Jucuapa-Cantón El Tapesquillo	5.0
Jucuapa-El Amatón	4.0
Jucuapa-El Chaguüite	3.0
Jucuapa-El Paraisal	2.0
Jucuapa-El Zapote	3.0
Jucuapa-Beneficio San José Chinameca	3.5
Jucuapa-Cantón Las Mariás-El Ratón	2.0
Jucuapa-Cantón Las Mariás-El Ojo de Agua-San Antonio	4.0
Jucuapa-Cantón Las Mariás-Oromontique	4.0
Los Arenales-La Peña-Plan Grande	3.0
Cantón Las Mariás-El Tapesquillo	3.0
Jucuapa-Cantón El Cerrito	4.0
Jucuapa-Cantón Loma de la Cruz	4.0
Santa Elena-Cantón Joya Ancha Arriba	6.0
Santa Elena-Cantón Joya Ancha Abajo	4.0
Santa Elena-Cantón El Zapote	4.0
Santa Elena-Cantón El Nisperal	3.5
Santa Elena-Cantón El Volcán	6.0
Santa Elena-Pueblo Ereguayquín	4.5
Santa Elena-Pueblo Santa María	3.0
Detour of Jucuapa road-Usulután to San Rafael Oriente	3.0
Alegria-Cantón Las Casitas	5.0
Alegria-Cantón Piedra Honda	3.5
Alegria-Cantón Yomo	5.0
Alegria-Cantón Potrerillos	4.5
Alegria-Cantón Guallinac	3.0
Alegria-Cantón El Quebracho	3.0
Alegria-Cantón El Yomo-El Quebracho	5.0
Tecapán-Cantón Gualache	5.0
Tecapán-Cantón El Cerro Verde	7.0
Tecapán-Cantón El Cerro Verde-Los Chapetones	13.0
Tecapán-Cantón Gualache-El Bongo-Jiquilisco	8.0
Tecapán-Gualache-Altos San Lorenzo	9.0
Tecapán-Cantón Los Chapetones	4.0
San Francisco Javier-Altos San Lorenzo	12.0
San Francisco Javier-La Pita-San Agustín	6.0
San Francisco Javier-Jiquilisco	8.0

/San Francisco

	<u>Length in Kms.</u>
San Francisco Javier-Cuyanizal	6.0
Detour of Gualache road-San Francisco Javier to Ozatlán	10.0
San Agustín-Las Tres Calles-San Marcos Lempa	12.0
San Agustín-Al Río-San Francisco Javier	8.0
Jiquilisco-Puerto Avalos	8.0
Jiquilisco-El Renquito	6.0
Jiquilisco-El Taburete-Jagual	5.0
Jiquilisco-El Taburete-Cantón Claros	6.0
Jiquilisco-Cantón El Hule Chacho	8.0
Jiquilisco-Los Campos	8.0
Jiquilisco-El Carrizal	6.0
Jiquilisco-El Coyolito	6.0
Jiquilisco-Aguacayo	5.0
Jiquilisco-El Paraíso	6.0
Jiquilisco-Salinas-El Potrero	6.0
Jiquilisco-La Canoa	20.0
Jiquilisco-Isla Mendoza	4.0
Jiquilisco-Bolívar	10.0
Jiquilisco-San Juan de Letrán	12.0
Jiquilisco-San Pedro	8.0
Jiquilisco-San Juan del Gozo	4.0
Ozatlán-El Palmital	2.0
Ozatlán-Las Trancas	7.0
Ozatlán-San Francisco Javier	5.0
Concepción Batres-San Antonio-El Espino	20.0
Concepción Batres-Railroad station	2.0
Jucuarán-El Espino	10.0
Jucuarán-La Cruz	4.0
Jucuarán-El Zapote	4.0
Jucuarán Samuria	6.0
Jucuarán-Gualora	2.0
Pueblo El Triunfo-Cantón El Aceituno	3.5
Pueblo El Triunfo-Cantón Los Espinos	3.5
Pueblo El Triunfo-Los Riños	2.0
Pueblo El Triunfo-Cantón La Cueva	3.0
Pueblo El Triunfo-Agua Ujuste	9.5
Pueblo El Triunfo-San Antonio-Los Novillos	12.0
Detour of Inter-American Highway to Estanzuelas	9.0
Estanzuelas-La Pintada	2.0
Estanzuelas-Puerto Joco	3.0
Estanzuelas-Hacienda San Jacinto	8.0
Estanzuelas-Corlantique	6.0
Estanzuelas-El Amatillo	9.0
Estanzuelas-San Sebastián	12.0
Estanzuelas-Sesori	18.0
Estanzuelas-Guayabito	8.0
Estanzuelas-Pasaquina and Hacienda Tecomatal	5.0
Estanzuelas-Cantón San Juan	4.0
Estanzuelas-Hacienda Condadillo	5.0

/Mercedes Umaña-

	<u>Length in Kms.</u>
Mercedes Umaña-Cantón La Montañita	5.0
Antiguo Mercedes Umaña-Jucuapa	8.0
Mercedes Umaña-La Barca	4.0
Santa Anita-Cantón El Jícaro	5.0
San Buenaventura-Las Jaguas-El Semillero	4.0
San Buenaventura-Nueva Guadalupe	5.0
San Buenaventura-Lolotique	2.0
San Buenaventura-La Caridad	6.0
San Buenaventura-Los Charecos	4.0
San Buenaventura-San Luis	3.0
Berlín-Cantón Virginia	2.0
Berlín-Cantón Los Chulupacos	3.0
Berlín-Cantón Colón	4.0
Puerto Parada-Puerto Flor	2.0
California-El Nisperal	4.0
California-Cantón Las Flores	2.0
Chapeltique-Cantón Trinidad	8.0
Chapeltique-Cantón Sontulín	3.0
Chapeltique-Cantón San Pedro	4.0
Chapeltique-Cantón Cacahuera	6.0
Chapeltique-Cantón Hualania	3.0
Chapeltique-Cantón Los Amates	7.0
Sesori-Cantón Las Mesas	8.0
Sesori-Cantón Mazatepeque	8.0
Sesori-Cantón Santa Rosa	4.0
Sesori-Cantón Minita	2.0
Sesori-Cantón Mariauara	8.0
Sesori-Cantón Petacones	24.0
Sesori-Cantón El Tablón	8.0
Sesori-Cantón Charlaca	7.0
Sesori-Cantón San Cristóbal	6.0
Carolina-San Luis de la Reina	4.0
Carolina-San Antonio	3.0
Carolina-Santa Clara	3.0
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	Total (Fifth Zone) 792.2
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SIXTH ZONE: Departments of San Miguel,  
 La Unión and Morazán

Moncagua-Quelepa	2.0
Detour of Inter-American Highway to Quelepa	1.5
Detour of San Miguel road-Usulután-El Delirio to Jucuarán	15.0
Inter-American Highway-El Colorado and El Hormiguero	16.0
Detour of the Military Route-San Francisco Gotera to San Carlos	2.0
Detour of the Military Route to El Divisadero	0.3
Detour of the Military Route to Bolívar	6.0

/Detour

	<u>Length in Kms.</u>
Detour of the Military Route to San José Chagüite	12.0
Detour of the Military Route to Agua Zarca	9.0
Detour of Inter-American Highway to Valle Alegre	6.0
Detour of Santa Rosa road-Inamorés to El Sauce	12.0
Detour of Inter-American Highway to Pasaquina	2.0
Detour of Inter-American Highway to Yayantique	10.0
Detour of Inter-American Highway to Olomega	10.0
Detour of San Francisco Gotera road-Jocaitique to Chilanga	2.0
Military Route to Sociedad and Corinto	29.0
Detour of Inter-American Highway to Yucuaiquín	12.0
Detour of San Francisco Gotera road-Jocaitique to Gualococti	12.0
Gualococti-San Simón	3.0
Detour of San Francisco Gotera road-Jocaitique to El Rosario	13.0
Detour of Inter-American Highway to El Jobo	8.0
La Morita-El Tránsito	12.0
Chinameca-El Copinol	2.0
Chinameca-El Pacayal	8.0
Detour of Inter-American Highway to El Caulote	4.0
Chinameca-El Boquerón-Las Marías	7.0
Santa Rosa-Montemayor	10.0
Delicias de Concepción-Hacienda California and Delicias de Concepción-Hacienda Calderón-Hacienda Quintanilla	11.0
Detour of Inter-American Highway to El Papalón	3.0
Chinameca-El Sambranal	3.0
Chinameca-La Bombeada	7.0
Chinameca-La Palma	4.0
Chinameca-El Pacayal-La Laguna	8.0
Chinameca-San Luis	2.0
Detour of Chinameca-La Bombeada to Las Mesas	7.0
Los Julianes-Amate de Amate de Agua	2.0
Detour of Inter-American Highway to Uluazapa	10.0
Detour of the Military Route to Comacarán	10.0
	<u>Total (Sixth Zone) 295.8</u>

Total of the six zones 4,253

Source: Dirección de Caminos, Ministerio de Fomento y Obras Públicas.

### Chapter III

#### HONDURAS

##### I. Introduction

The Republic of Honduras, located in the center of Central America, between 13° and 16° 30' north latitude and 83° and 89° 30' west longitude, has coastline on the Atlantic and the Pacific. Although it is the second largest in area of the Central American countries, it is one of the least populated. Its area is 115,205 square kilometers, and its population in 1950 was 1,428,089, which amounts to a density of 12.4 inhabitants per square kilometer. The gainfully employed population —631,500 persons— represents 44.2% of the total population.<sup>1/</sup>

The country is extremely mountainous. A chain of mountains crosses it from the Guatemalan border on the west to the Nicaraguan border on the east, having many ranges which cover almost all the country's area. Only on the Atlantic coast is there any considerable area of flat country, and even here it is broken up by the outcroppings of the mountains. Historical reasons (the Atlantic coast was for many centuries plagued by pirates) and climatic and sanitation problems caused the greater part of

<sup>1/</sup> Servicio Informativo del Banco Central de Honduras y del Banco Nacional de Fomento, Aspectos demográficos y económicos sociales de la población de Honduras. Tegucigalpa, May 1952, Tables 27 and 32. The figures from these tables, which are those used in the text, are adjusted figures and correct those of the Resumen general del Censo de Población of June 13, 1950.

/the population



the population to settle in the mountainous part of the country, in the numerous valleys. Only in recent decades has the coast experienced an appreciable economic activity and an increase in population density.

From the economic point of view, the country may be divided into several regions. The richest and most highly developed region is the northern coast, which includes chiefly the Departments of Cortés and Atlántida, in addition to a part of the Department of Yoro and the Bahía Islands. The basic product is bananas, cultivated on a large scale by the Tela Railroad Company, subsidiary of the United Fruit Company, with headquarters in La Lima and in the port of Tela, and by the Standard Fruit and Steamship Company, with headquarters in La Ceiba. There are also some independent banana producers, especially in the regions served by the Ferrocarril Nacional de Honduras, who sell their products to the above-mentioned companies. Also important in this region are forest products, especially mahogany and other fine woods, which are exported through the ports of Cortés, Tela, and La Ceiba.

Honduras is the largest banana-exporting country in the world, with shipments amounting to 13 million bunches in 1950 and 15 million in 1951. Income arising from these exports is spent chiefly in the northern part of the country, where the most important ports are located, as well as the most active trade, livestock and agricultural centers of different kinds, and the most important industries in the country (breweries, tanneries, shoe factories, oil and soap factories in San Pedro Sula, Tela, La Ceiba and Progreso). The four departments together have a population of 309,155, or 21.7% of the total population, and a density of 22.9 inhabitants per square kilometer.

/The western

The western region --Departments of Copán, Santa Bárbara, Ocotepeque, Lempira and Intibucá-- is mountainous, with numerous valleys in which the leading products are agricultural. Copán is an important producer of corn, sorghum, and tobacco, and Santa Bárbara of coffee and corn,<sup>1/</sup> Ocotepeque produces corn and wheat, and Lempira and Intibucá are corn-growing centers. In Copán tobacco is also processed. The population of this region is 404,280 inhabitants, or 28.2% of the total, a density of 23.9 inhabitants per square kilometer.

The central zone --Departments of Comayagua, Francisco Morazán, La Paz and El Paraíso-- is also mountainous and agricultural. The total population is 409,572 inhabitants, or 28.7% of the country's total, a density of 18.3 inhabitants per square kilometer. Of this population, about 100,000 people reside in the Distrito Central (Departamento Francisco Morazán), seat of the capital. This region produces large quantities of corn, rice, coffee, pigs and other basic foods. In Tegucigalpa and Comayaguéla are also located the Central Government and the central administrative agencies, the government banks and some industries (cotton fabrics, footwear). The silver and gold mines of El Rosario are situated in the Department of Francisco Morazán, and the Agua Fria mines are in El Paraíso. On the Pacific coast, on the shores of the Gulf of Fonseca and bordering on El Salvador and Nicaragua, are the Departments of El Valle

<sup>1/</sup> Santa Bárbara also produces first-class straw hats comparable to those of Ecuador.

and Choluteca,

and Choluteca, heavy producers mainly of livestock, but where cereals are also cultivated, especially corn and sorghum. These departments have the highest population density in the country --33.5 inhabitants per square kilometer-- with a total figure of 170,353 inhabitants, 12.7% of the aggregate population of the country. On the other hand, another important livestock region, Olancho, has scarcely 3.5 inhabitants per square kilometer and an absolute figure of 87,497. Here there are large areas of virgin territory.

A part of the Department of Olancho and that of Colón (37,250 inhabitants, or 1.4 per square kilometer) in the northeastern part of the country, comprise the least developed region of Honduras. Its forests of different woods are a source of income to a number of concessionaires and to a sparse indigenous population, especially in the region of Mosquitia. The western most part of the Province of Colón, in the vicinity of the old city of Trujillo and Puerto Castilla, was an important banana-producing region before the United Fruit Company was established there. The Panama disease decimated the plantations in the thirties, and the company abandoned them and scrapped the rail lines which served the area. At the present time the cultivation of rice is being developed here with the aid of the Banco Nacional de Fomento.

National per capita income was estimated in 1950 at \$116 but it is derived in large part from the high productivity of the banana industry, while the bulk of the population has a lower standard of living. More than half the national income comes from agricultural and livestock production. (See Table 35.) Manufacturing accounts for

/less than 10%,

less than 10%, transport 6%, and commerce and related services 15%. The still slight influence of the government on the national economy is evident in the small participation it has in the national income: 3%.

Among the circumstances which have contributed to the slow development of Honduras are the population factor; the topography of the greater part of the country, which limits agricultural activity to isolated valleys of difficult access; the system of tenancy and cultivation of the soil, which --apart from the large banana plantations-- consists fundamentally of small, scattered, self-sufficient units; the social and political conditions, etc. But possibly the most influential factor in the underdeveloped state of the country's economy has been the absence of transport facilities. Honduras has been, and still is in great part, a country without a system of inland communications, and this has accentuated the self-sufficiency of the different regions and the isolation of the different productive zones. Even today there is a notable difference and a relative separation between the economy of the Atlantic coast, dominated by banana production and essentially an export economy, and that of the rest of the country.

## II. Means of Transport for International Trade

In 1948-1950 74% of the total value of the exports of Honduras, with an annual average of \$40.7 million was derived from bananas. In 1951 the total value was \$42.4 million and bananas represented 68% of the total. In 1951 the value of banana exports was \$42.4 million, or

/Table 35

Table 35

Honduras: National Income by Activities, 1950

	Millions of Lempiras	% of total
<u>National income at factory cost</u> <sup>a/</sup>	332.5	100.0
Agriculture, forestry, hunting and fishing	182.8	55.0
Mining and quarrying	1.6	0.5
Manufacturing	29.4	8.8
Construction	15.6	4.7
Electricity, gas and water	1.8	0.5
Commerce, finance, insurance and real state	50.3	15.1
Transport, storage and communications	19.5	5.9
Services	21.0	6.3
Government	10.5	5.2

Source: Banco Central de Honduras and Banco Nacional de Fomento, Information Service, Estimación preliminar de la renta nacional de Honduras en 1950, Tegucigalpa, March 1952, Table 7.

<sup>a/</sup> Net payments to foreign countries, amounting to 48.6 million lempiras, deducted from the total and from the different sector totals.

68% of the total. The volume of banana exports amounted to 13 million bunches in 1950 and 15 million in 1951, shipped principally from Puerto Cortés and in lesser quantity from Tela and La Ceiba. (See Table 36.)

The country benefits from only a part of the income from banana sales: salaries paid by the companies, purchases made in Honduras by the companies, taxes and new investments. This fact differentiates the banana economy from the coffee economy, since in principle all earnings from coffee exports revert to the national economy. Coffee is the country's second-ranking export product. Average coffee sales to foreign countries in 1948-1950 amounted to \$4.4 million, or 7% of the country's total

/foreign

foreign sales. In 1951 there was such an increase in both the volume and the value of coffee exports (\$9.2 million) that they reached 15% of the total. Lumber and minerals --each representing an average share of 4% of total exports-- are the country's other ranking export commodities. The balance of exports is made up of cattle and pigs, abacá fiber, tobacco and other products which usually have an annual value of less than a million dollars.

Table 36

Honduras: Banana exports by ports, 1950 and 1951

(in thousands of bunches)

	1950	1951
Tela Railroad Co. via Puerto Cortés	5,045	6,532
Tela Railroad Co. via Tela	4,061	4,831
Standard Fruit and Steamship Co. via La Ceiba	3,817	3,687
Totals	12,923	15,050

Source: Tela Railroad Company and Standard Fruit and Steamship Company Railroad.

Imports are chiefly manufactures and these represent most of the country's consumption of these articles. Foodstuffs amount to barely 8.7% of total imports (1951), less than \$5 million. Textiles, on the other hand, came to 22.5%, fuel 7.6%, and construction materials, machinery and other capital goods 25.4%.

From the viewpoint of foreign trade, the outstanding fact about transportation in Honduras is that the entire system is well adapted

/to the banana

to the banana economy, while other exports and imports are handled under not very advanced conditions and with excessive charges. Imported commodities are highly priced on the Honduran market and consequently real income is reduced. Moreover, the high transport charges on exports and the lack of adequate means of communication limit the possibilities of a greater volume of production and export of commodities other than bananas.

The railroads and ports were set up chiefly for banana exports. Except for bananas, international freight traffic has to consist of road traffic due to the lack of a railway network connecting the ports with production and consuming centers. Traffic through Puerto Cortés has to make use of the 95-km. railroad line which constitutes the only access to the port. This involves a slow and costly transshipment from one transport system to the other. The movement of imports through Pacific ports is also by road. A small proportion of the country's foreign commerce is by air.

#### 1. Railroads

Honduras is the Central American country having the smallest extension of common carrier railroad lines. The railroad network --including the lines belonging to three companies-- is 539 kms. long,<sup>1/</sup> of which 101, belonging to the Ferrocarril Nacional de Honduras, are almost the only section used for public freight and passenger service.

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<sup>1/</sup> 1,267 kms. including the branch lines serving the banana plantations.

/The other

The other two companies —Tela Railroad, affiliated with the United Fruit Company, and Standard Fruit and Steamship Company— are used almost exclusively for the transportation of bananas from plantations on the Atlantic coast. The passenger and freight traffic is also mainly in connection with the companies' agricultural and industrial activities.

In 1951 Honduran railroads carried about 1.5 million passengers and one million tons of freight, 50% of which was banana exports.

(See Table 37.)

Table 37

Honduras: Railroad freight and passenger traffic, 1951

	Ferrocarril Nacional de Honduras	Tela Railroad	Standard Fruit and Steamship Company Railroad	Total
Train-kilometers (thousands)	212	1,174	1,054	2,440
Passengers (thousands)	421	827	306	1,554
Total freight (thousands of tons)	209	630	195 a/	1,034
Local	30	227	52	309
Import	101	—	—	101
Export	71	—	—	71
Bananas	7	403	143	553

Sources: Ferrocarril Nacional de Honduras, Tela Railroad, and Standard Fruit and Steamship Co. Railroad.

a/ Fiscal year 1950/1951. Informe de Fomento, Agricultura y Trabajo, 1950-1951. Tegucigalpa. Kilograms per bunch of bananas: 38.6

(a) Ferrocarril Nacional de Honduras. Government owned, but administered by the Tela Railroad Company by virtue of a contract with the government,

/this is a



this is a single-track, narrow gauge railroad (gauge: 1.067 meters, or 42 inches). The trunk line, 95 kms. long, starts at Puerto Cortés on the Atlantic coast, passes through San Pedro Sula, the country's second largest city and an important commercial and industrial center, and ends near Potrerillos where it connects with the Northern Highway leading to Tegucigalpa. The total length, including branch lines, is 101 kms. It joins with the lines of the Tela Railroad Company in Búfalo and Baracoa.<sup>1/</sup>

The rolling stock and locomotives consists of 11 steam locomotives (fuel-oil), 16 passenger cars, 3 gasoline motor cars, and 183 cars of various types. Part of the locomotives and rolling stock has been recently acquired. All the equipment is in good condition.

(See Table 38.) The permanent way, which the Mission inspected, is also in good condition, and the company is carrying out a broad program of maintenance and renovation. Structures and buildings are also in good condition. Repair shops are well equipped.

Nevertheless, the passenger service on the combined passenger and cargo trains is not satisfactory. The passenger train between Puerto Cortés and Potrerillos takes 4 hours to make a run of 95 kms.

The region served by this line is relatively flat, and, consequently, traffic conditions are favorable. The maximum gradient is 2.5% and the maximum curvature 7°. Operating costs per train-kilometer (including repairs, salaries, fuel and lubricants, water and other expenses), was \$1.12 in 1951, as compared to \$1.42 in Guatemala (IRCA).

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<sup>1/</sup> In 1953 a 30-km. branch line was constructed from Potrerillos to Guacaste for the transport of bananas from new plantations in this region.

Table 38

Honduras: Permanent way, equipment, and traffic of the Ferrocarril Nacional de Honduras

Permanent way:

Gauge	42 inches (1.067 meters)
Rails	28 and 30 kilograms per meter
Ballast	gravel
Maximum gradient	2.5%
Maximum curvature	7°
Signals	hand-operated

Locomotives and rolling stock:

Steam locomotive (fuel oil)	11
Gasoline motor passenger cars	3
Coaches	16
Covered freight cars	40
Flat cars	75
Banana cars	48
Tank cars	3
Others	18

Traffic 1947 1948 1949 1950 1951

<u>Train-kilometers (thousands)</u>	224	224	222	224	212
<u>Passengers (thousands)</u>	302	365	378	378	421
<u>Freight (thousands of metric tons)</u>					
Local	20	23	25	26	30
Import	66	76	85	26	30
Export	46	53	59	60	71
Bananas	18	15	12	6	7
<u>Cost of runs per train-kilometer (dollars)</u>	0.86	1.02	1.22	1.10	1.10

Source: Ferrocarril Nacional de Honduras.

(NOTE) ...

Most of the traffic handled by this line is general import and export freight, which in 1951 amounted to 170,000 tons, or 85% of the /total freight.

total freight. (See Table 38 above.)

Thus, due to the light volume of bananas transported, this railroad has less traffic than the other two.<sup>1/</sup>

(b) Ferrocarril de Tela (Tela Railroad Company). This line belongs to the United Fruit Company interests, and its main business is the transport of bananas from plantation to port. By government contract it manages Puerto Cortés and, since it owns the port of Tela and operates the Ferrocarril Nacional, it controls the two ports and the access facilities. To reach Puerto Cortés, the Tela Railroad uses the line of the Ferrocarril Nacional de Honduras from the junction at Baracoa (20 kms.).

The gauge of the Tela Railroad is the same as that of the Ferrocarril Nacional. The extension of its lines in kilometers is as follows: From Baracoa south to Búfalo (Ulúa branch line), 64; from Tela southwest to Santa Rita, 119; total 183. There are also a number of branch lines serving the plantations, with a total length of 626 kms.

The layout of the line is thoroughly functional for the plantations, which are situated on both sides of the tortuous Ulúa River. In the zone served by the Tela Railroad the most important localities are La Lima, headquarters of the United Fruit Company, and Tela, terminal port of the railway.

The permanent way, installations, and rolling stock are in excellent condition. (See Table 39)

<sup>1/</sup> With the production of the new banana region served by the railway, the volume of banana traffic is expected to reach in 1954 a total of 9000 cars (1,800,000 bunches).

Honduras: Permanent way, equipment, and traffic of the Tela Railroad Company and of the Standard Fruit and Steamship Co. Railroad.

	<u>Tela Railroad Company</u>	<u>Standard Fruit and Steamship Company</u>			
<u>Permanent way:</u>					
Gauge	0.914 meters - 3 ft.	0.914 meters 3 ft.			
Rails (weight)	27.8, 29.8 and 34.9 kilograms per meter	60 and 40 lbs. per yard.			
Ties	Native wood, plain and creosoted pine	Pine			
Ballast	Crushed rock and earth	Gravel			
Maximum gradient	1.7% (1 in 59)	2%			
Maximum curvature	12° minimum radius 146 meters	24°			
Signals	Hand-operated	Hand-operated			
<u>Locomotives and rolling stock:</u>					
Steam locomotives (fuel-oil)	34	30 Diesel 6			
Gasoline motor passenger cars	86	74			
Coaches	36	27			
Covered freight cars	256	57			
Open cars	413				
Banana cars	834	430			
Tank cars	50	24			
Refrigerator cars (gasoline motor)	2	4			
Flat cars	--	300			
Live-stock cars	--	17			
Fertilizers cars and miscellaneous cars	--	60			
Ballast cars	--	15			
Others	52	50			
<u>T r a f f i c</u>					
	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>
<u>Tela Railroad Company</u>					
Train-kms. (thousands)	1,355	1,445	1,494	1,228	1,174
Passengers (thousands)	677	806	821	736	827
Freight (ths. of metric tons)					
Local	204	240	272	252	227
Bananas (ths. of bunches)	475	462	405	425	403
	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	
<u>Standard Fruit and Steamship Co.</u>					
Train-kms. (thousands)	721	844	1,054	1,072	
Passengers (thousands)	384	350	306	316	
Freight					
Coconuts (thousands)	3,472	3,443	2,707	1,744	
Lumber (cars)	1,719	1,693	1,985	1,530	
Bananas (thousands of bunches)	2,713	3,817	2,687	3,714	

Source: Tela Railroad Co. and Standard Fruit and Steamship Co.

/Two-thirds

Two-thirds of the freight traffic is made up of bananas, and the rest is local freight. (See Table 37 above.) Most of the local freight, like the banana freight, belongs to the fruit company. In 1951 this railroad transported a total of 630,000 tons, or more than 60% of the country's total and handled 80% of the total banana traffic.

(c) Standard Fruit and Steamship Company Railroad. This line is 255 kms. long (540 kms. including the branch lines on the plantations). It has a smaller gauge than the other two railroads (0.914 meters, or 3 feet). (See Table 39.) The port of La Ceiba belongs to this company as well as most of the public service and industrial plants of this city. Almost all the economic activity in the region where it operates is dependent on the company. Transshipments with the Tela Railroad Company are in Tela. The Standard's line is used for transporting to the port of La Ceiba the bananas cultivated by the company in an area near the coast stretching 40 kms. to the west and following the Aguán River Valley south. Bananas make up two-thirds of the freight carried and about one-fourth of the country's total banana freight. (See Table 37 above.)

The line has been laid out for the exclusive service of the banana plantations, and La Ceiba, although an important industrial and commercial center, is practically isolated from the rest of the country. Almost all passenger and freight traffic between La Ceiba and San Pedro Sula, Puerto Cortés and Tela is by air.

## 2. Port and Maritime Situation

Honduras has a long coastline in the north and a very short one in the south, on the Gulf of Fonseca. Puerto Castilla, on the north  
/coast,

coast, has the best bay not only in Honduras but possibly in all Central America. It is at present abandoned, and its traffic has been almost nil since the United Fruit Company abandoned its plantations in that region and scrapped the railway line. The ports in use are, in the order of their importance, Puerto Cortés, Tela, and La Ceiba on the north coast and Amapala on the south coast. Amapala is the only national port; the others are operated through concessions. Of the total international sea-borne traffic in the fiscal year 1950/51, these ports handled 96%, distributed as follows: Puerto Cortés, 39%, Tela, 28%, La Ceiba, 23%, and Amapala, 4%. Together they handled a total volume of 828,607 metric tons. (See Table 40.)

Of the three main Atlantic ports, two —Tela and La Ceiba— have a very reduced and clearly delimited hinterland. This is due to the fact that the only means of access —the railroads— are not connected with other railways or roads penetrating farther into the interior. Puerto Cortés is connected to San Pedro Sula and Potrerillos by rail, and from Potrerillos there is a road to Tegucigalpa. Thus, the hinterland of this port extends to the capital.

(a) Puerto Cortés, Tela and La Ceiba. Puerto Cortés is a good port and the only sheltered one on the north coast. It is situated on the north of the Bay of Cortés, 355 kms. by rail and road from Tegucigalpa. It has a good wharf, but with limited mooring space. However, this limitation will be corrected by the projected extension. Ships tie up directly at the wharf and since the tide is only a few inches, it does not hinder operations. There are four banana conveyors and a few cranes belonging to the company.

ing to the company. The company also has warehouses but not for public use. The new customs warehouse being built will cost half a million dollars.

Table 40

Honduras: Freight movement by customs, 1950/1951

	Thousands of metric tons	% of total
Puerto Cortés	349	39
La Ceiba	199	23
Tela	250	28
Amapala	31	4
Others	57	6
Total a/	886	100

Source: Dirección General de Rentas. Series revised by the Banco Central de Honduras.

a/ The figure for the total tonnage was reached by using the following conversion for data not given in kilograms.

		Kilograms				
Bananas	Bunch	38.56	Pine	Cubic meter	650	
Pigs	Head	90.72	Cedar	Cubic meter	900	
Coconuts	3.5	1.00	Mahogany	Cubic meter	975	
Mules	Head	205.21	Other woods	Cubic meter	975	
Plantains	Bunch	27.22	Hats (palm)	8	1	
Steers	Head	158.76	Hats (Panama)	12	1	
			Cigars	1000	4	

Tela and La Ceiba are, to be more precise, private ports.

The piers, equipment, warehouses (except those of the customs), access facilities, etc. are all the property of the two companies referred to above, who also control the ocean lines. Both ports are at open roadsteads,

/but there is

but there is considerable depth at the pier heads, and ships can moor directly when the sea is relatively calm. The pier at Tela is 2,028 feet (618.5 meters) long, and 484 feet (147.9 meters) of this length is used for mooring. The pier has a wood structure built on concrete piles, and allows mooring of ships with a draught of 35 feet. The tide is a few inches. There is good equipment for loading bananas, but no permanent equipment for loading and unloading general cargo, so that this must be handled with the ship's tackle. Nor are there any public warehouses except that of the customs. This warehouse is 108 by 34 feet (32.9 by 10.4 meters) and has an annex --which was under construction during the Mission's visit-- which is 54 by 25 feet (16.5 by 7.6 meters).

The pier at La Ceiba is 1,237 feet (377.3 meters) long, of which 350 feet (106.8 meters) are for mooring. As is the case at Tela, loading and unloading is performed with the ship's tackle and the cargo is hauled to the customs by rail. Except for the customs, there are no public warehouses. Although a small addition was made to the customs warehouse at Tela because of the excessively small storage space, the volume of traffic at both La Ceiba and Tela is so light that lack of storage space does not generally constitute a serious problem.

The Atlantic ports have by far the largest volume of imports and exports. The movement at La Ceiba and Tela is almost exclusively limited to cargo belonging to the two fruit companies. Exports from Puerto Cortés are also confined mainly to company products, but imports here are largely commodities for general public consumption. In contrast

/to the situation



to the situation at most Central American ports, there has been no great increase in the volume of traffic at Honduran ports in the last ten years. Exports have not only failed to increase, but have even diminished to a small degree, and imports have slightly increased.

Puerto Cortés has the greatest volume of traffic. Its exports for the fiscal year 1950/1951 were 256,486 metric tons, and its imports were 92,276 metric tons. About 70% of the export tonnage was made up of the company's banana shipments, and of the import tonnage approximately 4% was for the company. The bulk of import tonnage was fuel from the Dutch West Indies and, next in volume, manufactured products, raw materials and foodstuffs from the United States. Third and fourth were imports from Venezuela and Canada respectively. Guatemala was the only Central American country exporting any considerable tonnage to Puerto Cortés. The volume coming from Guatemala was 663 tons in the fiscal year 1950-1951. Imports from other Central American countries were insignificant.

International maritime movement was relatively active in 1951. 218 ships in international service called at port, or an average of 18.2 ships per month. Of these ships, 208 --or more than 95%-- belonged to the company or were consigned to it, and only 10 were independent of the company's interests.

Although not so great as at Puerto Cortés, international traffic at Tela and La Ceiba was considerable, but was almost exclusively limited to cargo belonging to the two fruit companies.

About 99% of the total export tonnage of these two ports consisted of bananas, and at Tela, of the total of 90,635 metric tons  
/imported,

imported, 83,939 or 95% were for the company.

In Tela, as in Puerto Cortés, the bulk of imports consisted of fuel, principally from the Dutch West Indies. Next were raw materials, manufactured articles and foodstuffs from the United States. Costa Rica was almost the only Central American country exporting to this port --about 66 tons-- and total imports from other Central American countries amounted to less than one ton. Although Tela's maritime traffic was almost the same in 1951 as that of Puerto Cortés, and many of the ships calling at Tela weighed anchor for Puerto Cortés, by the volume of cargo loaded and unloaded at Tela it is evident that the utilization of bottoms was much smaller than that at Puerto Cortés. During the year 214 ships called at Tela, an average of 17.8 per month. 192 of these, or 90%, were company ships.

Of the three northern ports, La Ceiba handled the least cargo. In the fiscal year 1950-1951 total imports and exports at La Ceiba reached 198,992 metric tons, a monthly average of 16,583 tons, which may be considered a substantial volume. Only 76 ships in international service called here, or an average of 6.3 per month. Almost all imports came from the United States, with the exception of some 7,000 tons of fuel from Curacao, 1,000 tons of sugar from Cuba and a little over 1,500 tons of banana seeds which the company imported from Guatemala.

(b) Amapala. This is virtually a post in the encircling arms that form the Gulf of Fonseca. The port is situated on the island of Tigra, to the south of the island of Zacate Grande. The pier is in good condition,

but in such

but in such shallow water that ships have to anchor some distance from the island, and cargo must be loaded and unloaded on lighters. After the merchandise has gone through the customs, it has to be re-shipped in lighters to San Lorenzo, more than 20 kms. towards the coast from Amapala. There it is unloaded practically by hand and with the aid of a small crane, and reloaded on trucks, in most cases bound for Tegucigalpa which is approximately 130 kms. away.

With the port's new warehouses there appears to be no problem of congestion. The chief disadvantage is the high cost of double handling and excessive hauling. For example, for unloading a ton of general cargo, ENTSA (Empresa Nacional de Transportes, S.A.) charges 4 lempiras, which is the normal rate and is reasonable. But for transporting it from Amapala to San Lorenzo it charges 8 lempiras more, which, while not an excessive rate in itself, is an extra charge for a service not necessary in other ports in Honduras or in Central America. To this must be added more transshipment costs at San Lorenzo, and when this total is increased by the additional high charges for road transport to Tegucigalpa, it is easily understood why Amapala, in spite of being the only Honduran port on the Pacific, handles such a small volume of traffic. Some merchandise, such as 5 to 6-ton tractors, are subject, in addition to all the extra fees, to a charge of 200 lempiras for unloading and freightage to San Lorenzo.

In 1952, 52 ships in international service, or an average of one ship weekly, called at Amapala.<sup>1/</sup> Most of the ships --28 of the

1/ Excludes all types of watercraft from Puerto Morazán, Nicaragua.

52 serving the port in 1952-- belonged to the Grace Line, a firm which has for many years served the Pacific. Service was chiefly to Pacific ports of the United States and Panama. Only 5 ships arrived directly from Europe during the year.

The bulk of Amapala's imports was made up of liquid fuel from Peru.<sup>1/</sup> In second place were manufactured articles and foodstuffs from the United States. Principal exports are pine, naval stores and washed coffee.

Traffic with other Central American ports was of a rather substantial volume, especially with Nicaragua, since Morazán is but a short distance away and on the Gulf. Imports amounting to 3,024 tons came in from Morazán in 1952, a large part of which was sugar. There was very little traffic with El Salvador.

### 3. Services and Rates

From the point of view of the banana companies the transport situation is excellent. The shipping lines, ports and railways handling traffic to and from the plantations offer efficient service. On the other hand, from the point of view of the other aspects of the Honduran economy the situation is different, in regard to both ocean transport and port services as well as inland transport.

The principal shipping line serving Honduras is The Great White Fleet of the United Fruit Company. It specializes in banana transport and gives priority to this over any other traffic. As indicated above, the equipment at the piers is limited to banana conveyors, and all other cargo is handled with the ship's tackle, except at Puerto Cortés

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<sup>1/</sup> In the last few years this fuel has been shipped in small boats from Corinto, Nicaragua, directly to San Lorenzo.

/where the

where the company has a few cranes.

The most critical situation is in regard to access facilities. Due to the lack of roads leading to the ports, all import and export cargo must use the railway. Since the rail line from Puerto Cortés reaches only as far as Potrerillos, the limit of the banana zone, beyond this point the merchandise must be transshipped to trucks going to Tegucigalpa and other towns. This naturally increases costs.

The freight rates,<sup>1/</sup> divided into four principal classes according to the value and nature of the commodity, vary from 5 to 20 cents per ton-kilometer, in less-than-carload lots, with discounts in each class of 40%, 35%, 30% and 25% for carload lots. (See Table 41.) If the cargo is destined to or originates in Potrerillos, the rebate is much greater.

Diesel oil in tank cars, automobiles, and trucks pay 50 cents per kilometer; a thousand board feet of cut pine, 10 cents; of hardwood 15 cents; logs of 5000 feet or less, 30 cents.

The most notable features of these rates are their high level and the considerable difference between the charges for local freight and those for traffic to and from Potrerillos in carload lots. The difference between carload rates and less-than-carload rates also appears to be excessive. To move a ton of basic foodstuffs within its zone the Ferrocarril Nacional de Honduras charges 10 cents per kilometer,

<sup>1/</sup> Passenger fares and freight rates charged by the Ferrocarril Nacional de Honduras and by the Tela Railroad Company are identical. The passenger fare is 4 centavos first class and 2 centavos second class per kilometer or fraction thereof, which is equal to 2 and 1 cents respectively. The rates charged by the Standard Fruit and Steamship Company for its limited public traffic are practically the same as those charged by the other two railroads.

/while

while on railways in El Salvador and Guatemala the charge is less than half this amount. Import and export rates, that is, from and to Potrerillos (even for carload shipments, which get a substantial discount) are relatively high.<sup>1/</sup> It must also be borne in mind that the operating cost per train kilometer is less than on the IRCA and the Salvador Railway.

Table 41

Honduras: Selected railroad freight rates  
 (in cents per ton-km.)

Commodities	Local traffic		To or from Potrerillos	
	LCL	CL <sup>a/</sup>	LCL	CL
Corn, beans, sorghum, potatoes, lard, butter, etc.	10	7	10	5
Rice (rough), domestic vegetable oils	10	3.75	10	2.5
Cement, iron bars, paint, wire	15	7	15	5
Coffee beans	10	7	10	5
Abacá, cotton, copra, hides, etc.	10	3.75	10	2.5
Diesel oil in drums	10	7	10	5
Imported machinery	20	10	20	10

Source: Ferrocarril Nacional de Honduras.

<sup>a/</sup> CL = Carload; LCL = Less-than-carload.

Profits from the Ferrocarril de Honduras go to the government. In 1951 the company had a net income of \$191,000 out of a gross income of \$892,000 which is very satisfactory from a strictly financial

<sup>1/</sup> Cutuco-San Salvador, cement 3.2 cents, wheat 2.5, wheat flour 3.6; San José-Guatemala, 5.3, 6.0, and 5.4, respectively including port charges.

/point

point of view, especially in view of the low mileage of track and the relatively light traffic. (See Table 42.) But this represents a heavy drain on the country's economy, reflected particularly in the high cost of consumer goods. It also undermines incentives for production and export business in general and to this must be added the high port charges, the cost of transshipment at Potrerillos, and the prevailing road transport situation.

Table 42

Honduras: Income Statements of the Ferrocarril Nacional de Honduras  
 (in thousands of dollars)

Years	Total Income	Total expenses	Net income	Ratio of income to expenses
1947	638	428	210	67.0
1948	736	530	206	72.0
1949	739	567	172	76.7
1950	741	630	61	91.7
1951	892	701	191	78.5

Source: Ferrocarril Nacional de Honduras.

#### 4. Highways

Highways are more important for international trade in Honduras than in the other Central American countries. All goods not moved by air --except on the north coast-- utilize motor transport. All freight leaving Tegucigalpa and the central region of the country for Atlantic ports or viceversa is moved beyond Potrerillos or to this /point,

point, on the northern stretch of the Inter-Oceanic Highway. Freight entering or leaving Amapala goes by the southern stretch of the same highway. There is a certain amount of commercial traffic with El Salvador via the Inter-American Highway. The annual average traffic with El Salvador passing through El Amatillo customs in the five-year period from 1948 to 1952 was 6,185 tons of imports and 20,097 tons of exports. Road traffic with Nicaragua via El Espino customs was much lighter (223 tons of imports and 208 tons of exports), but traffic between El Salvador and Nicaragua on the same road amounted to more than 6000 tons in 1951/1952. (See Table 43.)

The Honduran road network is not extensive, even though the country has a slightly larger area than Guatemala, and is five and a half times larger than El Salvador. The total length of the country's roads is only 1,730 kms., which represents 27% and 22.5% of that of the two other countries mentioned, respectively.

Of this total, 1,355 kms. are national routes under the administration of the Dirección General de Caminos, 130 kms. are municipal and 245 kms. are private roads. Paved roads practically do not exist, and the total length of all-weather roads in the country is 1,572 kms.

In Honduras the ratio of length of roads to population is one kilometer of roads of all kinds for every 868 inhabitants, as compared with one to 466 inhabitants in Guatemala, and one to 249 in El Salvador. There is one kilometer of all-weather road for every 954 inhabitants. Per square kilometer of territory there are 15 linear meters



Table 43

Honduras: Inter-American Highway. Imports and Exports through Customs at El Espino <sup>a/</sup> and El Amatillo <sup>b/</sup> and through traffic between El Salvador and Nicaragua.

	Metric tons	Thousands of Lempiras
<u>A. Foreign trade via the Inter-American Highway</u>		
Imports through El Espino		
1948/49	..	..
1949/50	26.7	10.6
1950/51	487.1	135.8
1951/52	156.3	35.1
Annual average	223.4	60.5
Imports through El Amatillo		
1948/49	8,516.6	3,389.2
1949/50	6,577.6	2,836.9
1950/51	4,458.2	2,760.6
1951/52	5,189.5	2,834.3
Annual average	6,185.5	2,955.2
Exports through El Espino		
1948/49	..	..
1949/50	85.4	29.2
1950/51	133.8	50.0
1951/52	615 <sup>c/</sup>	230.3
Annual average	208.5	103.2
Exports through El Amatillo		
1948/49	17,739.5	2,131.7
1949/50	17,319.5	2,400.7
1950/51	24,376.2	3,048.4
1951/52	20,954.4 <sup>c/</sup>	2,619.3
Annual average	20,097.4	2,550.0
<u>B. Through traffic from El Salvador to Nicaragua</u>		
1951/52	850.1	508.0
<u>C. Through traffic from Nicaragua to El Salvador</u>		
1951/52	5,166.0	1,660.0
<u>D. Summary</u>		
<u>(a) Foreign trade (by land) 1951/52</u>		
Imports through El Espino	156.3	35.1
Imports through El Amatillo	5,189.5	2,834.3
Sub-Total:	5,345.8	2,869.4
Exports through El Espino <sup>c/</sup>	1,025.5	230.3
Exports through El Amatillo <sup>c/</sup>	4,796.0	2,619.3

(This table continues on the next page)

/of roads

of roads of all kinds (59 in Guatemala, and 366 in El Salvador).<sup>1/</sup>

Of the 989 kms. of trunk routes now in service, 379 correspond to the Inter-Oceanic Highway and 160 to the Inter-American Highway. In other words, 539 kms., or 55% of the total, are of major importance because of their international traffic, without taking into consideration the fact that an important part of the freight on the Western Highway is transshipped at San Pedro Sula for shipment to Puerto Cortés and foreign markets.

(a) Inter-Oceanic Highway. It will connect Puerto Cortés with San Lorenzo on the Gulf of Fonseca. At present the Southern Highway, or the Tegucigalpa-Jicaro-Galán-San Lorenzo stretch, and the Northern Highway, or the stretch from Tegucigalpa to Potrerillos, are in service.

Table 43 (continued)

	Metric tons	Thousands of Lempiras
Sub-Total	5,821.5	2,849.6
Total:	11,167.3	5,719.0
 (b) <u>Through traffic between El Salvador and Nicaragua</u>		
Merchandise in transit to Nicaragua	850.1	508.0
Merchandise in transit to El Salvador	5,166.0	1,660.6
Total:	6,016.1	2,168.6

Source: Transport Mission, from official data.

- a/ Nicaraguan border.
- b/ Salvadorean border.
- c/ For 1951/52 the estimates of value were made on 1950/51 average prices.

<sup>1/</sup> See the Hondurean road network in Appendix I at the end of the chapter.

/(i) Northern

(i) Northern Highway. The constructed part has a length of 260 kms. and it passes through Comayagua and Siguatepeque. The first section from Tegucigalpa to Km. 36 is from 6 to 7 meters wide, but it is narrower in some stretches and on some bridges; its horizontal and vertical alignment is defective, the grades are relatively gentle (generally less than 6%), and although it has numerous sharp curves, others, on the other hand, are of a large radius; the grading is good, it is filled and finished to the grade line, and its upkeep is in general, satisfactory.<sup>1/</sup> This section of the highway can be improved at a relatively moderate cost.

From Km. 36 to Comayagua (Km. 102) the alignment is poor on somewhat more than 50% of the highway, with numerous curves (some of them unnecessary), grades of more than 6% and even 10%, varying width and excessive gradient changes. The stretch between kms. 49 and 52, and those in the large valley of Comayagua beyond km. 75, are an exception.

From Comayagua to Siguatepeque (Km. 122), an overnight stop for vehicles, the highway generally has the same features as in the previous section, and becomes even worse in the first stretch of the Siguatepeque-Potreri- llos section (as far as Km. 180), where the road crosses mountains, becomes narrow, has a poor alignment, numerous inclines with sharp curves and grades up to 10%. Beyond Km. 180 the alignment definitely improves,

<sup>1/</sup> There is a narrow bridge at Km. 24, and the road narrows at Km. 21. The first 8 kms. and the stretch between Kms. 29 and 36 have good alignment. The grade is slightly over 6% at Kms. 13 and 15, and definitely greater than 6% at Kms. 19 and 28. The rolling surface in some stretches is in poor condition, for example, at Km. 19.

to the extent that it is not possible to travel at a speed of 40 km/hour, especially in the stretch between Kms. 19 and 28. The road is in poor condition in some stretches, for example, at Km. 19.

especially when it begins to cross the wide fertile plains of the Lindo River and the Sula Valley, where it is 7 meters wide, has very good alignment, long tangents and curves of a large radius, very gentle gradients and is in a very good state of upkeep.

(ii) Southern Highway. 110 kms. long, this route links the capital city with the Inter-American Highway, and at the present time constitutes the only international land route communicating Tegucigalpa with the neighboring countries.<sup>1/</sup> This has partially made up for the isolated position in which Tegucigalpa was placed as a consequence of the route chosen for the Inter-American Highway. Work is progressing at present on the relocation and improvement of the Southern Highway preparatory to paving it completely and converting it into a first-class highway. The road now in use is an all-weather road, on which poor horizontal and vertical alignment predominates, as well as varying width, grades in some places exceeding 6% and in others reaching 10%, many unnecessary curves and poor visibility.<sup>2/</sup>

(b) Inter-American Highway. In Honduras this does not constitute the most important highway as is the case in the other Central American republics, for it is located in the southern part of the country, following the shortest distance between El Salvador and Nicaragua. The Honduran section of this highway, 160 kms. long, has all been constructed, from the International Bridge over the Goascarán River (on the Salvadorean

<sup>1/</sup> The length of the section between Jicaro Galán and San Lorenzo is not included since this forms part of the Inter-American Highway.

<sup>2/</sup> The relocation of some stretches will mean the total abandonment of some parts of the present road. Others can be restored only at high cost. In both cases it will be necessary to replace many bridges and to widen others.

border) to El Espino (on the Nicaraguan border). It is not paved, but it is passable the year round. (For the lengths of each section, see Table 44.)

Table 44

Honduras: Inter-American Highway

Section	Length in Kms.
1. Salvadorean border-Jicaró Galán	40
2. Jicaró Galán-San Lorenzo	12
3. San Lorenzo-Choluteca	38
4. Choluteca-San Marcos	58
5. San Marcos-Nicaraguan border	12
Total:	<u>160</u>

Source: Transport Mission, from official data.

Some work still remains to be done on this highway, particularly on bridges.<sup>1/</sup> In general, from the Salvadorean border as far as Choluteca the highway has very good alignment, the corresponding specifications have been improved, high speed traffic is possible, despite the fact that there is a lack of adequate maintenance. From Choluteca to the Nicaraguan border, a mountainous area is crossed (Chinchayote Pass), in which the road climbs from a very low altitude to 2,700 feet above sea level. However, it has been possible to locate the highway in such a way that it has good vertical and horizontal alignment, wide

<sup>1/</sup> Three temporary bridges, located at 14, 21, and 22 kms. from Jicaró Galán must be replaced; and 9 bridges and some culverts must be built between Jicaró Galán and Choluteca.

/curves

curves and gentle grades, with the exception of a stretch of 4 kms. which is very poorly located, with narrow sharp curves and positive and negative grades greater than 10%.<sup>1/</sup> The same situation prevails between Kms. 110 and 120 from the Salvadorean border.

##### 5. International Highway Transport Conditions

Transport on the Inter-Oceanic and Inter-American Highways tends to be carried out more and more in trucks of 6 to 8 ton capacity, in contrast with the current use of 5-ton trucks on the other roads. There are few Diesel motor units or trailer trucks in use. Furthermore, in contrast with the system of small truck operators that prevails in Central America generally, traffic in Honduras tends to be operated by companies owning 20 or 30 vehicles, which carry most of the international freight traffic.

At present on the Northern Highway there is a marked directional difference in net traffic, the volume of import freight being much greater than the small volume of export freight. However, salt shipments from the Tegucigalpa region to the north tend to offset it in part. The usual freight rates between Potrerillos and Tegucigalpa vary from 1.75 to 3 centavos per pound for bulk merchandise, with an average of 2 centavos per pound, that is, 16 centavos or 8 cents per short ton-kilometer. The rate can be considered high, and this rate plus the railroad freight gives a total rate that is partly responsible for the high prices of imported articles.

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<sup>1/</sup> For this stretch, use was made of the temporary, or access road built during World War II by the U.S. Corps of Army Engineers.

From San Lorenzo to Tegucigalpa the highway freight rate is even higher than on the Northern Highway, with an average of 25 centavos or 12.5 cents per ton-kilometer. On the Southern Highway there is also a marked directional difference in net traffic, the volume of exports being only one-fifth of the volume of imports.

Traffic with El Salvador on the Inter-American Highway consists mainly of lumber, cereals and livestock. There are not many services in operation, and since the volume of imports from El Salvador is less than exports, trucks often return empty. Current charges are from 6 to 7 centavos per square foot of lumber. Services with Nicaragua are irregular and depend on the goods available for shipment.

In addition to this international highway traffic, there is also a small volume of traffic between the Salvadorean border and the town of Nueva Ocotepeque. Since this region is quite isolated from the rest of the country, most of its traffic with El Salvador is via the San Salvador-Puerto Lempira-Citalá route.<sup>1/</sup>

There are few international passenger services between Guatemala City, San Salvador, Tegucigalpa and Managua, and of these only one is Honduran -- operating between San Pedro Sula, Tegucigalpa and San Salvador. The fare is 15 lempiras, which can be considered reasonable.

#### 6. Air Transport

Air transport is particularly important in Honduras. The absence of sufficient surface routes has brought about an unusual develop-

<sup>1/</sup> See point 5 (c) in Section II of Chapter II, p. 124.

ment in domestic air service, which will be duly discussed in Section III of this chapter.

International air transport activities are centralized at Toncontin airport, 6 kms. from Tegucigalpa, at an altitude of 990 meters (3,250 feet) above sea level. Previously this was a small field, with a runway less than 1000 meters long. At the beginning of 1952 an excellent runway 1,800 meters long (6,560 feet), permitting operations of modern four-motor aircraft, became available. Future plans for this airport provide for a second runway 2,000 meters long (5,900 feet) should the need arise. As a result of this airport improvement, the international companies immediately increased their services. Pan American Airways began 6 flights a week with DC-4's in February 1952; TACA International Airlines began 5 flights a week also with DC-4's in July. In December PAA replaced its DC-4's with Constellations, but later had to put DC-3's back in service because of the hazard of the loose gravel on the runway. The government plans to pave this runway towards the end of 1953. When this and other improvements have been carried out, Toncontin airport, with its modern building, will be one of the best in Central America.

The companies which provide international service in Honduras are Pan American Airways, TACA International Airways, and Transportes Aéreos Nacionales (TAN), the last-named flying the flag of Honduras. Also, there is TACA of Honduras which makes 3 flights a week from San Pedro Sula to Belize.

In 1951 Pan American Airways carried a total of 400,000 pounds of cargo, and TACA International carried 100,000. PAA carried

/12,400



12,400 passengers, and TACA 3,000. Transportes Aéreos Nacionales, which has two C-46 aircraft, provides a service of 4 flights a week between Miami and Tegucigalpa, with intermediate stops at Havana and San Pedro Sula. Twice a week its flights are extended to Managua and El Salvador. This company has carried a considerable amount of freight for the Institute of Inter-American Affairs. Every week a plane takes a full load of silver ore from Honduras to Miami, and other national products are also flown to foreign countries. The most interesting innovation is an air shipment 4 times a week of chilled meat from Tegucigalpa to the United States via Miami.<sup>1/</sup> With these export products TAN has been able to overcome in part the lack of balance in the volume of import and export cargo. Thus, while in 1951 the volume of imports reached 906,000 pounds, and of exports 302,000, during the first nine months of 1952 imports amounted to 1,277,000 pounds and exports 870,000.

International rates for passengers and cargo do not differ in Honduras from those charged in the other Central American countries. TAN charges a specific commodity rate for freight weighing from 100 to 3,300 lbs. from Miami to Tegucigalpa, of 15 cents per pound, or 22 cents per ton-kilometer (32 cents per metric ton-mile). For north-bound freight weighing more, the rate is 5 cents a pound, or 7.2 cents per ton-kilometer (10.5 cents per ton-mile). TACA International's rates to New Orleans are from 27 cents to 11.7 cents per ton-kilometer (40 to 17 cents per ton-mile).

<sup>1/</sup> Since TAN did not have enough planes, TACA International also transported meat to New Orleans towards the middle of 1952. The cost of meat was 23 cents per pound in Tegucigalpa, or one-fourth of the price in New York; thus, there was a large enough margin to cover transportation costs by air and leave a profit.

### III. Means of Transport for Domestic Economic Activity

Honduras is characterized by the absence of land transportation routes between the different regions of the country. Those that do exist are extremely deficient and cause high operating costs. Many important regions have no communication with the principal commercial centers of the country. Aviation has partly fulfilled the need created by the absence of roads, but the conditions under which it provides its services bear heavily on the prices of the products shipped. Thus, the solution of the road problem is fundamental for the development of Honduras.

The production of basic foodstuffs, which requires cheap means of transport, could be increased if the road network were improved. Contrary to the situation prevailing in other Central American republics, corn production is distributed among the different departments in proportion to the population, reflecting how little is transported, even though some departments are potentially capable of yielding much larger crops. The same thing is true of bean production. Sorghum production, on the other hand, is not distributed proportionally: the Departments of Choluteca and Valle, in the southern part of the country, produce about a third of the total, with only 12% of the country's population. Half of the rice crop comes from 4 departments --Yoro, Comayagua, Cortés and Colón-- which have 24% of the population. Of the potato crop, 28% comes from El Paraíso, to the southeast, which has 6% of the population. Almost all the sugar is produced in Cortés, with 10% of the total population. Practically all of the wheat crop is harvested in Ocotepeque, to the west, where 3% of the inhabitants live. (For 1951 data

/see

see Table 45.)

Table 45

Honduras: Production of Basic Foodstuffs, 1951

(in metric tons)

	Rice	Beans	Corn	Sorghum	Potatoes	Wheat	Sugar
<u>Honduras;</u>	10.010	21.240	186.639	48.110	5.080	3.629	4.588
Francisco Mo- razán	256	2.377	16.829	6.737	707	3	--
El Paraíso	284	3.053	11.768	6.092	1.362	16	--
Choluteca	298	1,216	15,227	10.347	12	--	34
Valle	469	472	8.758	6.092	7	--	--
Olancho	691	2.162	14.824	19	140	--	--
Comayagua	1.122	1.807	10.733	1.388	792	--	--
La Paz	227	671	6.823	2.519	64	21	--
Yoro	1.444	1.424	15.714	36	132	--	--
Santa Bárbara	630	1.822	22.467	7	203	--	819
Intibucá	220	733	8.123	4.487	10	118	--
Lempira	418	1.559	14.110	10.116	75	172	--
Copán	267	1.435	17.251	14	210	91	--
Ocotepeque	144	307	4.832	2.299	162	3.206	--
Cortés	1.748	942	9.276	17	1.100	2	3.735
Atlántida	687	626	6.324	4	68	--	--
Colón	1.105	631	3.545	7	36	--	--
Islas de la Bahía	a/	3	35	a/	a/	--	--

Sources: Figures for rice, beans, corn, and sorghum: Censo Agropecuario 1952; for potatoes, wheat, and sugar: Servicio Informativo del Banco Central y del Banco Nacional de Fomento, Tegucigalpa.

a/ Less than 1 metric ton.

1. Highways and Roads

(a) Inter-Oceanic Highway. This route has already been described in detail.<sup>1/</sup> Agricultural and livestock products are shipped to Tegucigalpa

<sup>1/</sup> See Section II, point 4 (a), p.192.

/along

along the first 36 kms. of the Northern Highway. The Tamara region, at 1,200 meters above sea level produces corn, beans, bananas, oranges, etc. From Km. 36 to Comayagua the highway passes through an extensive region of forests producing lumber, and alternating with cultivated fields of corn, bananas, beans, sugar cane and fruit. There are important stock-raising areas as well as uncultivated lands. On the Comayagua plains, there are vast fields of sugar cane and cereals, as well as fruit orchards. Here irrigation has been introduced with satisfactory results. About 2 kms. from Comayagua (toward Siguatepeque) the Banco Nacional de Fomento has built an important grain elevator.

Along the section between Siguatepeque and Potrerillos, which crosses the Río Lindo plains and the Sula Valley at an altitude of about 300 feet, there are important lumber-producing areas and saw-mills, large and medium-sized cultivations of sugar cane, bananas, fodder (with abundant livestock), corn, fruit, and rice.

The Southern Highway, which at the present time is being improved and relocated in order to convert it into a first-class paved highway,<sup>1/</sup> passes through a region in which corn, beans, sorghum, potatoes, livestock, poultry products, lumber, etc. are produced.

In addition to international traffic, there is heavy domestic commercial traffic on the Inter-Oceanic Highway, principally to and from Tegucigalpa.

<sup>1/</sup> The contract for the relocation, improvement and paving of the first stretch of 40 kms. from Jicaro Galán (point of junction with the Inter-American Highway) towards Tegucigalpa has been awarded to the J. A. Jones Construction Co., on a cost plus 10% basis. The study and relocation of the rest of the highway to Tegucigalpa has also been given to the same firm.

(b) Inter-American Highway.<sup>1/</sup>

(c) Eastern Highway. This route is 129 kms. long and connects Tegucigalpa with Danlí and El Paraíso. When completed as far as the Nicaraguan border, it will also constitute an important international route. This road has traffic the year round, and its construction has appreciably contributed, in a direct way, to the economic development of Danlí and El Paraíso, and indirectly to that of Yuscarán and the mines of the Agua Fría zone.

The features of this highway are poor horizontal and vertical alignment, numerous curves (many of them sharp), and inclines in various sections with grades of 6%, and in others, up to 10%. The width is insufficient in many stretches. It is irregularly graded, and almost totally filled and surfaced for year round traffic. Some drainage work is lacking, some bridges are inadequate and others are defective.<sup>2/</sup> On very few stretches are there good alignment and gentle grades.

(d) Western Highway. This route, whose terminal points will be Nueva Ocotepeque and San Pedro Sula, now has an established traffic between the latter city and La Entrada, at 72 kms. from Santa Rosa de Copán, but because of the lack of many bridges, traffic is occasionally interrupted when the rivers are high. Aside from the value that it already has for the development of the western region, it will have in the future

<sup>1/</sup> See Section II, point 4 (b) of this chapter, p.194.

<sup>2/</sup> For example, at Km. 40 a bridge is lacking. A wooden bridge at Km. 47 should be replaced with a permanent structure. There is one under construction at Km. 51, and another at Km. 88 (Río Azul); and bridges are lacking at Kms. 54, 57 and 62 (Río Guayabo). The one over the Netiapa River at Km. 76 is in very bad condition.

/great

great importance for trade with El Salvador since it will connect with the San Salvador-Puente Lempira-Citalá highway. At present the road is being relocated and improved between La Entrada and Santa Rosa de Copán. The construction of bridges and drainage structures has also been started. It has poor horizontal and vertical alignment on many stretches, sharp curves, varying width (narrow in some places), and grades of more than 6%.<sup>1/</sup>

(e) Olancho Highway. It will connect the capital with Juticalpa, and will penetrate farther to the north into the Department of Olancho, to stimulate the development of valuable farming, stock-raising, and forested zones. At present it is only partially built, extending for 149 kms., and its features are similar to those of the last two roads described above.<sup>2/</sup>

(f) Other roads. Also worth mention are the routes from Siguatepeque to La Esperanza and to Marcala, the branch of the Western Highway to Santa Bárbara, and the Central Highway (La Ceiba-Olancho), because of the significance they will have in the development of important regions of the country. Plans exist for connecting the first of these routes to the capitals of the Departments of Lempira and Copán.

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<sup>1/</sup> Since 1952 more maintenance work is being done on the San Pedro-Sula-La Entrada section. Some relocation work is to be done, and a few bridges that are still lacking will be built. Between Santa Rosa de Copán and Nueva Ocotepeque (approximately 90 kms.) studies are being made for the location of the entire section, so that its definite construction may be started subsequently.

<sup>2/</sup> For the fiscal year 1953/54 the Dirección General de Caminos has proposed the construction of 45 additional kms. of this important route, which would mean an expenditure of approximately 900,000 lempiras.

2. Public Expenditures on Roads and Highways

The government of Honduras has been spending an annual average of 3.4 million lempiras on construction, improvement and maintenance of its roads. (See Table 46.)

Table 46

Honduras: Public Expenditures on roads, 1947/48 to 1951/52

<u>Years</u>	<u>Central Government</u> (in thousands of lempiras)	<u>Local Governments</u>	<u>Total</u> (in thousands of lempiras)	<u>Total</u> (in thousands of dollars)
1947/48	2,104	260	2,364	1,182
1948/49	2,506	344	2,850	1,425
1949/50	2,945	424	3,369	1,685
1950/51	3,621	322	3,943	1,971
1951/52	5,972	404	6,376	3,188
Total	17,148	1,754	18,902	9,451
Annual Average	3,430	351	3,780	1,890

Source: Central government: Ministries of Finance and of Development; local governments: Annexes to Reports of Minister of the Interior.

Maintenance absorbs 60% of this, and the remainder goes to the construction and improvement of the roads of the entire country. If one bears in mind that in Honduras, in a region with topographical and other natural features similar to those of the zone crossed by the Southern Highway, the construction of 1 km. of first-class highway may

1/ There are several sources of income for construction, improvement and maintenance of roads in Honduras: (a) tolls; (b) land and water leases; (c) personal road tax; (d) taxes on real estate, commercial establishments, gasoline, manufacturing enterprises, patents and concessions on mines and mining zones; and (e) a percentage of general import duties and of coffee export duties.

/cost

cost around 80,000 lempiras, and in the region of the Central Highway, some 30,000 lempiras; then it is evident that with an average annual appropriation of 1.5 million lempiras it would only be possible to build some 19 kms. of the first type of highway, and some 50 kms. of the second in a year, leaving nothing for the improvement of a single kilometer of road. The annual road expenditures applied to maintenance activities amount to 2.2 million lempiras. Bearing in mind that 1,500 lempiras <sup>1/</sup> is the average cost per kilometer for maintenance, only some 1,500 kilometers a year can be taken care of, leaving the rest of the road network without maintenance. In other words, the funds assigned for the purpose during the past five years have been insufficient for the various expenditures on roads. The limited number of kilometers that have been added to road network of the country confirms this, as can be seen by the figures compiled by the Banco Central de Honduras (see Table 47) on the rate of increase of the road network between 1945/46 and 1951/52.

### 3. Road Transport Conditions

There is no statistical information concerning vehicle traffic along the roads of Honduras. An estimate made by the Dirección General de Caminos considers that along the Northern Highway (between Tegucigalpa and Comayagua) there are 50 motor vehicles a day, and along the Southern and Eastern Highways, 60. On the other hand, it is estimated that along the highway leading to Olancho and on the Siguatepeque-La Esperanza-Marcala highway, there are less than 50 vehicles a day.

<sup>1/</sup> Figures from the Dirección General de Caminos.

/These figures



These figures are possibly lower than what they are in reality. Traffic on the Inter-American Highway can be estimated at some 150 vehicles a day along the route to El Salvador, and at about 90 vehicles along the route to Nicaragua. Even though these are low figures, they represent an increase over those of recent years.

Low road mileage and low population density are the principal factors which have kept highway transportation at such a mean level. Road traffic in Honduras may be summed up as follows:

(a) Imported goods are distributed from the capital to the most important towns --Comayagua, Danli, etc.-- in Central Honduras, and from San Pedro Sula to the towns and villages of the coastal districts. From the important towns to the villages, goods are carried generally by ox-cart or pack mule.

Table 47

Honduras: Increase in the road network

Years	Kms.	Annual increment (in kms.)
1945/46	1,339	..
1946/47	1,357	18
1947/48	1,389	32
1948/49	1,400	11
1949/50	1,442	42
1950/51	1,544	102
1951/52	1,675	131

Source: Banco Central de Honduras.

/(b) Road

(b) Road transport of farm products and of local manufactures is limited to the most populated zones of the central region and of the northern coast. Most of the domestic transport is by carts and mules. An exception is the transport of bananas, which are moved by railroad, and coffee, which is moved by trucks or ox-carts to the processing mills, and from there often by truck to railroad terminals such as Potrerillos, or to San Lorenzo.

The number of automotive vehicles in Honduras is very small. At the present time there are only 4,627, divided about equally between private and commercial vehicles. (See Table 48 and 49.) About half of these vehicles are registered in the Department of Francisco Morazán, where Tegucigalpa is located, and about 25% in the Department of Cortés, where San Pedro Sula, the principal industrial and commercial center of the country, is located. Of the 15 other departments, only 4 --Yoro, Atlántida, Choluteca and Valle-- have more than 50 vehicles. Nevertheless, since 1950 the number of automotive vehicles, excepting passenger buses, has increased almost by 50%.

Table 48

Honduras: Automotive vehicles registered, by class, 1950-1952

Year	Auto- mobiles	Trucks	Buses	Pick- ups	Jeeps	Station wagons	Others	Total
1950	1137	1151	57	16	182	631	121	3295
1951	1295	1309	56	56	197	606	46	3565
1952	1506	1502	59	332	347	670	211	4627

Source: Dirección General de la Policía Nacional, Tegucigalpa.

/The number

The number of passenger buses is very small (59). The increase from 1950 to 1952 was only 2 vehicles. It is estimated that there are 10 trailer trucks in the country and 300 semi-trailer trucks, the majority of which are primarily used in transporting lumber and livestock. There are no statistics relating to ox and mule carts, which are the principal means of transport for most of the country, but probably they are quite numerous.

Table 49

Honduras: Automotive vehicles registered, by departments, 1952

<u>Department</u>	<u>Auto-</u> <u>mobiles</u>	<u>Trucks</u>	<u>Station</u> <u>wagons</u>	<u>Buses</u>	<u>Pick-</u> <u>ups</u>	<u>Jeeps</u>	<u>Others</u>	<u>Total</u>
Francisco Morazán	1012	550	386	41	201	178	201	2569
Cortés	312	509	186	6	106	68	2	1189
Atlántida	98	122	15	6	3	12	—	256
Choluteca	37	83	38	4	7	42	8	219
Yoro	15	68	6	2	1	9	—	101
Valle	11	66	11	—	1	—	—	89
Santa Bárbara	4	35	7	—	4	4	—	54
El Paraíso	5	21	9	—	2	5	—	42
La Paz	2	18	3	—	—	7	—	30
Olancho	1	19	—	—	1	8	—	29
Comayagua	4	4	2	—	4	3	—	17
Copán	3	2	4	—	2	5	—	16
Intibucá	2	3	2	—	—	—	—	7
Ocotepeque	—	2	1	—	—	2	—	5
Lempira	—	—	—	—	—	4	—	4
Totals	1506	1502	670	59	332	347	211	4627

Source: Dirección General de la Policía Nacional, Tegucigalpa.

The greater part of the automotive vehicles in Honduras has been purchased in recent years, and consequently is in satisfactory /condition.

condition. This is especially true of those belonging to the trucking enterprises, which do not neglect their maintenance.

The cost of vehicles, replacement parts and fuel is high. The cheapest truck chassis comes to 6,000 lempiras (\$3,000), and complete with body 6,600 lempiras (\$3,300). Tires, as elsewhere in Central America, are high-priced.<sup>1/</sup> Gasoline costs 1 lempira (50 cents) a gallon, inclusive of taxes from 37 to 44 centavos. Diesel oil costs 92 centavos, and has a tax of 32 to 42 centavos.<sup>2/</sup> This high cost of Diesel oil limits a wider use of Diesel-powered vehicles, and may be considered harmful to the country's economy. A more extensive use of this type of vehicles would reduce both operating costs and expenditures for imported fuel.

Repair and maintenance expenses are also high because of the lack of garages, repair equipment, and trained mechanics.

The Constitution provides for no regulation concerning rates, and consequently the operators establish them freely. There are

<sup>1/</sup> The usual prices are as follows: 7.50 x 20, 175 lempiras (\$87.50); 8.25 x 20, 250 lempiras (\$125); and 9.00 x 20, 290 lempiras (\$145).

<sup>2/</sup> National and municipal import duties and taxes on gasoline Diesel can be classified as follows:

Duties and taxes	Gasoline		Diesel	
	North	South	North	South
Consular	0.0168	0.0168	0.0130	0.0130
Customs	0.3144	0.3197	0.2942	0.3015
Municipal	0.1074	0.0375	0.1220	0.0091
Total	0.4386	0.3740	0.4292	0.3236

The higher custom duties in the South are due to the inclusion of lighthouse and tonnage dues, which in the North are paid by ship captains.

/rates

rates between 7 and 12 cents per ton-kilometer. (See Table 50).

Table 50

Honduras: Truck transport freight rates

	<u>Distance</u> (kms.)	<u>Rate per pound</u> (centavos)	<u>Rate per ton-kilometer</u> (centavos)	<u>(cents)</u>
Tegucigalpa- Siguatepeque	122	1.5	24	12
Tegucigalpa- Potrerillos	260	1.7	14	7
Potreriillos- Siguatepeque	138	1.5	23	11.5
Potreriillos- Comayagua	158	1.5	20	10
Potreriillos- La Villa de San Antonio	175	1.5	17	8.5

Source: Transport Mission, from data furnished by private companies.

Public passenger service is less satisfactory than freight service. When the Mission visited Honduras, there were only 57 passenger buses in the entire country. Three fourths of these were operating in the Department of Francisco Morazán, and there were 12 departments with no buses whatsoever. Intercity bus service is sporadic with the exception of the most important routes. Buses with bodies of local manufacture are heavy and uncomfortable. Furthermore, the fares are very high --two or three times higher than in El Salvador-- varying between 1.75 to 3 cents per passenger-kilometer. (See Table 51.)

The city bus service in Tegucigalpa is satisfactory, in spite of the fact that the vehicles themselves are not first class.

/Table 51

Table 51

Honduras: Inter-city bus fares

R u n	Distance (kms.)	Fare (lempiras)	Fare per	
			passenger-kilometer (centavos)	(cents)
Tegucigalpa-San Antonio	85	5.00	6.0	3.0
Tegucigalpa-Cómayagua	100	6.00	6.0	3.0
Tegucigalpa-Siguatepeque	122	7.00	5.5	2.75
Tegucigalpa-Potreriillos	260	8.00	3.0	1.5
Siguatepeque-Potreriillos	138	4.00	3.0	1.5

Source: Transport Mission, from data furnished by private companies.

The Inter-Oceanic and Inter-American Highways, which have been constructed under better technical standards, do not fulfill the requirements for any considerable amount of traffic between Honduras and the neighboring countries. Consequently, road traffic has high costs and high rates, which adds to the inconveniences and over-charges already noted, and results in still higher prices for the consumer and reduced income for the producer. Furthermore, there are municipal traffic taxes (piso y peaje), levied in the towns on each incoming vehicle. These taxes vary from one municipality to another, and in some cases are higher for imported articles than for those of domestic manufacture. For example, at Potrerillos and at Danlí a truck has to pay a tax of 5 lempiras if carrying imported merchandise, and 1.25 lempiras if domestic products. In many cases, special tolls are charged for crossing certain bridges, especially along the Northern Highway. Examples of municipal

/taxes

taxes levied on trucks operating between Tegucigalpa and San Lorenzo and between Tegucigalpa and Potrerillos appear on Table 52. To these expenses others must be added such as bridge tolls, or national and municipal charges for registration, licenses, inspection, customs and fuel sales tax. Charges for piso y peaje have been eliminated in almost all other countries, and there is no justification for retaining them in Honduras.<sup>1/</sup>

#### 4. Air Transport

Honduras is, in a sense, the cradle of civil air transport in Central America. It was here that Pan American Airways established in 1929 the first air route for crossing the Isthmus, shuttling amphibians from Tela on the northern coast to San Lorenzo on the Gulf of Fonseca. It was also here in 1931 that the New Zealander, Lowell Yerex, organized a small company called Transportes Aéreos Interamericanos, which as years passed by, gradually developed into the well known TACA enterprise, which has operated not only in Central America but in other countries as well. For many years the maintenance shops of TACA at Tegucigalpa served as an international training center for Central American mechanics, and the men who were trained in them are to be found today throughout the whole region. At present TACA de Honduras is a company representing Hondurean interests for the most part, and it serves the majority of the domestic air routes.<sup>2/</sup>

<sup>1/</sup> The Mission was informed that according to a proposed fiscal reform, the government is studying the possibility of eliminating them.

<sup>2/</sup> The Hondurean company should not be confused with TACA International Airlines of El Salvador, which is a completely different enterprise.

Table 52

Honduras: "Piso y peaje" taxes on the San Lorenzo-Tegucigalpa-Potrerillos route

	Lempiras
1. Municipal traffic tax in Tegucigalpa (per month)	10.00
2. Truck entry fee Tegucigalpa Municipality	3.00
3. Truck entry fee San Lorenzo Municipality -- up to 10,000 lbs.	1.88
Truck entry fee San Lorenzo Municipality -- up to 15,000 lbs.	3.75
Truck entry fee San Lorenzo Municipality -- up to 25,000 lbs.	5.00
4. Truck entry fee Potrerillos Municipality	1.25
5. Truck entry fee Potrerillos Municipality, foreign commodities	5.00

Source: Oficina Técnica de Ingeniería, Secretaría de Agricultura, Tegucigalpa.

When Yerex began his operations 20 years ago, the relative isolation of Tegucigalpa and the lack of surface transportation routes made Honduras peculiarly suited to air transport. Much the same conditions still hold true. It is therefore not surprising to find that air transport continues to be one of the principal means of communication throughout the country.

In October 1952 TACA de Honduras was providing scheduled service to some 27 points, primarily in the western region, in Olancho, and along the northern coast. Flights vary from as many as 2 a day from Tegucigalpa to San Pedro Sula, to as few as 1 or 2 a week to places like San Marcos Ocotepeque, near the Salvadorean border, and San Francisco de La Paz, in Olancho. Unlike Guatemala, where air routes in general radiate

/out from the



out from the capital and back again, the Honduran routes have a different pattern. For example, from Tegucigalpa to La Ceiba there is no direct service, and passengers must go by way of San Pedro Sula, Puerto Cortés and Tela, or by way of Olancho, in flights requiring 2 or 3 hours. Fares are based on these roundabout distances. Flying time for the non-stop flight between Tegucigalpa and San Pedro Sula is only 45 minutes, but on the majority of flights there are frequent landings made at places only a few miles apart, over a river or mountain. Planes average 10 or 15 landings a day, and the average flight-time between stops is only 17.5 minutes. As a result, engine depreciation, gasoline consumption, tire wear and other operating costs are higher than normal.

In Honduras merchandise of all kinds is carried by air-- from cosmetics to construction materials. For export and for consumption in the more important cities, the air lines carry coffee, tobacco, hides, grain, meat, machinery to be repaired, etc.

In 1952 TACA operated 6 planes: four C-47's, one DC-3 and a Lockheed 14, the last-named stationed at Belize. Each of these planes had logged a total of 8,000 to 12,000 hours or more. The amount flown per month per plane for the first nine months of 1952 was 42 hours for the Lockheed, and 73 hours for each of the other five. This is relatively poor utilization. The maintenance and repair shops of the TACA de Honduras, with a personnel of 110 Honduran and 2 Costa Ricans, can perform all the maintenance required by Honduran civil aviation at a very reasonable cost.

/In addition

In addition to TACA there are several other airlines. Among them is Servicio Aéreo de Honduras (SAHSA), one of 4 companies organized in 1944 on Pan American Airway's initiative in the countries of Central America. PAA owns 40% of the capital, the government 20%, and local citizens the balance. Today SAHSA practically duplicates all the domestic routes of TACA, and has in operation four C-47's. The company has constructed parallel or nearby landing strips to those of TACA at San Pedro Sula, Nueva Ocotepeque and Santa Rosa de Copán. In 1951 SAHSA flew a total of 456,601 miles as compared with the 470,613 of TACA. Operating and unit costs of both companies were also very similar.

Another company is Aerovías Nacionales de Honduras, S.A. (ANHSA), which was organized in 1949 primarily to transport aguardiente, a government monopoly. This company carries only official freight, of which 90% is aguardiente. In 1951, operating with two C-47's, it flew 153,000 miles, transported 6,072,000 pounds, and had a gross income of \$202,052 (\$0.82 per kilometer flown).

The most outstanding feature of Honduran aviation, in close relation to the country's economy, is the high rates. On the main route from Tegucigalpa to San Pedro Sula, express charges are 61 cents per ton-kilometer (89 cents per ton-mile). The rate to Catacamas, in the Department of Olancho, or to Santa Rosa de Copán is as high or higher. Express rates to Tela and La Ceiba are over \$1.00 per ton-mile. Similarly, passenger fares are the highest in Central America; for example, 9.5 to 10 cents per passenger-kilometer (15 to 16 cents per passenger mile) between the capital and Tela or La Ceiba; 13.7 cents per kilometer (22 /per mile),

per mile), from Tegucigalpa to Yoro; 11 per kilometer (18 per mile) between Santa Rosa de Copán and Nueva Ocotepeque. Even on the direct flight between the capital and San Pedro Sula the passenger fare is 7.2 cents per kilometer (11.5 per mile). On the other hand, the fare on TAN for the flight from Tegucigalpa to Managua is 4.8 cents per kilometer (7.7 per mile). These rates and fares do not include the 2.5% tax on domestic flights and the 5.0% tax on international flights.

#### 5. Inland Waterways

Transportation on the inland waterways of Honduras has not yet been developed. The rivers, inlets, and lakes have not been studied and data basic to inland navigation is not available, although it is estimated that there are more than 1,300 kilometers of navigable waterways, distributed as follows:

Segovia River (Coco or Huanquí)	400
Patuca River	400
Caratasca Lagoon	200
Aguán River	150
Ulúa River	150
Chamelecón River	50
Lake Yojoa	25

The channels are not marked in any way, and nothing is done to keep them in navigable condition.

On the Bahía Islands (Islas de la Bahía) there is some sporadic shipbuilding on a small scale. Wooden hulls for cabotage boats and river craft are built to order. The craft used, for the most part, are canoes, and there is only a small number of gasoline boats either imported or built locally but with imported motors.

There is no

There is no centralized system of boat registration and often there is none whatever. There are no regulations governing navigation, rates or provisions for carriage; nor is there any established regular traffic or any estimate of the volume of inland water traffic.

Although the Mission had insufficient information to be able to judge the future possibilities of water transportation, in its opinion of all the Honduran waterways only a small portion of them are adequate for navigation and have a rich enough basin that would permit their development.

Some of the rivers flow through zones which are practically uninhabited and their use as means of transportation would depend above all upon the economic development of their immediate hinterland. This is the case of the Patuca and Segovia Rivers, each of which is estimated to have a navigable extension of 400 kms. Other rivers suited for navigation, such as the Uluá and Chamelecón, cross industrial and agricultural zones already served by highway and railroad, and consequently, their use as a means of communication at the present time offers little possibility.

Finally, the Aguán River, with its 150 kms. that are assumed to be navigable, has its source in the Department of Yoro. It flows through a fertile valley in the northern part of the Department of Colón, and empties into Trujillo Bay, which is well-protected and considered one of the finest in Central America. Considering the development possibilities of this region and the other conditions mentioned, the study and exploration of the Aguán River might constitute the first step of an investigation of Honduran waterways, especially those which cross the rich Departments of Colón and Olancho.

APPENDIX I

HONDURAS: ROAD NETWORK

	<u>Length in Kilometers</u>
1. <u>All-weather roads</u>	
A. <u>Trunk roads</u>	989
1. Inter-Oceanic Highway:	379
(a) Southern Highway: Teguci- galpa-Jicaro Galán	119
(b) Northern Highway: Teguci- galpa-Potrerillos	260
2. Eastern Highway: Tegucigalpa- El Paraíso	129
3. Olancho Highway: Tegucigalpa- Guayape	149
4. Western Highway: San Pedro Sula- Sta. Rosa	172
5. Inter-American Highway	160
B. <u>Other important routes</u>	246
6. Siguatepeque-La Esperanza-Marcala	123
7. Branch of Western Highway to Sta. Bárbara	66
8. Branch of Southern Highway to San Buenaventura	3
9. Branch of Inter-American Highway to Goascorán	4
10. Branch of Olancho Highway to Cedros	27
11. Branch of Eastern Highway to Yuscarán	23
C. <u>Secondary routes</u>	337
12. Tegucigalpa-Mateo-Lepaterique branch road	10
13. San Pedro Sula-La Lima road	14
14. Tegucigalpa-San Juan de Flores road	41
15. Branch of Eastern Highway to Agua Fria	29
16. Branch of Eastern Highway to Morecelí	4
17. Branch of Eastern Highway to Colinas	10
18. Branch of Southern Highway to Ciruelo	15
19. Choluteca-Orocuina branch road	35
20. Branch of Olancho Highway to Archaga	24
21. Progreso-Yoro road	125
22. Branch of Western Highway to Macuelino	30
<u>Total length of all-weather roads:</u>	1,572
/2. <u>Dry-</u>	

Length in kilometers

2. Dry-weather roads 158

- 23. Branch of Northern Highway:  
 Río Lindo-Sta. Cruz de Yojoa 28
- 24. San Pedro Sula-Choloma road 20
- 25. Branch of Southern Highway to  
 Ojojona 37
- 26. Branch of Eastern Highway to  
 Guinope-San Luis 42
- 27. San Lucas branch to San Antonio de  
 Flores 20
- 28. Branch of Eastern Highway to Tumbula 8

Total length of Honduran roads: 1,730

3. Roads under construction

- 1. Gracias-Santa Rosa de Copán road 50
- 2. Comayagua-La Libertad road 50
- 3. Central: La Ceiba-Olanchito road 60
- 4. Puerto Cortés-Cuyamel road 50
- 5. Potrerillos-San Pedro road 35

Total length of roads under construction: 245

Chapter IV

NICARAGUA

I. Introduction

Nicaragua is the largest of the Central American republics and has the lowest population density. Its area has been estimated at 148,000 square kilometers,<sup>1/</sup> and it has a population of 1,057,023, or 7.14 inhabitants per square kilometer, according to the final figures of the census of May 1950. The 1940 census showed that 35.9% of the total population was gainfully employed and that 73.1% was engaged in agriculture.<sup>2/</sup> From 1945 to 1951 the increase in population was more than 22,000 per year, or about 2% annually.

The country is almost triangular in shape. Measured along a straight line, Nicaragua has some 450 kms. of coastline on the Atlantic and 300 on the Pacific. It is between 10° 45' and 15° 10' north latitude and 83° 15' and 87° 40' west longitude.

Nicaragua is divided into three large areas:

(a) The western zone on the Pacific coast, made up largely of low, flat country with an elevation of less than 200 meters,

<sup>1/</sup> Including Lake Managua and Lake Nicaragua, which have a total area of 9000 square kilometers.

<sup>2/</sup> The corresponding figures for the 1950 census were still not available when this report was written.

/the large

the large lakes of Managua and Nicaragua, and a line of volcanic peaks. There are two seasons in almost the whole region: the rainy season, from May to October, and the dry season from November to April. The climate is hot, except in some parts of the Departments of Masaya and Carazo, where it is temperate. In contrast to the other Central American countries, which have tended to develop in the mountains and central plains away from the coast, Nicaragua has its most highly developed region on the Pacific zone. About 60% of the population lives in this area, and the country's 5 largest cities are found here. More than 10% of the country's population is concentrated in Managua, the capital city. Masaya, the most densely populated department, with 120.7 inhabitants per square kilometer, is likewise in this area. Natural conditions are favorable to agriculture and to its mechanization, and production of agriculture and livestock is considerable. There is also some production of industrial articles. Most of this area is crossed by the principal roads and by the rail line of the Ferrocarril del Pacifico, whose terminal is Corinto -- the country's leading port.

(b) The central zone, which begins about 95 kms. inland from the Pacific coast. It contains 23% of the population, is very mountainous, has a milder climate, and a rainy season lasting from 6 to 9 months. Its most densely populated department is Madriz, with 24.1 inhabitants per square kilometer. The largest livestock region in the country is in the Department of Chontales, which also has great mineral and forest wealth. The Inter-American Highway, as well as the projected Atlantic Highway, cross this area. There are also some roads of per-

/manent



manent and seasonal traffic that are used to transport products of the region.

(c) The eastern zone, situated between the Atlantic and the Continental Divide, has 8% of the population, or only a little over 1 inhabitant per square kilometer. The climate is hot, and the rains last from 9 to 12 months. It is rich in minerals and forests. The largest rivers in Nicaragua flow through this area, and along the river banks are the region's chief population centers.

Nicaragua's economic development has been slow, but for the past 3 years plans for accelerating it have been introduced, the first grain elevator has been built, a development corporation has been founded, and certain economic and fiscal measures are under consideration.

Gross National product in 1950 was estimated at 1,027 million córdobas, of which agriculture represented 40%, manufacturing 14%, and mining 6%. (See Table 53.)

Table 53

Nicaragua: Gross National Product, 1950

	Millions of córdobas	% of total
<u>Gross national product</u>	1,027	100
Agriculture	416	40.5
Mining	60	5.8
Construction	54	5.3
Manufacturing	145	14.1
Transportation and communications	37	3.6
Power	11	1.1
Commerce and finance	108	10.5
Government	63	6.1
Professional and domestic services	27	2.6
Other services (hotels, interest payments, rents, etc.)	106	10.4

Source: International Bank for Reconstruction and Development, The Economic Development of Nicaragua, p. 74, based on preliminary estimates of the Dirección General de Estadística, Managua.

In 1951 the gross national product probably exceeded 1,200 million córdobas.<sup>1/</sup> This increment of close to 17% was partly due to the greater volume of exports, but it also reflects the devaluation of the córdoba and the rise of internal prices.

Agriculture, the country's principal economic activity, is concentrated in the western coastal region and yields exportable surpluses even of basic consumer products. (See Table 54.)

Table 54

Nicaragua: Production and exports of some agricultural commodities, 1951

(metric tons)

Products	Production	Exports
Corn	92,886	14,300
Beans	19,939	792
Sorghum	31,945	—
Sesame	15,079	8,177
Cotton	17,332	4,365
Rice	18,160	8,347
Manioc	6,898	—
Coffee	23,828	16,098
Sugar	29,440	8,346

Source: Dirección General de Estadística.

During the agricultural year 1951-1952, 93,000 metric tons of corn were produced, and more than 14,000 were exported. Half

<sup>1/</sup> Source given for Table 53. At the rate of 7 córdobas to the dollar, this is equivalent to \$170 million and almost \$155 per capita.

/of this

of this production was in the Departments of Chinandega, León and Managua, in the western zone. (See Table 55.) All departments are producers, but some in the central zone, do not completely cover their demand. Bean production in 1952 amounted to 20,000 tons, of which 800 were exported. León, Managua, Carazo, and Granada produced more than half of the total, and certain departments in the central zone did not produce enough for consumption. Of the total rice production 80% is concentrated in Carazo, Chinandega, Granada, Managua, and Masaya, but nearly all departments are self-sufficient, and in 1951, of a total crop of 18,000 tons, more than 8,000 tons were exported. The western zone also produced almost all of the 15,000 metric tons of sesame, of which more than 8,000 tons were exported in 1951. It also produced two-thirds of the 17,000 tons of cotton grown in 1951. Most of the coffee also comes from the western zone, although it is also grown in the central zone. Since 1950 coffee is the leading export product. This is due to its high market price. The sugar cane plantations are concentrated in Chinandega, but there is an increasing number in Managua. These two departments supply the rest of the country and at times export. More than 20,000 heads of livestock have been exported annually. Some cross the Honduran border on foot; some are shipped from San Juan del Sur and Corinto to Peru, Panama, and other countries.

Nicaraguan industrial production is centered chiefly in the area near the capital. The cement factory at San Rafael del Sur, about 50 kms. from Managua, has produced 18,000 tons per year. About 4 million yards of cotton textiles are produced annually, and there is

/also some

also some production of beer, vegetable oils, and other commodities that are shipped to the different departments. Industry has made little progress in recent years, and the demand for manufactured articles is satisfied largely through imports.

Table 55

Nicaragua: Production of basic foodstuffs for domestic consumption, by departments, 1951/1952

(metric tons)

	Corn <sup>a/</sup>	Beans <sup>b/</sup>	Manioc	Sorghum <sup>a/</sup>	Rice	Sugar <sup>c/</sup>
<b>Totals</b>	92,836	19,939	31,945	18,160	6,898	15,696
Boaco	4,175	449	1,531	—	—	—
Carazo	5,119	2,197	2,154	4,135	—	—
Chinandega	15,071	636	3,023	1,744	392	13,741
Chontales	7,768	788	2,184	106	149	—
Estelí	2,821	487	325	—	—	—
Granada	3,371	2,424	772	3,337	880	123
Jinotega	8,575	969	963	1	16	—
León	15,112	2,213	4,881	819	521	857
Madriz	2,008	543	1,169	4	14	—
Managua	14,193	3,791	13,089	2,549	2,901	285
Masaya	2,920	1,007	142	2,579	1,219	—
Matagalpa	4,703	1,637	1,142	108	4	—
Nueva Segovia	1,486	420	462	33	354	—
Río San Juan	457	229	—	523	—	—
Rivas	3,957	2,024	108	1,535	—	690
Zelaya	—	125	—	682	449	—
Comarca del Cabo Gracias a Dios	—	—	—	—	—	—

Source: Dirección General de Estadística, Managua.

- a/ The fanega of corn and sorghum was converted to kilograms on the basis of one fanega to 132.48 kgs.  
 b/ The fanega of beans was converted on the basis of one fanega to 154.56 kgs.  
 c/ The 1945/46 sugar season. This is the last year for which figures are available by departments.

/There are

There are in Nicaragua an estimated 1,383 gold and silver mining claims that have been denounced.<sup>1/</sup> The number of mines in production, however, is much smaller, and only 6 mines produce almost all the gold. For many years these metals occupied first place among Nicaraguan exports. In 1951, 7,820 kilograms of gold valued at \$8.7 million, and 6,450 kilograms of silver valued at \$171,000, were exported. Mining is concentrated in the central and eastern parts of the country, from where the production is shipped by air.

There has been very little development in transportation. Road building is very recent, and due to the increased agricultural production, the principal railroad lacks capacity to move export crops efficiently. Nicaragua has a great economic potential for development in many zones, both in the field of domestic consumption and in the field of exports to the rest of Central America and other countries. There are vast areas which could be opened up for cultivation, and there are mineral and forest resources which have never been exploited. It is therefore clear that to carry out the development programs which the government is undertaking or will undertake,<sup>2/</sup> transportation facilities will have to be improved and further developed.

## II. Means of Transport for International Trade

In order to meet present foreign commerce requirements, an intensive use is made of existing transportation facilities, parti-

<sup>1/</sup> International Bank for Reconstruction and Development, The Economic Development of Nicaragua, p. 185.

<sup>2/</sup> See the five year development program proposed by the Mission of the International Bank for Reconstruction and Development, op.cit. Approximately two-thirds of the total cost of this program consists of expenditures on improvements in transportation and communications.

/cularly of those

cularly of those in the western coastal region. The Pacific ports handle about 75% of the total volume of foreign commerce. Approximately 45% of Nicaragua's exports —chief coffee, cotton, oil-seeds, and sugar— and almost 70% of her imports pass through the port of Corinto (see Table 56). The only access to the port is the rail line, which connects it with the capital, 138 kms. away. A lighter but increasing volume of exports and imports pass through the port of San Juan del Sur, on the Pacific —including exports from the nearby northern region of Guanacaste, Costa Rica. Puerto Cabezas and El Bluff (Bluefields) on the Atlantic also have some traffic, the bulk of which is lumber exports. International air cargo traffic is light. There is a small but growing international traffic with El Salvador and Honduras via the Inter-American Highway, and a small volume of freight is moved through Puerto Morazán across the Gulf of Fonseca. However, the great importance of Corinto and of the means of communication between it and the cities of Chinandega, León and Managua, as well as between the port and the western and central zones, is the basic characteristic of the existing international transport facilities.

#### 1. Railroads

The only public railroad system in Nicaragua is the Ferrocarril del Pacífico, which is government-owned. The railroad also owns the ports of Corinto and San Juan del Sur on the Pacific, and the port of San Jorge on Lake Nicaragua, as well as the steamship service on this lake.<sup>1/</sup> This combined transport system is the most important in the country.

<sup>1/</sup> The light and power company in Managua is also owned by the railroad.

TABLE 56

NICARAGUA: VOLUME OF IMPORTS AND EXPORTS, BY CUSTOMS 1946-1951

PORTS AND CUSTOMS	EXPORTS (THOUSANDS OF TONS)						IMPORTS (THOUSANDS OF TONS)						PERCENTAGE DISTRIBUTION OF TOTAL TRAFFIC					
	1946	1947	1948	1949	1950	1951	1946	1947	1948	1949	1950	1951	1946	1947*	1948	1949	1950	1951
OCEAN PORTS	75.8	83.6	88.2	88.6	121.5	114.0	95.7	109.3	113.1	119.4	118.2	171.9	99.1	98.9	98.5	99.1	97.6	96.7
PACIFIC ZONE	48.4	45.9	59.0	56.8	74.7	74.8	75.3	92.0	95.5	95.3	101.3	153.5	71.4	70.7	75.6	72.5	71.7	77.2
CÓRINTO	41.8	37.1	47.6	49.0	56.1	50.5	74.9	80.3	82.9	78.6	78.2	120.5	67.4	60.2	63.9	60.8	54.7	57.8
SAN JUAN DEL SUR	6.3	8.7	8.2	5.2	12.8	7.6	0.3	0.5	1.1	3.4	8.7	13.4	3.8	4.7	4.5	4.1	8.8	7.1
MORAZÁN	0.3	0.1	3.2	2.6	5.8	16.7	0.1	0.1	0.2	0.3	0.1	—	0.2	0.1	1.7	1.4	2.4	5.7
SOMOZA	—	—	—	—	—	—	—	11.1	11.3	13.0	14.3	19.6	—	5.7	5.5	6.2	5.8	6.6
<u>ATLANTIC ZONE</u>	27.4	37.7	29.2	31.8	46.8	39.2	20.4	17.3	17.6	24.1	16.9	18.4	27.6	28.2	22.9	26.6	25.9	19.5
EL BUUFF	7.5	11.2	11.1	13.6	29.2	22.2	5.8	3.3	4.6	11.2	5.6	5.4	7.7	7.4	7.7	11.8	14.2	9.3
PUERTO CABEZAS	15.9	20.6	12.1	13.6	13.5	13.9	13.9	13.4	12.4	12.2	10.7	12.9	17.2	17.5	12.0	12.3	9.8	9.1
CABO GRACIAS A DIOS	4.0	5.9	6.0	4.6	3.9	2.6	0.7	0.6	0.6	0.7	0.6	0.1	2.7	3.3	3.2	2.5	1.8	0.9
DELTA DEL SAN JUAN A/	..	..	..	..	0.2	0.5	—	—	—	—	—	—	..	..	..	..	0.1	0.2
<u>INLAND CUSTOMS</u>	0.1	0.1	1.8	0.8	3.2	7.0	1.1	1.6	0.3	0.2	0.9	1.0	0.7	0.0	1.0	0.5	1.7	2.7
EL ESPINO (HONDURAS)	0.1	0.1	1.8	0.8	3.2	7.0	—	0.1	0.1	0.1	0.2	0.2	0.05	0.1	0.9	0.4	1.4	2.4
MANAGUA B/	—	—	—	—	—	—	0.1	0.1	0.1	0.1	0.4	0.6	0.05	0.1	0.05	0.1	0.2	0.2
MANAGUA C/	—	—	—	—	—	—	1.0	1.4	0.1	—	0.3	0.2	0.6	0.7	0.05	—	0.1	0.1
<u>AIRPORT (MANAGUA)</u>	—	0.1	0.5	0.2	0.1	0.2	0.3	0.3	0.5	0.7	1.6	1.6	0.2	0.2	0.5	0.4	0.7	0.6
<u>TOTAL</u>	75.9	83.8	90.5	89.6	124.8	121.2	97.1	111.2	113.9	120.3	120.7	174.5	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: ANNUAL REPORTS OF THE RECAUDACION GENERAL DE ADUANAS, MANAGUA.

A/ DATA UNKNOWN FROM 1946 TO 1949 (RELATIVE TO BANANA EXPORTS VIA COLORADO, COSTA RICA).

B/ IMPORTS BY ROAD REGISTERED AT THE MANAGUA CUSTOMS.

C/ IMPORTS BY SEA REGISTERED AT THE MANAGUA CUSTOMS.

In 1950/51 the Ferrocarril del Pacífico carried more than 3 million passengers and more than 300,000 tons of freight, one-third of which was import traffic. There was an almost equal volume of exports, chiefly through Corinto. (See Table 57.) Both passenger and freight traffic, but especially the latter, have increased substantially since 1947, in spite of the increasing competition of road transport all along the line except on the Corinto-Chinandega stretch.

Table 57

Nicaragua: Traffic on the Ferrocarril del Pacífico, 1946/47 - 1950/51

	1946-47	1947-48	1948-49	1949-50	1950-51
Train-kms. (thousands)	3,032	3,203	3,396	3,534	2,758
Passengers (thousands)	2,821	2,859	2,928	3,021	3,117
Freight (thousands of tons):					
Local	55	43	62	43	92
Coffee	12	15	7	20	15
Import	87	101	91	105	115
Export	48	55	53	76	84
Total	202	214	213	244	306

Source: Ferrocarril del Pacífico, Managua.

The railway system runs along the Pacific coast, from the port of Corinto and Chinandega southeast, passing through León and Managua to Masayá. Here it divides, one line leading to Granada, on the shore of Lake Nicaragua, and the other to Jinotepe and Diriamba, in the Department of Carazo. From the trunk line at León, a branch line runs north to the Río Grande, and another one from Chinandega runs to Puerto Morazán. Disconnected from the trunk line, there is a line which passes

/through



through the city of Rivas near the Costa Rican border and connects the ocean port of San Juan del Sur with the lake port of San Jorge. The total length of the system is 380 kms. distributed as follows:

	<u>Kms.</u>
Main line, Granada-Corinto	190
Branch lines: León-Río Grande	85
Masaya-Diriamba	44
Chinandega-Puerto Morazán	30
San Juan del Sur-San Jorge line	31

The railroad owns 31 steam locomotives (fuel oil), 73 passenger cars, 8 small gasoline motor cars and 320 miscellaneous freight cars. The Mission travelled on the ordinary trains of the railroad, on the Managua-Corinto and San Jorge-San Juan del Sur runs. It thus had an opportunity to observe the movement on these lines and to make a light inspection of the rolling stock and permanent way. Especially notable is the small stock of locomotives -- some of them dating from the last century -- insufficient in number for present traffic needs, and even more remarkable is the inadequacy of most of these. Almost all of them should have been withdrawn from service and replaced by more powerful and more economical locomotives. Consequently, these locomotives have a minimal efficiency and operating costs are high, not only because of the low thermic capacity of these antiquated models, but also because of the frequent and high costs of repairs and the low number of units available for service. Locomotives average monthly 2,700 kms;<sup>1/</sup> the cost per

<sup>1/</sup> Data from statistics supplied by the Ferrocarril del Pacífico, June 1952. The normal average per locomotive for a system like this one should be, with steam traction, from 4,500 to 5,000 kms. per month.

locomotive-kilometer (including wages, repairs, fuel, lubricants and other items included in variable costs) is 3.01 córdobas, or \$0.43;<sup>1/</sup> repairs per locomotive-kilometer amount to 0.736 córdobas, or 10.4 cents. The average tractive force per train-kilometer was scarcely 203 gross tons. These costs are very high for such low working averages, especially considering that the trunk line, Managua-Corinto, where most of the traffic is handled, is quite level (maximum grade of 2% on one short stretch).<sup>2/</sup>

The number of freight cars owned by this railroad would be sufficient if the locomotive equipment were increased and improved, thus achieving greater tractive force and more speed; more trains could be run, and the present long cycle for freight cars would be cut considerably.

General conditions of the permanent way are deficient on the trunk line itself. The line between San Jorge and San Juan del Sur is in bad condition, but it is going to be scrapped, since traffic can be handled less expensively and more rapidly by the road parallel to the railway. This new road is now being built.

The roadbed is earth (partly volcanic ash), with light rails, 30 kilograms per meter on three-fourths of the main line, and 25 to 20 on the rest. Branch line rails are 20 kilograms. If traffic conditions are to be improved, it will be necessary to renew long stretches

<sup>1/</sup> At the rate of 7 córdobas to the dollar.

<sup>2/</sup> On the stretch from Granada-Managua, on the San Juan del Sur line and the Diriamba branch line, conditions are more difficult (maximum grade 3%).

/of the line;

of the line; ties which are in bad condition will have to be replaced, and the line reballasted. If heavier locomotives are to be used for greater speed, a complete renovation with heavier rails will be necessary. Another factor which would make for great economy would be the improvement of the present system of hand-operated signals, at least on the trunk line where traffic is heavy enough to justify an efficient system.

The port of Corinto, whose railroad facilities are practically the same as they were 30 years ago, also contributes to the inefficiency of rail transport. This is due primarily to the delays in the use of freight cars and to the volume of freight handled which is too large for existing facilities.<sup>1/</sup>

The railroad's situation is paradoxical, since despite the unfavorable factors described above, its financial statements reveal excellent results. Operating ratios (operating expenses in relation to operating revenue) have varied from 60% to 70% in recent years; only in one year the ratio was 74%. (See Table 58.) There are very few private or government-owned railroads in the world --and perhaps none in Latin America-- which can show such a low operating ratio. The Nicaraguan government has accumulated profits from the operation of the railroad but has not reinvested them in spite of the need there is to renew and modernize the rolling stock, locomotives and other equipment, and to improve port facilities. In 1943, when the operating ratio was even lower

<sup>1/</sup> See point 2 (a) of this section, p. 237.

--52%-- there was a net income of 3 million córdobas, and rates were raised 20%; in 1945 and in 1951 rates were again raised 25% and 20% respectively, while net income continued to increase at the same time.

Table 58

Nicaragua: Ferrocarril del Pacífico, Operating Income, 1946/47 - 1950/51  
 (thousands of córdobas)

	<u>Freight</u>	<u>Pas- senger</u>	<u>Other revenue</u>	<u>Total</u>	<u>Operating expenses</u>	<u>Net oper- ating income</u>	<u>Operating ratio</u>
1946/47	6,755	3,605	523	10,883	6,737	4,146	61.90
1947/48	6,643	3,540	443	10,626	7,313	3,313	68.82
1948/49	6,201	3,574	320	10,095	7,491	2,604	74.20
1949/50	6,958	3,684	318	10,959	7,364	3,595	67.19
1950/51	8,272	4,421	785	13,480	8,390	5,089	62.25

Source: Ferrocarril del Pacífico, Managua.

If the favorable balances of the last five financial years had been applied toward improving the line and acquiring new locomotives and rolling stock, the railroad would be now not only in excellent financial condition, but it would also be able to offer more efficient service with lower freight rates, to increase its traffic and to face successfully the competition of the roads. If a sum equal to the aggregate net income of the last five years had been invested, it is likely that an improvement plan could have been carried out which would have replaced all the present steam locomotives with electric Diesel units (in a 2 to 1 proportion) and would also have brought about other important improvements, such as:

/15 electric

(Thousands of dollars)

15	electric Diesel locomotives ("Road-Switcher" type, 660 H.P.) at \$90,000 each F.O.B. shipping port	1,350
	Accessory equipment to supply them with 6 tractive axles for each locomotive (instead of 4), to reduce the weight per axle of modern locomotives, which is greater than the capacity of the Ferrocarril del Pacifico line, without reducing the total adherent weight of the locomotive; also the use of double traction with single control	220
2	light hydraulic or mechanical Diesel trains for rapid passenger service on the trunk line, each train made up of two 320/360 HP motor cars and one coupled car, with a seating capacity per train of approximately 270 passengers, at an estimated price of \$220,000 each F.O.B.	440
3	hydraulic or mechanical Diesel motor cars, 300 HP, for rapid passenger service (30/90 seated) at \$70,000 each F.O.B.	210
30	freight cars of different kinds at an average of \$5,000 each F.O.B.	150
	Freight and expenditures	250
	Equipment for Diesel roundhouse and repair shop	150
	Total	2,770

It should be kept in mind that once the new equipment were in service at least two-thirds of the cost, or about one million dollars, would have been saved in fuel alone, and that during the first year, normal locomotive repairs would have amounted to almost nothing. To these advantages must be added others such as elimination of water service, economy in fuel transport, speeding up of traffic, and greater tractive force. There would also be an increase in traffic, especially passenger traffic, due to the speed, comfort, and frequency of the trains. With these additional economies it would have been possible to improve the lines and /the signaling

the signaling and switching system.<sup>1/</sup>

Import cargo freight rates are considerably higher than export cargo rates; local freight rates are in most cases double the export freight rates. This situation is possibly due to the fact that there is no road between Corinto and Chinandega; here freight is handled exclusively by the railroad. In other words, the railroad profits from its monopoly of both the rail services and the port which handles 60% of Nicaragua's imports. Freight charges for wheat, construction steel, and industrial machinery are very high: 13 cents per ton-kilometer for less-than-carload lots for the first 50 kms., 11 cents up to 100 kms., and 7.6 cents up to 200 kms. Textiles freight rates are 16, 13 and 9.5 cents respectively. (See Table 59.) Export freight rates, except those on coffee, are not as high as import rates. Coffee freight rates are 5.6 cents for carload lots and 4.4 cents for less-than-carload lots for 200 kms. or more. For shorter distances, rates are higher. (See Table 59.) The rate for cotton bales is 5.6 cents in carload lots for distances of 200 kms. or more; for other commodities the rates are considerably lower.

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<sup>1/</sup> The limited time at the Mission's disposal did not permit a thorough inspection of the fixed equipment, and it is thus unable to recommend a detailed plan of the work necessary for reconditioning the line. In respect to this, the recommendation of the International Bank for Reconstruction and Development is quoted here, op.cit.:  
Reballasting almost the entire 138 kilometers of roadbed between Corinto [and] Managua at a total cost of \$300,000. Replacing the bulk of the present cross -- ties on the Corinto--Managua's main line by higher quality logs at a gross cost of \$300,000. Relaying some 3,000 tons of rail, about a fourth of the required effort, for complete rehabilitation. The total cost is estimated at \$325,000 of which \$300,000 would be for rail, \$15,000 for switches, and \$10,000 for labor.

## 2. Port and Maritime Situation

The greater part of Nicaragua's maritime traffic is concentrated on the Pacific coast, where there are two principal and two secondary ports. On the Atlantic there are two important ports, one of which -- Puerto Cabezas -- belongs to a fruit company.

(a) Corinto. This is the best port in the country and the one with the greatest volume of traffic. It is situated at a relatively deep harbor and is well-sheltered. The maximum draught is 28 feet. The port facilities are used exclusively in connection with the Ferrocarril del Pacifico, which links Chinandega and Managua; the port is managed by the Railway. The pier is about 150 meters (500 feet) long and 15 meters (50 feet) wide; but ships can berth only along one side, for there is not enough depth along the other and it is blocked by sheds. Between the space where liquid fuel is discharged and the foot of the pier, coastal craft and small vessels can tie up.

The port has two chief limitations: insufficient berthing capacity and lack of equipment for discharging and moving cargo on the pier and from the pier to the warehouses. In regard to the pier itself, its short length limits the space available for ships of any considerable draught and they sometimes have to anchor out in the bay awaiting a berth. This increases costs and consequently, ocean freight rates for commodities loaded or discharged at this port. There is no equipment for loading and discharging freight between ship and pier, nor for moving it on the pier or to the warehouses, except the obsolete railroad equipment. This causes congestion on the pier and also increases costs.

Table 59

Nicaragua: Selected commodity freight rates in effect on the Ferrocarril del Pacifico in January 1951

(in cents per ton-kilometer)<sup>a/</sup>

	50 Kms.		100 Kms.		200 Kms.	
	C.L.	L.C.L. <sup>b/</sup>	C.L.	L.C.L.	C.L.	L.C.L.
<u>Imports</u>						
Wheat, construction steel, industrial machinery	10.0	13.0	7.9	11.0	5.6	7.6
Textiles (woolen or cotton)	—	16.0	—	13.0	—	9.5
<u>Exports</u>						
Sesame	3.8	5.8	3.1	4.6	2.2	3.3
Cotton bales	9.5	5.8	7.6	4.6	5.6	3.3
Palm and other oils	5.8	5.2	4.6	4.2	3.3	3.0
Rice, beans, corn	3.8	5.8	3.1	4.6	2.2	3.3
Coffee	7.5	9.5	6.2	7.7	5.6	4.4
<u>Local freight</u>						
Domestic rice, beans, corn, cement	6.0	7.8	4.7	6.3	3.4	4.6

Source: Ferrocarril del Pacifico, Managua.

<sup>a/</sup> Figures converted at the rate of 7 córdobas to the dollar.

<sup>b/</sup> C.L.: carload; L.C.L.: less-than-carload.

When the volume of traffic is normal there is sufficient space in the warehouses. However, they are poorly situated. This is common in ports developed with practically no planning. It is also true of the facilities for discharging liquid fuel, which are poorly located at mid pier.

(b) San Juan del Sur. This port, 30 kms. from the Costa Rican border, on the Pacific coast, has a relatively limited hinterland. It is linked /with the town



with the town of Rivas by a 26-km. rail spur but it is likely that this line will soon be scrapped. The Inter-American Highway will then go through the port and continue along the coast line to the Costa Rican border. The bay is very shallow except at the entrance. Here ships must anchor, and load and discharge by lighters, since the small pier and the shallow water only allows small vessels to reach it. There are not enough facilities for loading, discharging, and for hauling the freight to the custom house and to the railroad station, particularly in view of the port's increasing traffic. The custom house has recently been enlarged, so for the time being there is no congestion.

In 1951 exports through San Juan del Sur included almost 11,000 head of livestock and a substantial quantity of lumber. There was also a considerable volume of imports. San Juan del Sur has potential importance as a port for the northern Guanacaste region in Costa Rica.

(c) El Bluff. This port is situated on the Atlantic coast on the eastern side of the Bluefields Lagoon, 8 kms. from the town of Bluefields. It has had increasing activity since 1950, and now handles a greater volume of traffic than Puerto Cabezas -- a port belonging to a fruit company which for many years was Nicaragua's most important Atlantic port. El Bluff is well-sheltered, but at the entrance to the lagoon there is a bar at a least depth of 13 feet at high water. At the wharf there is sufficient depth, but since the tide is only 18 inches, ships with considerable draught that could tie up at the wharf, are unable to cross the bar. According to information from the U. S. Government Hydrographic Office in the Panama Canal Zone, ships with a draught of 12 feet have called at El Bluff, but at low water and with heavy sea the recom-

/mended draught

mended draught is not more than 9 feet.

Opposite the custom house, there is a well maintained reinforced concrete wharf 150 meters (500 feet) long. The warehouses are new and spacious. Free water is supplied to the ships, and pilot service is not compulsory. The cargo is discharged with the ship's tackle, and dispatched on lighters to Bluefields, at the other end of the lagoon. El Bluff's only communication with its hinterland is by the Río Escendido, which empties into the lagoon. This river is navigable as far as Rama, but the region through which it flows is thinly populated and is not very suitable for cultivation. Thus, the port's traffic is limited to lumber and banana exports.

Maritime services are regular, especially to and from Corinto. In 1951, 139 foreign merchant ships arrived at port, or an average of 11.6 per month, with an average registered tonnage of more than 1,800 net tons. Only 61 foreign ships called at San Juan del Sur, or 5 per month, with an average net tonnage of 1,560 tons. The number of ships calling at El Bluff was almost as great as at Corinto (11 per month), but their average tonnage was scarcely 270 net tons. In contrast to other Central American ports, those in Nicaragua do not suffer so much from discriminatory freight rates nor from control by foreign interests as from deficient port facilities. As for ocean freight rates, in the case of Corinto and of San Juan del Sur, the same factors come into play which affect other Central American ports. The shipping conference which controls most of the international traf-

fic of these ports has established, according to common practice, identical

/rates for

rates for the entire Pacific coast, from Champerico, Guatemala, to Puerto Armuelles, Panama. At the two Nicaraguan ports the situation is even less favorable due to a surcharge of 50 cents per ton, which reveals the greater cost of calling at these ports.

Port charges appear to be reasonable. The wharfage fee is 13.20 córdobas per ton of imports discharged. The charge for liquid fuel in bulk is 4.80 córdobas for less than 500 tons and 4.20 for larger quantities. In general, export handling charges are also reasonable, but since commodities of very different value are grouped in a single class, charges weigh more heavily on some export items than on others. Thus, the charge for coffee and for cement is the same, 13.20 córdobas per ton, which seems reasonable for coffee, but high for cement.

Some inter-Central American traffic has developed at Puerto Morazán, a small Nicaraguan port on the Estero Real River, which empties into the Gulf of Fonseca. In 1951, from this port, about 12,000 tons of corn were shipped to El Salvador, 14,000 tons of sugar to Honduras, and around 3,000 tons of rice and sorghum to both these countries. A substantial volume of lumber is also shipped to El Salvador. On the other hand, the volume of imports discharged at Puerto Morazán is insignificant. Ocean traffic with Costa Rica is handled at San Juan del Sur and Corinto, but it is also very limited.

Finally, there is Puerto Somoza, a short distance away from Managua. Since the port is at an open roadstead, the construction of a breakwater and pier would require heavy expenditure. At present it is only used by tankers to discharge liquid fuel.

(d) Nicaraguan Merchant Marine. The Mamenic is a private

/enterprise

enterprise serving the following routes as a public carrier: (1) from New York and other U.S. Atlantic ports to Pacific ports in Central America; (2) from New Orleans and other U.S. Gulf ports to Pacific ports in Central America; (3) from Europe to Pacific ports in Central America; (4) from Corinto to El Bluff and nearby ports on the Caribbean; (5) between ports on the Gulf of Fonseca, and (6) special voyages, primarily to carry livestock.

According to information the Mission was able to obtain on the field trip, the routes to the United States are covered mainly with chartered vessels of approximately 2,400 tons d.w. There is an average of five vessels on these routes, and sailings are fortnightly or every ten days. On the European route there are two vessels with monthly sailings. The Mamenic has placed an order with a Bremen yard for two more vessels of 3,500 tons d.w. each; they will probably be commissioned in this service. In the coastal and intercoastal routes it generally has five small craft with itineraries varying according to demand. The Mamenic is affiliated to the Atlantic and Gulf/West Coast of Central America and Mexico Conference.

### 3. Highways

Nicaragua has about 2,600 kms. of roads. There are 580 kms. of national highways, and the rest are departmental or local roads. All-weather roads have a total length of 974 kms. of which 303 kms. are paved. The total length of dry-weather roads is 1,636 kms. At present there are 370 kms. of roads under construction. (See Appendices I and II at the end of this chapter.)

/The road

The road density of Nicaragua is 9% of that of El Salvador and 1% of that of the United States. There are 17.6 meters of all kinds of roads and 6.6 meters of all-weather roads per square kilometer. Since there is 1 km. of roads for every 386 inhabitants and 1 km. of all-weather roads for every 1,150 inhabitants, the population/all-weather road ratio is 38 times greater than in the United States and around nine-tenths of that in El Salvador.

The lack of roads is so acute that with the exception of the areas covered by the Inter-American Highway, by the constructed part of the road to Rama, and by other all-weather, short-length roads (mostly in the central zone), the country is practically without any kind of all-weather roads.

(a) Inter-American Highway. With a total length of 383 kms., the route begins at the Honduran border, at a place called El Espino, continues east for a relatively short span and then predominantly in a southeastern direction towards the Costa Rican border. It runs through Managua and through other important centers such as Somoto, Condega, Esteli, Diriamba, Jinotepe, and Rivas. (For the length and condition of each section of this highway, see Table 60.) The Inter-American Highway is an all-weather road from the Honduran to the Costa Rican border. Although it has been almost completely graded, the first section between the Honduran border and Somoto (19 kms.), which at present has bad horizontal and vertical alignment and grades of more than 6%, requires relocation and grading, as well as the construction of several bridges.<sup>1/</sup> It is expected that an existing

<sup>1/</sup> Among them, a bridge with a span of more than 100 meters, is now under construction some 3 kms. from the border.

plan for improving this road will be carried out very soon in order to give the highway good alignment and easy grades.

Table 60

Nicaragua: Inter-American Highway

<u>Section</u>	<u>Length in kilometers</u>	<u>Present condition</u>
1. Hondurean border-Somoto	19	All-weather (ungraded, needs improvement)
2. Somoto-Condega	32	All-weather (10 kms. graded; rest needs improvement)
3. Condega-Esteli	36	All-weather (ungraded, needs improvement)
4. Esteli-Sébaco	46	All-weather (completely graded)
5. Sébaco-Managua	103	Paved
6. Managua-Jinotepe	46	Paved
7. Jinotepe-Rivas	66	Paved
8. Rivas-Costa Rican border	35	All-weather (completely graded)
Total:	<u>383</u>	

Source: Data gathered directly by Transport Mission.

Past the valley near Somoto, the highway continues for some distance through hills and rolling country as far as Condega. A short stretch of about 10 kms. near Condega has been graveled and graded. From Condega to Esteli (36 kms.) there are several temporary bridges which will have to be replaced by permanent ones. Most of the highway has poor or fair alignment and numerous slopes with grades of over 6% --in some cases as high as 10% or 12%-- and excessive curves (some very sharp). Although the road is well maintained, traffic conditions are difficult on some stretches because of insufficient width. The whole section from

/Condega

Condega to Estelí will be relocated and completely rebuilt. Between Estelí and Sébaco (46 kms.) the highway is not paved, but it has a stone base, and is completely graded and finished to its grade line, with good horizontal and vertical alignment, and gentle grades (except for some of more than 6% at kms. 120 and 134).<sup>1/</sup> It is well maintained.

The 106-km. section from Sébaco to Managua is paved. The width varies from 5 to 5.50 meters; the horizontal and vertical alignment is good; the curves are relatively easy, and grades are no greater than 6%. All the bridges and drainage structures are permanent. Except on the stretch Puertas Viejas-Pasle (Kms. 71-86), where the pavement is deteriorating, the condition of the road is good. From Sébaco there is a paved branch road to Matagalpa.

The section between Managua and Jinotepe (46 kms.) is completely paved. It is 5 meters wide and has good alignment along most of its length. The stretch near km. 19, which was built ten years ago, has some construction defects and bad alignment.

The section between Jinotepe and Rivas, a distance of 66 kms. is also paved. The heaviest traffic on all the highway is between the capital and Rivas --specially between Managua and Jinotepe-- since the road here runs through one of the country's richest agricultural and stock regions.

The highway is well maintained, has good alignment, gentle grades, and a width of 6 meters beginning at kilometer 47. As

far as km. 66 it was not difficult to locate first-class materials for

<sup>1/</sup> Distances in kilometers on the highways are measured from the main square in downtown Managua.

/the sub-base

the sub-base and base, but beyond this point, towards the Costa Rican border, on a stretch of approximately 25 kilometers, there is a great deal of sonsocuite --a material of very poor quality. It has created a real construction problem, and to overcome it has meant considerable effort and expense. Its use is more costly than that of ordinary materials. The asphalt pavement ends at approximately 1.5 kms. from the Rivas railroad station.

The section between Rivas and the Costa Rican border (35 kms.) has good alignment, long tangents, a width of 6 meters, easy curves, good visibility, and grades of 6% or less. Permanent concrete or steel bridges are needed to replace 8 temporary wooden structures. The bridge over the Las Lajas River is relatively new (1945). It has a steel framework and is in very good condition. All this section is well maintained. Freight traffic from the Costa Rican side is only from the nearby border region, for in this area of the Guanacaste there is only one dry-weather road which is difficult to travel. There are about 105 kms. between the border and the present terminal point of the Inter-American Highway in Costa Rica that still have to be built.

(b) San Benito-Rama Road. This road, also known as the Highway to the Atlantic, begins at San Benito, 36 kms. from Managua, on the Inter-American Highway, and at present goes as far as Quinama,<sup>1/</sup> 165 kms. from San

<sup>1/</sup> Actually, the all-weather road at present reaches as far as Muhan, 19 kms. from Villa Somoza, but beyond that point it is practically an access road.



Benito (9 from Villa Somoza). The road will end at Rama, 270 kms. from San Benito,<sup>1/</sup> a point from where the Escondido River is navigable.

When this highway is completed it will serve as a link between the two oceans. On the Atlantic side, cargo will be loaded and discharged at the port of El Bluff. On the Pacific side, access to the ports will be by the highways from Rivas to San Juan del Sur (under construction), and the one from Las Conchitas to Masachapa, which are branches of the Inter-American Highway.

The section still to be constructed between Quinama and Rama is to be partly financed with a grant of 4 million dollars from the United States government. The total cost of the 105 kms. not yet constructed will be about 8 million dollars, including improvement of the stretches already built. Even considering that specifications are first class and that the road will be completely paved, the total cost seems very high. It would be possible to spend less, making it an all-weather road but postponing the paving and improvement of the section which is already constructed.

The Nicaraguan government attaches great importance to this road because it will constitute the first means of communication by land between the two oceans, and because the forest, livestock, and agricultural products, and minerals of the eastern zone that at present

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<sup>1/</sup> Between Rama and the Caribbean, river navigation can be used as far as Bluefields and El Bluff. At Rama a small river port will be constructed and equipped for boats with a 15-foot draught; the sand banks and silt which form at the mouth of the river will be dredged, and the port facilities at El Bluff will be used.

have low local prices, would have higher prices as soon as the road is built. It will also provide an exit through El Bluff for products from the western zone which should be sent out by the Atlantic. It will likewise serve to transport import commodities, avoiding the trip through the Panama Canal. Nevertheless, the usefulness of the road will be limited until Rama has been provided with additional facilities, and until the necessary river traffic equipment has been acquired.

(c) San Jorge-San Juan del Sur Road (under construction). This highway will replace the line of the Southern Railway, which is being scrapped.

Between San Jorge, on Lake Nicaragua, and San Juan del Sur, on the Pacific coast, it runs through Rivas, on the Inter-American Highway. It is expected that this road will stimulate export and import traffic, and the development of the fishing industry at San Juan del Sur. The estimated cost of construction is approximately \$285,000.

#### 4. Air Transport

International operations are centered at Las Mercedes airport, 9 kms. east of Managua, at an altitude of 55 meters above sea level. Constructed during World War II as part of the Hemisphere Defense Program by the United States government, it is one of the best airports in Central America. It has a 1,830-meter asphalt runway, paved taxi strips, hangars, floodlights, rotating beacon, and instrument landing facilities. Pan American Airways operates the field for the Nicaraguan government.

The only other civil airport in the country with a paved  
/runway,

runway, also a legacy of the Hemisphere Defense Program, is at Puerto Cabezas on the Caribbean coast, in northeastern Nicaragua. In 1951 plans were made for the joint operation of an international service connecting Puerto Cabezas with Miami, Florida, to the north and San José to the south, and an agreement to this effect was signed between Líneas Aéreas de Nicaragua (LANICA) and Líneas Aéreas Costarricenses (LACSA). The plan was never implemented, however, and LACSA alone operates the route today with only a fuel stop at Puerto Cabezas.

Between Managua and San José, LANICA and LACSA, under a joint pooling agreement, operate two weekly round trips each.

There are four other international air carriers serving Nicaragua. The principal passenger carrier is Pan American World Airways (PAA); while by far the greatest part of the cargo is carried by TACA International Airlines. Air cargo imports have increased considerably in the last 5 years -- from 270 tons in 1947 to 1,600 in 1951. The Royal Dutch Airlines (KLM) which first started serving Managua in May 1951, operates twice a week with DC-3 aircraft to San Salvador, where its Central American service terminates at present, and south, via San José and Panama, to the Dutch West Indies and Europe. Transportes Aéreos Nacionales de Honduras (TAN) flies twice a week with C-46's to Miami, via Tegucigalpa.

Because of the limited airport facilities in San José, both PAA and TACA shuttle back and forth with DC-3's to the Costa Rican capital, connecting at Managua with their four-engine schedules. Prior to February 1953, when it initiated through service to Panama,

an agreement was signed with TACA.

to the effect of...

TACA terminated four-engine operations at Managua, and PAA was the only carrier providing non-stop one-plane service to Panama. During the last year or so, in addition to its daily through four-engine service, PAA has also flown a substantial number of special cargo trips northbound out of Panama to Managua bringing primarily products from the Free Zone of Colón.

As elsewhere throughout Central America, air cargo imports in Nicaragua far outweigh exports. International cargo rates vary from around 41 cents per metric ton-kilometer for packages weighing not more than 100 pounds, to 14-20 cents per metric ton-kilometer or even less for large export shipments.

International passenger fares have varied considerably. Thus, in an effort to develop traffic between Nicaragua and Costa Rica, LANICA and LACSA charge \$14 one way, and \$21 round trip, equivalent to 4.2 cents and 3.1 cents per kilometer, respectively.<sup>1/</sup>

KLM's one-way fare is \$17, while PAA and TACA charge \$19, the latter equivalent to 5.6 cents per kilometer. PAA's one-way fare from Managua to Miami in a four-engine Constellation (via San Salvador) is \$114, equivalent to 7 cents per great-circle kilometer; while TAN charges \$91 in a twin-engine C-46 (via Tegucigalpa), equal to 5.7 cents per kilometer.

Facilities for international air transport at Las Mercedes air port is reported by air carrier personnel and travellers to be the least satisfactory of any point in Central America. Clearance formalities not infrequently delay the afternoon shuttle plane to San José beyond its daylight departure deadline, compelling transit passengers to

<sup>1/</sup> From San José to Managua, LACSA charges a fare equivalent to \$13, or 3.9 cents per kilometer.

remain overnight in Managua. Customs clearances sometimes take two hours. Closer adherence to internationally accepted standards for facilitating air transport would greatly reduce these complaints.

### III. Means of Transport for Domestic Economic Activity

Domestic transport in Nicaragua is carried on for the most part under quite primitive conditions, except for the traffic on the Ferrocarril del Pacífico and for the relatively recent one on the various roads that have been wholly or partially constructed. As economic activity reaches areas previously undeveloped agriculturally, the need for creating new routes becomes imperative. It can be said that the development of the different means of transportation has not kept pace with the needs of commercial agriculture for export, and of mining.

As is the case in the other Central American republics, some crops are concentrated in certain zones, and consumption mainly in others. Consequently the demand for domestic transport comes to a considerable extent from the distribution of these basic foodstuffs. Corn is produced in the western coastal area, primarily in Chinandega and León, which have a surplus. It is consumed in the central and eastern parts of the country. These two departments and Managua produce nearly half of the total corn crop.<sup>1/</sup> (See above Table 55.) Bean producing areas are also concentrated principally in the western zone,

<sup>1/</sup> Nicaragua generally has a corn surplus which in most cases is exported to El Salvador and other countries.

/and part of

and part of the crops is shipped to the central and eastern zones; this is also the case with rice. Almost all the country's sugar is produced in the Department of Chinandega.

#### 1. Railroads

The Ferrocarril del Pacífico, which is the only public railway system in the country, has already been discussed. It has also been pointed out that imports and exports constitute an important part of its traffic. However, this railroad is also important for local trade in the western region of the country, between Chinandega and Granada, as well as in the short route from San Jorge to San Juan del Sur. On both of these routes the railroad's situation will change when highways are built. They will undoubtedly take away much of its local traffic if its high rates are not lowered.

Even though rates for local freight are lower than those applicable to imported freight, they are nevertheless quite high, especially for short hauls. For instance: rice, beans, cement, and corn pay 6 cents per ton-kilometer in carloads, and 7.8 cents in less-than-carloads for distances up to 50 kms.; 4.7 and 6.3 cents, respectively for distances between 50 and 100 kms.; and 3.4 and 4.6 for 200 kms. or more. (See above Table 59.) These rates are high even when compared with those charged by other Central American railroads.<sup>1/</sup> Basic freight rates are of course subject to certain charges and special treatment:

<sup>1/</sup> For example, those of Guatemala and El Salvador (See Part I, Chapters I and II, Sections II, 3 and II, 3 respectively.) In Honduras there are some rates that are even higher.

merchandise shipped by express is subject to an extra charge 100% over and above the ordinary freight rate, and in practice most valuable merchandise is only accepted as express. On the other hand, various industrial enterprises --among them flour mills, the cement factory, a glass factory, and the sugar refineries-- have special rates with rebates up to 50% of the ordinary rates. The efficiency of the transport service for local freight leaves much to be desired.

There is a certain amount of passenger traffic, especially on the Corinto-Managua route and intermediate points, which totalled 3.3 million passengers in 1952, as compared with 2.9 million in 1949. About one third of the company's income is derived from this passenger traffic. (See above Table 58.) Passenger service leaves much to be desired with respect to comfort and sanitary conditions, especially second class, and about 75% of the passengers travel second class. Passenger capacity offered by the railroad is generally less than the demand for it. Business has increased in recent years, but there is the same number of trains and no new rolling stock. Speed standards are very low. Due to the insufficient tractive force and to the poor condition of the permanent way, the trains cannot develop enough speed between stations to have a good average for the total run. The daily passenger express train between Managua and Corinto, where traffic conditions are the most favorable, has an average speed of 30 kms. per hour, while the daily passenger train from Granada to Corinto takes 7:20 hours to cover 190 kms. -- an average speed of only 26 kms. per hour. On the other hand, the average passenger run is scarcely 30 kms.

/as compared

as compared with the average haul which is 80 kms.

Passenger fares as of February 1951 are low. However, the low quality of the service must be kept in mind. The standard first class fare is 0.0945 córdobas (13.5 mills) per passenger-kilometer, and the second class fare 0.0432 córdobas (6.2 mills). There is a 25% reduction for week-end fares, but on express trains the fare is 25% higher. There is also a third class passenger fare in freight cars adapted for this service; this fare is 25% of the standard first class fare. The average per passenger-kilometer income in 1951 was just 0.045 córdobas (6.5 mills).

## 2. Roads and Highways

Nicaragua has few roads for domestic traffic and few roads of access to the Inter-American Highway. Of the country's total of 974 kms. of all-weather roads, the Inter-American and the constructed portion of the San Benito-Rama highway constitute 548 kms. The other roads, mainly for domestic use, total 426 kms. To be sure, the San Benito-Rama highway is at present a route for purely domestic traffic. Dry-weather routes total 1,636 kms. (See Appendix II). In addition there are 370 kms. under construction, 114 of which are on the San Benito-Rama route, 124 on the Managua-Chinandega route, and the rest are short stretches in various regions.

(a) San Benito-Rama Highway. This road is now constructed as far as Quinama, 165 kms. from Managua. Up to Villa Somoza, 9 kms. before reaching Quinama, the road is graded and filled, is well maintained, has good horizontal and vertical alignment, and can take heavy year-round traffic.

/Its initial



Its initial location was done in 1937 up to about km. 46, at Puerto Banderas. Beyond this point it was relocated and constructed in 1940 with technical aid from the United States government.

At Km. 78 a 19 km. consolidated dirt road leading to Boaco branches off the main route. At Santo Tomás another road branches off to San Pedro de Lóvago (10 kms.) and to the La Libertad mines (26 kms.), part of which is in bad condition and at present under reconstruction. The La Libertad mines and the town of Santo Domingo are connected by an all-weather road (12.5 kms. now under traffic). Leaving San Tomás the road continues with good alignment, and is graded and filled to the grade line. In the last few kms. before reaching Villa Somoza the grading and filling work is incomplete. From Villa Somoza on, the route is merely a narrow access road, with poor alignment but relatively easy grades. Most of the bridges are temporary. The access road ends at Muhan, 19 kms. from Villa Somoza. The Highway Department has installed there an important sawmill, and is planning to install another one near by which will furnish all the lumber needed in road construction.

(b) Sébaco-Matagalpa Road. This route, 26 kms. long, is completely paved, and connects the capital of the Department of Matagalpa with the Inter-American Highway. It was graded around 1944 and paved with asphalt in 1948. It has good alignment, gentle grades, and relatively easy curves. The road is 6 meters wide and is well maintained. A large part of the location was made with the cooperation of the U.S. Bureau of Public Roads. A road branches off from this route at Waswalf, leading to Jinotega (27 kms.). Although it is neither paved nor does it have the features even of a second-class highway, it is an all-weather route,

/Because

Because of bad location and construction, the alignment is quite deficient. There are numerous horizontal and vertical curves (many of them sharp), and consequently some sections have very poor visibility. There are stretches with relatively moderate grades, but others exceed 6% and even 10%. Beyond Jinotega, the road goes on to San Rafael del Norte, but this section is generally passable only in the dry season. From San Rafael there is a dry-weather road to Concordia and Estelí, and another to Condega.

(c) León-Poneloya. This route is all paved and has a length of 20 kms. It links the capital of the Department of León, where grains and cotton are produced, with Poneloya, on the Pacific coast. The Ferrocarril del Pacífico passes through León, and has a branch from there to Totolapa.

(d) Conchitas-Masachapa. This road was jointly constructed by the Ministry of Development and the National Cement Company. It is 33 kms. long. The grading, bridges and drainage structures were built by the Highway Department, and the concrete pavement by the Company. Half of this route has a transverse section 5.5 inches thick in the center, and 7 inches thick at the edges; the rest is 7.75 inches thick on its entire width. The width of the pavement varies from 6.00 to 6.10 meters (with transverse expansion joints every 10 meters and a longitudinal joint).

The average cost for paving was approximately 93,250 córdobas a kilometer. The cost of maintenance in 1949 and 1950 was 30,000 córdobas a kilometer.

(e) Managua-León-Chinandega. This route will be 124 kms. long. This was the route originally preferred for the Inter-American Highway, since it crosses a region of valuable and abundant agricultural production which

/has prospects

has prospects of rapid economic development. However, it was rejected at the request of the government because it runs parallel to the railroad. General opinion is that now the railroad's capacity has practically been reached, and that the new highway will not affect its operation. The total construction cost -- financed in part with funds from the International Bank for Reconstruction and Development -- has been estimated at 2 million dollars. Up to the present time almost all the surveying, clearing, grading, and drainage structure work has been completed on the Managua-León section. (85 kms.)<sup>1/</sup> The Mission was able to verify that the results obtained have been quite satisfactory from the point of view of the technical quality of the work as well as the short time taken to construct it. The road will continue from León to Telica (9 kms.), and from there to Chinandega (31 kms.).

(f) Matagalpa-Jinotega. This route will be 34 kms. long. The location has had to be effected over difficult mountainous terrain along its entire length. The total construction cost has been estimated at \$707,000. Climbing to a maximum altitude of 1,555 meters, it will cross the region of El Arenal, which has a plentiful water supply and produces one of the best varieties of Nicaraguan coffee. Here the mean temperature is 20°

<sup>1/</sup> The general specifications of this and other highways under construction are as follows: total width, 7 meters; asphalted rolling surface, 5 meters; minimum radius of curves, 30 meters; maximum grade, 10%; bridge load capacity, according to design N-15. The base of the asphalt pavement can have up to 30 cms. thickness of select material, and a layer of waterbound macadam covered with an asphaltic layer composed of a primary penetration coat of cold asphalt, RCO, and an RC2 asphaltic cover with crushed rock of 1/4 inch size.

/centigrade.

centigrade. There are also some mines, and forest and livestock production. The connection between Jinotega and Matagalpa by means of a good paved highway will aid more and more in the transportation of its products through the Inter-American Highway to Managua or El Salvador, or to the export ports.

(g) Matagalpa-Tuma-Caratera (under construction). This route (40 kms.) will connect the capital of the Department of Matagalpa (which is destined to become an important distribution center for the products of the region and for those brought in as the interior regions are settled and developed) with the place where according to existing plans, the Tuma River hydro-electric plant is to be built. The road will cost approximately \$809,000.

(h) Managua-Santo Domingo-Masaya (under construction). This route will be 27 kms. long. It will aid in the development of an important agricultural zone now only partially under cultivation, and will connect the towns of Santo Domingo, Ticuantepe and Nindirí with Managua and Masaya. It will also stimulate the development and distribution of goods produced in the Ticuantepe Valley. At present the agricultural products grown in this region are transported in animal-drawn carts. The cost of this project is about \$540,000.

(i) Other roads. From the town of Yalagüina, 12 kms. from Somoto, between Somoto and Condega, a narrow all-weather road branches off from the Inter-American Highway to Totogalpa, Ocotal and Dipilto, crossing an important farming and livestock region. The horizontal and vertical alignment and general quality of construction could be appreciably improved at a relatively moderate cost. At Dipilto a United States firm has set up

two sawmills with a daily capacity of 30,000 feet and 75,000 to 100,000, respectively. There are others in the region, such as those installed by another American firm which has a concession on the Poteca River (tributary of the Cocos River). This company is building a road between Jalapa and Español Grande following the left bank of the Cocos River.

Another important branch of the Inter-American Highway is the one that goes from km. 13 to Sabana Grande.

### 3. Public Expenditures on Roads and Highways

The Ministry of Development and Public Works has spent during the last four fiscal years an annual average of 9.3 million córdobas (equivalent to \$1.3 million) on construction, improvement and maintenance of roads. (See Table 61.) According to the Highway Department, the average cost per kilometer for some of the most important roads has been \$50,000 in mountainous terrain and \$27,000 in flat country. The cost per linear foot of structural steel or concrete bridges is \$440. The Highway Department has been increasing its annual expenditures in carrying out new road projects. These expenditures have included increasing purchases of mechanized equipment, especially during the fiscal year 1951/52, when this investment reached 16.6 million córdobas (\$2.4 million). The preceding year it was only 7.8 million córdobas (\$1.1 million).

/Table 61

Table 61

Nicaragua: Annual Expenditures on Road Construction and Maintenance

<u>Years</u>	<u>Thousands of córdobas</u>	<u>Thousands of dollars a/</u>
1948/49	6,983	997
1949/50	5,933	847
1950/51	7,803	1,115
1951/52	16,595	2,371
Total in 4 years	37,314	5,330
Annual average	9,328	1,333

Source: Transport Mission, on data furnished by the Highway Department (Ministerio de Fomento y Obras Públicas).

a/ Converted at 7 córdobas to the dollar.

Successive investments on roads and highways will increase in future years. The Ministry of Development and Public Works worked out in 1951 a four year plan, and to carry it out, expenses up to \$12.7 million will be incurred. Included in this plan are three regional road networks that will complement the existing trunk roads, that is, the Inter-American Highway and the San Benito-Rama Highway. (See Table 62.) To carry out this plan the government has obtained a loan from the International Bank for Reconstruction and Development that will cover 28% of the cost (\$3.5 million), and a grant from the United States government that will amount to approximately \$4 million. The rest is to be financed from fiscal funds. The loan from the Bank will be spent on mechanized equipment, materials and other items whose purchase is in foreign exchange. The grant from the United States government is allocated exclusively to the construction of the 114 kms. between Villa Somoza and Rama.

Table 62

Nicaragua: Road and Highway Program 1951-1955

Project	Length (Kms.)	Cost (In thousands of dollars)
<u>A. Northern Group</u>		
1. Matagalpa-Jinotega	34	709
2. Matagalpa-Tuma-Caratera	40	809
<u>B. Central and Eastern Group</u>		
1. San Jorge-San Juan del Sur	31	285
2. Managua-Santo Domingo-Masaya	27	540
3. Managua-Masaya	45	225
<u>C. Western Group</u>		
1. Managua-León	85	1,491
2. León-Telica	8	83
3. Telica-Chinandega	31	524
<u>D. Rama Highway</u>		
Villa Somoza-Rama stretch	114	8,000
<u>Total cost</u>		
Financed by the United States government		4,000
Loan from the International Bank for Reconstruction and Develop- ment		3,500
Fiscal funds (Nicaraguan govern- ment)		5,164

Source: Transport Mission, from official data.

Besides the general plan, estimates for minor expenditures have been made in order to complete the Inter-American Highway. These estimates amounted to only 2 million córdobas for 1952/53. (See Table 63.)

/Table 63

Table 63

Nicaragua: Annual Expenditures on the Construction and Maintenance of the Inter-American Highway

Years	Millions of córdobas
1948/49	4.0
1949/50	2.2
1950/51	2.6
1951/52	2.0
1952/53	2.0
	<u>12.8</u>

Source: Ministerio de Fomento y Obras Públicas, Departamento de Carreteras.

4. Road Transport Conditions

Automotive traffic in Nicaragua has increased considerably since the construction of the Inter-American Highway. A marked increase in agricultural production as a result of improved communications is also noticeable. Traffic on the country's roads has shown a very rapid growth. Whereas in 1946 --according to an estimate made by the U.S. Bureau of Public Roads-- the highest recorded traffic density on the Inter-American Highway was only 50 vehicles a day along the Managua-San Benito section, in 1951 the following figures were recorded: 806 vehicles a day between Tipitapa and San Benito, 1071 between Managua and Tipitapa, 1273 as the maximum between Managua and Las Conchitas, and 1235 between Esquinas and Diriamba. (See Table 64.) Nevertheless, the proximity of all these sections to the city of Managua should be noted.

/Table 64



Table 64

Nicaragua: Automotive Vehicle Traffic Density, 1951

Sections	Vehicles per hr.	Average in 12 hrs.	Calculated traffic density in 24-hrs. a/
<u>Inter-American Highway</u>			
<u>Northern Section</u>			
Managua-Tipitapa	85	1,020	1,071
Tipitapa-San Benito	64	768	806
San Benito-Sébaco	47	564	592
Sébaco-Estelí	28	336	353
<u>Southern Section</u>			
Managua-Conchitas	101	1,212	1,273
Conchitas-Esquinas	70	840	882
Esquinas-Diriamba	98	1,176	1,235
Diriamba-Jinotepe	68	816	857
Nandaime-Rivas	30	360	378
<u>San Benito-Santo Tomas-Rama Road</u>			
San Benito-Empalme Boaco	27	324	340
Empalme Boaco-Juigalpa	..	..	..
Juigalpa-Villa Somoza	..	..	..
<u>Others</u>			
Sébaco-Waswalf	47	564	592
Conchitas-Masachapa	17	204	214
Esquinas-San Marcos	27	324	340
Nandaime-Granada	16	192	202

Source: Transport Mission, based on official traffic figures furnished by the Highway Department of the Ministerio de Fomento y Obras Públicas.

a/ - The figures for this column were arrived at on the assumption that during the 12 hours of the night (between 6 p.m. and 6 a.m.) there is a traffic of only 5% of the vehicles in circulation during the daytime.

/That part

That part of the highway to Rama between San Benito and the junction to Boaco has a daily traffic of almost 340 vehicles. On the Sébaco-Waswall section of the road to Matagalpa there was a daily traffic of 592 vehicles in 1951. The lowest figure along other routes where traffic figures have been recorded was 202 vehicles a day.

These figures illustrate the transportation possibilities and the urgent need for building up an appropriate road network which would include, aside from the main routes, secondary routes and local and feeder roads. Such a network should also be coordinated with other means of transportation.

Another proof of the increased automotive traffic is the increase in the number of registered vehicles. Excluding military and official vehicles, and motorcycles, motor vehicles increased 80% between 1949 and 1952, even though in absolute figures the number is small: 2334 vehicles in 1949, and 4279 in 1952. (See Table 65.) The total is divided almost equally between commercial and private vehicles. The increase in the number of public passenger buses is difficult to ascertain, because trucks which are frequently used as small passenger buses are not classified as buses but as ordinary trucks. However, if about half of these vehicles are assumed to be used as buses, then possibly about 30% of the total number of vehicles are employed as public passenger carriers, which can be considered very satisfactory. On the other hand, the previous assumption would mean that there are only about 700 cargo trucks in use, which is only half of the total figure given for large and small trucks, and this number would seem inadequate for the country's needs. The number of taxis, which is almost 600, seems to be excessive

/and out

and out of proportion to the service required in the cities. There is no information concerning vehicle distribution by departments, but the larger part of them are in use in the capital and in surrounding areas.<sup>1/</sup>

Table 65

Nicaragua: Registered Motorized Vehicles, by Type and Use

	1949	1950	1951	1952
Private cars	1,153	1,380	1,766	2,036
Taxis	249	280	345	589
Trucks (all sizes)	794	792	1,200	1,409
Passenger buses	138	179	220	245
Government vehicles	250	251	299	318
National District vehicles	25	25	23	21
Fire Department vehicles	15	15	15	13
Red Cross vehicles	2	2	2	2
National Guard vehicles	350	310	560	575
Motorcycles	196	197	250	290
Totals:	3,172	3,431	4,610	5,208

Source: Ministerio de Fomento y Obras Públicas, Departamento de Carreteras, Managua.

Since the greater part of these vehicles have been imported in recent years, they are in good condition. However, overloading, lack of repairs and the bad condition of many roads, make for an intensified use, so that a vehicle gives only 3 or 4 years of efficient service instead of 6 or 8 years as it would normally. As in the other Central Amer-

<sup>1/</sup> There is also a large number of pack animals and animal-drawn vehicles. In 1948 it was estimated that there were about 6,000 carts in use.

/ican countries,

ican countries, the cost of vehicles and equipment is very high. For example, the lowest priced two-ton truck costs approximately 30,000 córdobas (about \$4,500), while heavier type vehicles cost from 45,000 to 50,000 córdobas (\$6,000 to \$7,000). These high prices are due mainly to the high ocean freight rates, the import duties, and the rail freight from Corinto to Managua. The ocean freight rate between the United States and Corinto is 2,500 córdobas per truck. The import duties are 15% ad-valorem in the case of commercial vehicles, while passenger automobiles, which are classified as luxury items, pay an exchange surcharge of 3 córdobas per dollar above the regular exchange rate of 7 córdobas to the dollar. This means that an automobile costing \$1,000 dollars would cost 10,000 córdobas at a Nicaraguan port. The rail freight rate from Corinto to Managua averages about 500 córdobas for an automobile and 600 for a medium size truck. Sales commissions at times are also quite high. In fact, the cheapest automobile coming from the United States costs 26,000 córdobas, and the smallest European car costs 15,000 to 16,000 córdobas. European motorcycles cost from 3,550 to 5,895 córdobas, according to their power capacity.

In general, 5-ton trucks are used, but many of the leading trucking companies use 6 to 7-ton capacity vehicles, and one or two of them use 10-ton trailer trucks, which are the most efficient and economical for transporting heavy freight such as lumber and livestock.

Gasoline prices are high. In 1952 it cost 2.95 córdobas a gallon (42 cents). Recently, Diesel motor vehicles have been coming into use, and fuel for these costs 1.45 córdobas a gallon (20.7 cents).

/The cost

The cost of tires is also high: size 8:25 x 20 costs 1,100 cordobas (\$160).

Although a large number of trucking concerns have only one vehicle, others own fleets of 5 to 15 vehicles, and specialize in

moving livestock, lumber and other heavy freight. As has been said, the

greater part of motor traffic is on the Inter-American Highway and on a

few other roads in the vicinity of Managua. Merchandise is transported

to local markets on ox-carts or pack animals, and imported goods are

likewise distributed to small towns and villages. Since imports and

exports are mainly carried by rail, the roads are used principally for

carrying goods from the towns to the railroad stations. For example,

coffee, which is carried by cart to the collecting centers or proces-

sing mills, is transported from there by truck to the railroad, where

it is shipped to Corinto. A similar situation prevails with reference

to such products as sesame seed, sugar and cotton. There is also quite

a large amount of lumber shipped by truck to Managua and vicinity for

local use. Hauling distances tend to increase, and lumber is now

brought from Chontales to Managua, a distance of 200 kms., and from

Rivas, 100 kms. away. Lumber which is floated across Lake Nicaragua is

also hauled from San Jorge to Managua, or to San Juan del Sur.

Managua is an important distribution center, utilizing

for this distribution mainly trucks: to the north and south along the

Inter-American Highway, and to the east, the Rama road. About 60% of

the traffic consists of general merchandise, 20% of coffee, and another

20% of agricultural products, which vary with the season. The greatest

volume of

is

has

volume of traffic of agricultural products occurs between December and May. These factors affect the transport system, since during the winter, trucks often return empty, and sometimes reduce their rates by as much as 50%.

Rates are not controlled by the government, but there is a tendency for the concerns to agree on uniform rates. On the Inter-American Highway between Managua and the Honduran border —except along the first short run between Managua and Tipitapa— rates charged fluctuate between 3 and 5 cents per ton-kilometer. (See Table 66.) The rate applicable to livestock varies between 13 and 15 cents per head per kilometer, according to the condition of the road and to the distance.

Table 66

Nicaragua: Truck Freight Rates between Managua and El Espino, 1952

From Managua to:	Distance (Kms.)	Rate per 100 lbs. (cordobas)	Approximate rate per ton-kilometer (centavos) (cents)
Tipitapa	22	1.50	1.40 20
Sébaco	103	1.50	30 4
Matagalpa	128	1.50	23 3
Estelí	150	2.00	26 3.5
Candija	186	3.00	32 4.5
Somoto	220	4.00	36 5
Ocotal	240	4.00	33 4.5
Espino	259	4.50	34 5

Source: Ministerio de Fomento y Obras Públicas.

There is considerable traffic on ox-carts; the rate is 50 cordobas (\$7) a day. As the length of the haul and the amount carried vary greatly, it is difficult to estimate within any degree of precision /the cost.

the cost of such transportation, but on the average one could figure the cost to be approximately from 3 to 5 cordobas (40 to 70 cents) per ton-kilometer.<sup>1/</sup>

Keeping in mind the various domestic transportation rates, several interesting phenomena may be observed. In the first place, excluding the freight rate between Managua and Tipitapa, which is excessive, the other rates are reasonable, averaging around 5 cents per ton-kilometer. Secondly, on the northern section of the Inter-American Highway, which is paved from Managua to Sébaco, the rate is 3 cents per ton-kilometer, while, on the rest of the highway, which is gravel, the rate increases to 5 cents — a difference which does not seem to be justified in this amount, although operating costs on the non-paved sections are naturally higher than on the paved sections.<sup>2/</sup> Thirdly, there is a marked relationship between road conditions and transport costs — for example in the case of livestock. (On hauls of 250 kms. over bad roads

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<sup>1/</sup> An example of the consequences of this form of slow and costly transport is found in the report The Economic Development of Nicaragua, by the International Bank for Reconstruction and Development: "Production and trade are heavily burdened at present by the the need to use beasts of burden for local haulage. For example, in the León-Chinandega district, the charges for carrying raw cotton by ox-cart to cotton gins 20 or 30 miles from the farm absorbs 10 per cent or more of the sales proceeds. It costs as much or more to haul coffee from the Tuma Valley to Matagalpa by pack mule as to move thereafter by truck, rail and ocean freighter to overseas markets" (Pages 223-224).

<sup>2/</sup> The unpaved sections are well constructed and well maintained at present. (See Section II, point 3 (a), p.243)

/there is

there is an extra charge of 4 cordobas per head, or a total of 100 cordobas per load.) Finally, transport costs by animal traction, as compared to mechanized transport costs, are 7 times more costly. This not only limits consumption, but also production.

City bus service in Managua is quite satisfactory. There are 57 companies with a total of 100 buses, which also provide service to the surrounding area. Perhaps lower fares could be charged, and the buses made more comfortable. If cooperatives, corporations, or combines were formed, transport service would be more efficient and economical. At present the fare is 25 centavos (4 cents) per passenger.

There are a great number of taxis in Managua. Two types of vehicles are used: small European sedan models, which charge within the city limits one cordoba per person, and standard United States models, which charge two cordobas. With the smaller taxis the public pays less and the country saves on fuel imports. Taxi fares for inter-city service are less reasonable and even high. On good roads the average charge would be about 16 to 18 centavos per passenger-kilometer (assuming there are five passengers per taxi), and on bad roads about 25 centavos (figures equivalent to 2.5 and 4 cents, respectively). (See Table 67.)

With respect to intercity bus service, on the southern section of the Inter-American Highway there are 13 companies operating 27 vehicles, and on the northern section, 11 companies operating 25 vehicles. Most of these buses consist of a truck chassis on which a body of domestic manufacture has been superimposed. Their capacity

/varies



varies from 20 to 40 persons, and little comfort is offered. Nevertheless, service is regular and rates are reasonable. They vary from 3/4 to 1 cent per passenger-kilometer, according to the route. (See Table 68.) Since there are so few vehicles and their capacity is limited, it is difficult for them to have low operating costs as long as there is such a large number of independent companies.

Table 67

Nicaragua: Authorized Taxi Fares for Interurban Service

From Managua to:	Distance (Kms.)	Fare (cordobas)	Fare per pas- senger-kilometer (centavos)(cents)
Jinotega	163	150 )	16-18 ) 2.5
Villa Somoza	192	180 )	
Somoto	220	190 )	
Ocotal	240	200 )	
Rivas, S. Jorge	112	100 )	27 ) 4
Peñas Blancas	127	120 )	
Boquita-Casares	70	95 )	

Source: Jefatura de Tránsito.

There are very limited international passenger and freight services from Nicaragua to San Salvador (606 kms. distant). The passenger fare is 50 cordobas (approximately 1.1 cents per passenger-kilometer), and for freight 8 to 10 cordobas per quintal, (4.5 cents per ton-kilometer).

Table 68

Nicaragua: Interurban Passenger Bus Fares

From Managua to:	Distance (Kms.)	Fare (cordobas)	Fare per pas- senger-kilometer (centavos)(cents)	
Tipitapa	22	1.50	7	1
Sóbaco	103	4.00	4	0.75
Matagalpa	128	5.00	4	0.75
Estelí	150	8.00	5	0.75
Somoto	217	14.00	6	1
Jinotega	150	7.00	4.5	0.75
Jinotepe	46	3.00	6.5	1
Rivas	112	6.00	5	0.75

Source: Transport Mission, on data provided by the companies.

Taxes are one of the factors that increase operating costs of passenger buses and trucks. The annual tax for the registration of vehicles, licenses, etc., is about 160 cordobas. The transport companies also have to cover the social security tax, which varies from 10 cordobas monthly when the company has up to 5 vehicles, to 5 cordobas a month when it has 10 vehicles or more. A company having 15 vehicles would have to pay almost 1,000 cordobas annually, or \$140.

As has been pointed out, the cost of vehicles is also high, and to this must be added that there are no financial facilities for purchases. Neither the agents nor the companies can obtain credit under favorable conditions, and this is reflected in the sales and in the service.

There is no organization or government department specifically in charge of transportation matters. Different aspects of transportation are

portation are divided among several ministries. The Traffic Department of the National Guard fixes taxi and passenger bus fares, and inspects the trucks. There is no operators' organization.

#### 5. Air Transport

The sole air carrier with a domestic operating franchise is Líneas Aéreas de Nicaragua (LANICA). It was founded in 1945 with the assistance of Pan American World Airways, which purchased 40% of the stock. The government purchased 20%, and local residents the balance. During some 12 years, until its contract was cancelled in 1948, TACA de Honduras pioneered in air transport in Nicaragua, and extended its service into the mining areas of Siuna and Bonanza in the northeastern part of the country, which previously were inaccessible. Operating with obsolete aircraft and landing on strips which by modern standards would be wholly inadequate, TACA made possible the establishment of two completely equipped mining centers in the heart of the jungle.

Today LANICA serves these two mining centers and six other points in the country: two missionary posts on the Cocos River, a lumber camp, Puerto Cabezas, El Bluff on the Atlantic coast, and the mining community of La Libertad. None of these fields was constructed by the government. Present passenger schedules consist of a service six times a week around a triangular course from the capital 280 kms. east to Bluefields; or 420 kms. northeast, via Siuna and Bonanza, to Puerto Cabezas; and 235 kms. along the Atlantic coast. Two or three times a week stops are made at the Rio Cocos outposts, at the lumber camp, and at La Libertad. During 1951 over 27,000 passengers were carried. Passenger fares between

/points

points on LANICA's triangular route average about 4.4 cents per passenger-kilometer; for packages weighing 12 kilograms or more, the rate varies from 27 to 41 cents per metric ton-kilometer. The Mission was informed that LANICA is reported to have made profits of 100% or over. This has enabled the company to clear its debts, to invest considerable sums in new equipment, and to declare dividends approaching 20%.

The company has seven C-47 type aircraft. Two were acquired recently to replace two lost in cargo accidents during 1952. Maintenance facilities towards the end of 1952 consisted of little more than a warehouse. Radio frequencies employed conflicted with other radio operators, so that it was scarcely possible to hear the central Managua station while in flight at mid-day. The pilots have flown an excessive number of hours, judged by the universal experiences of responsible concerns elsewhere in the world.

The primary activity of LANICA is the fulfillment of a contract as air freight carrier for the mining companies at Siuna and Bonanza. Some 75% to 80% of the 15,000 tons carried in 1951 were for the account of these mines. Most of the supplies destined to Bonanza are flown in some 130 kms. from Puerto Cabezas, while Siuna is supplied primarily by planes that make use of a landing strip built at Alamicamba, on the Río Prinzapolca. In this manner the air haulage over the jungle is reduced to 66 kms. Contract rate per short ton from Alamicamba to Siuna is about \$25, equivalent to 41 cents per metric ton-kilometer. Rates on Diesel oil are 10% less.

The Mission was informed that in spite of these rates, and of a large volume of traffic which is permanent the year round, air

/service

service to meet the the mines' needs was uncertain and inadequate.

Were it possible for a competitive carrier to obtain a domestic operating franchise to serve the mines, there can be little question but that air freight contract rates would drop considerably and that services would substantially improve. The situation has become so critical from the point of view of the mines, that they have started constructing a 100 km. road to a point about 13 kms. down stream from Alamicamba, where there is deep water the year round. When the road is completed, if it is suitable for permanent traffic and adequate to handle all the mines' needs, the financial basis of present domestic air transport in Nicaragua will undergo a radical change. When the Mission visited Nicaragua in November 1952, the company's personnel seemed to be overworked. However, it was reported later that new pilots have been engaged, and that other beneficial changes are being considered.

#### 6. Inland Waterways

Even though Nicaragua has more than 2,000 kms. of navigable inland waterways, the rivers, inlets and lakes have not been studied, and the details of interest to navigation are unknown. In the Ministry of Development and Public Works there is no department or section in charge of inland navigation. The river channels are not marked, nor is there any conservation work on them. There are no regulations concerning navigation, rates, nor conditions of carriage. There is no regular traffic, and no estimates have been made concerning the volume of passengers and merchandise carried. There are very few motor craft in use. Most companies operating on the rivers are subsidiaries

/of other

of other companies engaged in agricultural activities.

The navigable inland waterways of Nicaragua are the following:

	<u>Kilometers</u>	
<b>1. Lake Managua-Lake Nicaragua-San Juan River System</b>		
Lake Managua (perimeter)	190	
Tipitapa River	10	
Lake Nicaragua (perimeter)	400	
San Juan River	200	800
<b>2. Punta Gorda River</b>		
		40
<b>3. Cucra River</b>		
		30
and Lake Cucra		20
<b>4. Escondido River and tributaries</b>		
Escondido River	100	
Cama River	25	
Rama River	30	
Siquia River	25	
Mico River	20	200
<b>5. Curinhuas River</b>		
		50
and Pearl Lagoon		60
<b>6. Grande River</b>		
		250
<b>7. Prinzapolca River and tributaries</b>		
Prinzapolca River	160	
Bambana River	30	190
<b>8. Cucalaya River</b>		
		30
and Huantla Lagoon		40
<b>9. Huahua River</b>		
		30
and Karatá Lagoon		20
<b>10. Cocos or Segovia River</b>		
		400
		<u>2,160</u>

(a) Lake Nicaragua. Lake Nicaragua is 153 kms. long and 62 wide, and Lake Managua is 60 by 21. They have a combined area of 9,000 square kilometers, and occupy 20% of the most populated and at present productive

/area

area of the country.

On Lake Nicaragua the freight and passenger service are provided by the Ferrocarril del Pacifico. In 1950/51, 5,370 tons of freight and 19,800 passengers were carried. In 1951/52 the volume increased to 8,300 tons of freight and 27,900 passengers. (See Table 69).

Freight rates are not very high. From Granada to San Jorge, along the western shore of the lake, they amount to about 3 cents per ton-kilometer. Between San Carlos, on the other side of the lake, and either of the other above-mentioned ports, the rate is about 1.5 cents per ton-kilometer. Livestock rates vary from 2.70 cordobas (40 cents) to 7.80 (\$1.10) per head, according to classification. (See Table 70). However, to these rates must be added wharfage and handling

Table 69

Nicaragua: Traffic on Lake Nicaragua

	<u>Freight (In thousands of tons)</u>				Total	<u>Passengers</u> (thousands)
	Agricultural products	Animals	Manufactures	Others		
1944/45	..	..	..	..	10.4	..
1950/51	2.3	0.4	2.1	0.4	5.4	19.8
1951/52	3.5	1.1	3.3	0.4	8.3	27.9

Source: Ferrocarril del Pacifico, Managua.

charges which are high. In Granada the charge per ton is 6 cordobas and at the other two ports, 2 cordobas. For livestock the charge is 30 and 25 centavos per head respectively. At Granada wharfage charges are /so high

so high that for each wooden board 10 centavos per inch thickness or fraction thereof must be paid, and for each wooden crosstie, 15 centavos.

Table 70

Nicaragua: Transport Rates on Lake Nicaragua, 1952 <sup>a/</sup>

Run	Distance (Kms.)	CORDOBAS					
		Freight		Passengers			
		Per 100 kgs.	Per ton- km.	Per passenger		Per Passenger-km.	
1st	2nd	1st	2nd	1st	2nd		
Granada-San Carlos	221	2.20	0.10	14.50	7.24	0.06	0.03
San Jorge-San Carlos	160	1.74	0.11	9.88	4.78	0.06	0.03
Granada-San Jorge	61	1.20	0.20	4.90	2.47	0.08	0.04

Livestock transportation (per head)

Pigs	2.70
Small animals (calves up to 1 year)	5.40
Large animals	7.80

Source: Ferrocarril del Pacifico.

<sup>a/</sup> These quotations were obtained by adding to Regulations No. 6 of the freight rates, of July 1, 1947, the 20% increase which went into effect in 1951.

Passenger fares are around 1 cent per passenger-kilometer in first class and 0.5 cents in second class.

A study should be undertaken of the causes of such poor service on Lake Nicaragua and of the means for improving it. Traffic might possibly increase if rates were changed and wharfage charges reduced. Roads built in the lake region --previously almost devoid of

/roads--



roads— may make for an increase in lake traffic, as can be inferred from the figures for 1952.

(b) Cocos (or Segovia) River. This river has its source in the Mountains of Colón, Department of Choluteca, Honduras, and empties into the Caribbean Sea, forming a delta at Cape Gracias a Dios. It runs for some 750 kms. through an almost uninhabited jungle region. There is a stretch of about 220 kms. from Waspán to Gracias a Dios which is navigable for tugs and launches of medium draught. In a stretch 170 kms. upstream from Waspán, up to Ahuasvilla, there also seems to exist some service, although existing rapids along this stretch, tend to hinder navigation.

Bravtigan and Company provides services along this river with Diesel tugs and barges, both for banana exports and for general imports. It seems that this company is having serious financial difficulties. Between April and November 1952, it carried 1,000 tons of bananas for export, as well as 130 tons of beans and 500 of rice for local traffic. The rates charged vary between 1.5 and 11 cents per ton-kilometer, according to the merchandise. Passenger fares are less than 5 mills per passenger-kilometer.

(c) Escondido River. This river is formed by the confluence of the Siquia, Mico and Rama Rivers. It empties into Bluefields Lagoon, near the port of El Bluff. The river is important because of the project to use it as a link with the Rama highway, thus enabling export traffic to go out through the Port of El Bluff. This river has never been measured nor marked, except for a few rails painted white that have been embedded at places where there are rocks.

/The Mico

The Mico River is considered navigable for craft with not more than 4 feet draught, from its confluence with the Siquia as far as El Recreo, 20 kms. downstream. The Siquia River itself is considered navigable for craft drawing not more than 4 feet from the quay at Real de Chontales upstream to the confluence with the Mico River, some 29 kms. distant; and for craft of 20 feet draught, downstream as far as the river port of Rama, situated opposite the confluence of the Rama and Mico Rivers. This river, which is navigable for boats of 4 feet draught for some 30 kilometers before joining the Siquia, flows into the two others at the river port of Rama, thus forming the Escondido River. From here it is navigable for craft of 20 feet draught as far as the bar formed in a place called Guaterjol (Waterhole), a kind of lagoon where the delta begins. The depth at this bar and at the bar along the channel of the delta in the Blue-fields Lagoon, is what limits the draught of boats that can navigate the river.

At present, Rama exports palm oil, rubber, wood, bananas, ipecac, and nugget and bar gold, and imports general merchandise. There are still no port facilities worth mentioning at Rama.

These rivers that flow into the Caribbean are important access waterways to underdeveloped regions. It is of utmost importance to construct access roads to the landing platforms along the rivers in order to promote the development of this part of Nicaragua.

/APPENDIX I

APPENDIX I

NICARAGUA: HIGHWAY NETWORK

	<u>Length in Kms.</u>
1. <u>All-weather roads</u>	
A. <u>Trunk Routes</u>	548
1. Inter-American Highway	383
2. San Benito-Nama (total length of 270 kms.)	165
B. <u>Other important routes</u>	223
3. Sóbaco-Matagalpa	26
4. Matagalpa-Jinotega	34
5. León-Poncioya	20
6. Las Conchitas-Masachapa	33
7. Crucero-Las Nubes	5
8. Masaya-Masatepe	12
9. Masatepe-Jinotepe	14
10. Nandaimo-Granada	22
11. Granada-Masaya	18
12. Managua-Masaya	35
13. San Marcos-Cuatro Esquinas	4
C. <u>Other secondary routes</u>	203
14. Condega-Pueblo Nuevo	12
15. Estelí-San Juan de Limay	35
16. Waswalí-Jinotega	27
17. La Libertad-Santo Domingo	15
18. Boaco-Empalme	19
19. Tipitapa-Banderas	20
20. Tipitapa-San Juan	15
21. Acoyapa-Empalme	6
22. Yalagüina-Ocotol	21
23. Yalagüina-Pueblo Nuevo	12
24. San Pedro Lévago-Santo Tomás	8
25. San Pedro Lévago-La Libertad	13
	974
2. <u>Dry-weather roads a/</u>	1636
Total length of roads in Nicaragua	2610
3. <u>Roads under construction</u>	
1. Matagalpa-Tuma-Caratera	40
2. Matagalpa-Jinotega	34
3. Managua-Chinandega	124
4. San Jorge-San Juan del Sur	31
/5. Managua-	

	<u>Length in Kms.</u>
5. Managua-Santo Domingo-Masaya	27
6. Villa Somoza-Rama	114
Length of roads under construction	370
4. <u>Summary</u>	
1. Paved highways	303
2. All-weather roads (not paved)	671
3. Dry-weather roads	1636
4. Roads under construction	370
	<hr/> 2610

Source: Transport Mission, from official data.

- a/ The Highway Department of Nicaragua has furnished an inventory of the most important dry-weather routes in the country which appear in Appendix II.

APPENDIX II

NICARAGUA: IMPORTANT DRY-WEATHER ROADS

	<u>Kms.</u>
<u>Department of Managua:</u>	
1. Managua-Sabana Grande	15
2. Managua-Sto. Domingo-Ticuanteppec-Masaya	27
3. La Cruz Verde de San Isidro Road	23
4. Jocote Dulce Road	20
5. San Vicente Road	23
6. Pochocuape Road	23
7. Florida Road	23
8. Inter-American Highway Km. 10-11 to Carmen	18
9. Las Piedrecitas-Los Brasiles	22
10. Las Piedrecitas-La Rapadura-Santa Rita	34
11. San Andrés de la Palanca Road	16
12. Los Brasiles-Miraflores-El Tamagás	<u>22</u>
Total	266
<u>Department of Carazo:</u>	
1. Jinotepe-La Paz de Oriente	8
2. Diriamba-Casares	31
3. Santa Teresa-La Conquista	8
4. San Marcos-La Concepción	<u>8</u>
Total	55
<u>Department of Masaya</u>	
1. Masaya-Cofradía-Las Mercedes	18
2. Masaya-Los Altos-Zambrano-Tipitapa	25
3. Zambrano-Tisma	11
4. Zambrano-Granada	20
5. Masaya-Catarina-San Juan de Oriente	10
6. Masaya-La Concepción	<u>13</u>
Total	97
<u>Department of Granada</u>	
1. Las Fuentes-Diriomo-San Juan de Oriente	11
2. Granada-Masaya	18
3. Granada-El Paso de Panaloya	<u>20</u>
Total	49

Department of Rivas

	<u>Kms.</u>
<u>Department of Rivas</u>	
1. Ochoyongo-Güisocoyol-Las Salinas	28
2. Rivas-Tola-Bocana de Brito	20
3. Tola-Güisocoyol	16
4. La Virgen-San Juan del Sur	19
5. Inter-American Highway-Belén	2
6. Rivas-Potosí	7
7. Rivas-Buenos Aires	<u>4</u>
Total	96

<u>Department of León</u>	
1. Malpaisillo-Mina El Limón	21
2. La Reynaga-Mina La India	23
3. El Sauce-Achuapa-Limay	27
4. La Paz-El Tamarindo	15
5. León-La Paz-Centro	26
6. La Paz-Centro-Nagarote	16
7. Malpaisillo-Madroñal-Estero	34
8. El Sauce-Villanueva	20
9. Estero-El Sauce	<u>32</u>
Total	214

<u>Department of Chinandega</u>	
1. Chinandega-Somotillo-Cinco Pinos	83
2. Villanueva-Somotillo	18
3. Puente Real-Villanueva	42
4. Estero-Villanueva	40
5. Somotillo-Limay	<u>32</u>
Total	215

<u>Department of Boaco</u>	
1. Tecolostote-Camalapa-Camoapa	40
2. Boaco-Camoapa	22
3. Boaco-Tierra azul	24
4. Boaco-Muy Muy	<u>38</u>
Total	124

/Department of Chontales

	<u>Kms.</u>
<u>Department of Chontales</u>	
1. Juigalpa-Comalapa	22
2. Juigalpa-Puerto Díaz	11
3. San Pedro Lóvago-Mina Jabalí	14
4. Acoyapa-San Bartolo	<u>42</u>
Total	89
<u>Department of Matagalpa</u>	
1. Daría-Mina La India	32
2. Inter-American Highway-Esquipulas	12
3. Ciudad Darío-Terrabona	26
4. Matagalpa-San Ramón	9
5. Matagalpa-Apante Grande	10
6. Matagalpa-Fundadora	<u>24</u>
Total	113
<u>Department of Jinotega</u>	
1. San Rafael-Jinotega	18
2. Jinotega-El Tuma	<u>30</u>
Total	48
<u>Department of Estelí</u>	
1. Pueblo Nuevo-Limay	34
2. Condega-Yalí	26
3. Pueblo-Nuevo-San Lucas	11
4. El Sauce-Estelí	36
5. Estelí-Concordia-San Rafael	<u>38</u>
Total	143
<u>Department of Madriz</u>	
1. Ducualí-Telpaneca	20
2. Somoto-Totogalpa	<u>11</u>
Total	31

/Department of Nueva Segovia

	<u>Kms.</u>
<u>Department of Nueva Segovia</u>	
1. Ocotal-Hicaro-Jalapa	70
2. Ocotal-Dipilto	12
3. Ocotal-Maquelizo	<u>14</u>
Total	96
Total length of dry-weather roads	1,636

Source: Departamento de Caminos de Nicaragua.



Chapter V

COSTA RICA

I. Introduction

Except for El Salvador, Costa Rica is the smallest in area of the Central American republics and has the least number of inhabitants. Located between 8°02' and 11°14' north latitude and 82°33' and 85°57' west longitude, its area is 50,900 square kilometers. It has a population of 838,084, or 16.4 inhabitants per square kilometer.<sup>1/</sup> The country has 212 kms. of coastline on the Atlantic and 1,016 on the Pacific.

Costa Rica may be divided into three geographical zones:

(a) The central zone consists of a plateau 90 kms. long and 45 kms. maximum width, and has an area of 2,000 square kilometers. The altitude of this zone varies from 900 to 1,800 meters above sea level, with volcanic peaks of 3,400 to 3,800 meters. The mean temperature is about 20° centigrade. Nearly seven-tenths of Costa Rica's total population lives in this zone, which from the economic point of view is the most important of the country; in some parts the population density is almost 400 inhabitants per square kilometer, one of the highest in the world. On the central plateau are

<sup>1/</sup> Dirección General de Estadística, San José. Estimate as of December 31, 1951.

/also the

also the most densely populated parts of the Departments of San José, with a population density of 60.0 inhabitants per square kilometer; Cartago, 40.5; Heredia, 18.5; and Alajuela 16.4

(b) The eastern zone, comprising the Department of Limón, on the Atlantic coast, has a population density of only 4.6 inhabitants per square kilometer, and the greater part of its area is jungle and unexploited country. The land is very fertile, but the climate as well as the diseases of a few years ago (mainly malaria and yellow fever) have prevented this region from developing as rapidly as other parts of Costa Rica, with the exception of the banana plantations and Puerto Limón. After 1930 banana cultivation dwindled as a result of the Panama disease which attacked the plantations, and banana-growing was partially replaced by the cultivation of cacao and abaca fiber. Large areas of land were abandoned, and the economic activity of the entire region diminished considerably. Progress in sanitary conditions and the high fertility of the land are two factors favorable to the future development of prosperous farming and stock-raising in this part of the country. To achieve this development, however, two basic problems would have to be overcome: the heavy rainfall --which makes drainage works necessary in the case of certain crops-- and the lack of sufficient and adequate means of communication.

(c) The western zone, on the Pacific coast, has a much more favorable climate for economic activity than the Atlantic zone. In the northern part is the Province of Guanacaste, with an abundance  
/of fertile

of fertile land and flat country where mechanized farming is possible. At present the population density is only 8.6 inhabitants per square kilometer, and the region lacks efficient means of communication with the rest of the country. Nevertheless, in recent years there has been a substantial increase in the production of corn and other products, as well as livestock. In the future it may become one of the most important economic areas in Costa Rica and in all of Central America. To the south of Guanacaste is the Province of Puntarenas, which extends along the rest of the Pacific coastline. Its population density is 8.2 inhabitants per square kilometer. Rice-growing and fishing along the coastal region of the Gulf of Nicoya constitute the most important economic activities of this province. Towards the south are the banana plantations of the United Fruit Company (Quepos and Golfito). The rest of the region has yet to be developed and is largely covered by jungle.

Although not definitive, the most recent available estimate of Costa Rica's national income shows that it reached 811 million colones, or \$145 million, in 1949. Per capita income was 1,020 colones, \$180, which is the highest in Central America with the exception of Panama. Of the total national income, 34% is derived from agriculture, forestry, and fisheries; 24% from wholesale and retail trade; 17% from manufacturing; 8% from government services; 5% from transportation, and another 5% from finance, insurance, and real estate (See Table 71.)

The classification of the gainfully employed population

/Table 71

Table 71

Costa Rica: National Income by Activities, 1949  
 (in millions)

	Colones	Dollars	%
Total	811	145	100.0
Agriculture, forestry and fisheries	273	49	33.8
Mining and extractive industries	10	2	1.4
Contract construction	22	4	2.8
Manufacturing	137	24	16.6
Wholesale and retail trade	198	35	24.0
Finance, insurance and real estate	38	7	4.8
Transportation	38	7	4.8
Communications and public utilities	10	2	1.4
Services	23	4	2.8
Government and government enterprises	62	11	7.6

Source: The Twentieth Century Fund, Costa Rica: A Study in Economic Development, p. 340.

also reflects the predominance of agriculture in the national economy. Thus, of the total gainfully employed population, 54.7% is engaged in agriculture, 11% in manufacturing, 14.7% in services, and 7.9% in commerce. This situation reflects a tendency for the population engaged in agriculture to change gradually to other activities. In 1927, 61.8% of the gainfully employed population was engaged in agriculture, and 7.9% in manufacturing.

Agricultural production may be divided into export crops and products for domestic consumption. In 1949 the principal export /crops

crops were bananas, coffee, cacao, and abacá fiber. In 1951 these crops accounted for 97% of the total value of exports. Bananas, grown on a large scale by the United Fruit Company in the Pacific area, are also grown by a number of independent producers in the same area and on the Atlantic coast. In 1951 banana exports amounted to 10,015,000 bunches, valued at \$ 33.5 million, 9,421,000 from the Compañía Bananera de Costa Rica --a subsidiary of the United Fruit Company-- and the rest from independent producers<sup>1/</sup>. Coffee-growing takes up most of the land devoted to agriculture and it is almost exclusively in the hands of Costa Ricans. Most of the country's coffee is grown in the central zone. In 1951 coffee exports totalled 18,982 metric tons, with a market value of \$ 22.2 million. Cacao, produced by the banana companies on the Atlantic coast, is Costa Rica's third-ranking export product. In 1951 the crops amounted to 3,916 tons, valued at \$ 19 million. Abacá fiber is likewise produced in the Atlantic zone, primarily by the United Fruit Company. The annual export value is \$ 2.5 million. In 1949 the value of export crops amounted to more than half the total value of the products of agriculture, livestock, forestry, and fisheries.

The most important crops for domestic consumption are corn, beans, and rice, which are cultivated principally in the Provinces of Guanacaste, Puntarenas, San José, and Alajuela; sugar and panela are mostly concentrated in the highland zone of Alajuela, Cartago and San José. Dairy cattle are found in the central region, while

<sup>1/</sup> Only banana exports from Honduras have been greater than the Costa Rican exports. In recent years, Costa Rican banana exports have surpassed in value even coffee exports.

beef cattle primarily in the Province of Guanacaste.

The central zone consumes a much greater quantity of cereals, grains, and meat than it produces, and has to cover its deficit bringing in these products from other parts of the country.

The most important local manufacturing products are hides and leathers, canned fruit, beer, cotton textiles, vegetable oils, shoes, soap, and canned fish (Puntarenas). The factories are located mainly in San José, Alajuela, and Cartago. At Heredia --where there is also some tanning-- and elsewhere in Costa Rica, there are some small isolated factories. In spite of this growing industrial activity, most of the manufactured products consumed in Costa Rica are imports from the United States.

The distinctive trait of the transport situation is the compact network of roads on the central plateau and the lack of communications between this plateau and the coastal areas. Only two railways connect the capital and the most important towns with the ports of Puerto Limón on the Atlantic and Puntarenas on the Pacific. (A second class highway also connects Puntarenas with the central plateau.) Thus, economic activity has tended to be concentrated more and more in the central region, and there are areas with great agricultural potential which have not been developed primarily because of the lack of efficient means of transportation. The Province of Guanacaste has been limited in its development since it only has a road between Nicoya and Puerto Jesús, and the Tempisque and Bebedero rivers that flow into the Gulf of Nicoya. The Departments of Limón and Puntarenas

and Puntarenas also lack means of communication. The concentration of the population on the central plain also tends to increase due to the absence of roads radiating outwards. This situation reduces the possibilities of a more thorough exploitation of natural resources.

## II. Means of Transport for International Trade

Almost all of Costa Rica's import and export freight is moved by rail; a small volume is transported by air.

The principal ports, except Puntarenas, have only railway communication. In the case of Puntarenas, although there is a road which connects it with the interior of the country, more than 99% of import and export traffic is moved exclusively by rail.

Inland communications that could be used for public transport with Nicaragua and Panama are completely lacking. The Inter-American Highway has not been constructed precisely at the Nicaraguan and Panamanian border zones.

### 1. Railroads

Two companies constitute the Costa Rican common carrier railroad network. One belongs to the government --the Ferrocarril Eléctrico al Pacífico, which connects San José with the port of Puntarenas. The other is a private company --the Northern Railway, whose trunk line connects San José with Puerto Limón. In addition to these, there are three private railways belonging to the Compañía Bananera de Costa Rica, a subsidiary of the United Fruit Company-- the Quepos and

/Gelfito

Golfito Divisions on the Pacific coast, and a line belonging to the Panama Division on the Atlantic coast. These three systems are completely separate from each other and from the common carrier lines. However, the port of Quepos as well as the excellent natural port of Golfito --considered Central America's best Pacific port-- have no other inland communication with the rest of the country except the railway belonging to the banana company.

The country's railroad network is 1,327 kms. long including only the Ferrocarril Eléctrico al Pacífico and the Northern Railway. The track is narrow gauge (1.067 meters, or 42 inches). In 1951 the two common carrier railroads carried a total of 1.5 million passengers and 450,000 tons of freight; 56% of the freight was local, 32% was import freight, and 12% export freight.

(a) Ferrocarril Eléctrico al Pacífico. Electrified along its entire length, it is the only electric railway in Central America. In addition, the company, which is government-owned, also owns the port facilities at Puntarenas and is in control of all port services.

The San José- Puntarenas trunk line is 115 kms. long. Including the two short branch lines to Alajuela and Esparta, the total length of the systems is 132 kms. The company owns some old model electric locomotives (20 to 22 years of service) of low tractive force, two small steam locomotives, two Diesel yard engines, 13 auxiliary motor rail inspection cars, 40 passenger cars, and 263 miscellaneous freight cars.

/The profile



The profile of the line --with grades up to 3%, and curves with a radius of less than 100 meters along almost all its length-- makes traction extremely difficult and limits the tonnage of the trains. There is a need for repairs and replacement of ties, as well as for a general improvement of the line. The rails are 70 and 80 lbs. per yard (35 and 40 kgs. per meter). The signals are electric. The rolling stock is in good condition but is insufficient to fulfill rapidly and efficiently peak traffic requirements. There are plans to purchase several more powerful electric locomotives, and 85 new freight cars are due to arrive soon. With this increase in rolling stock and the above-mentioned track improvements, the railroad will be in a position to offer an efficient service.

Passenger traffic on the Ferrocarril al Pacifico has increased 53% in the last 5 years. (See Table 72.) The amount of freight carried has also shown a considerable increase, rising from 193,000 metric tons in 1947 to 226,000 in 1951, an increase of 17%. However, it should be noted that almost all this increase was in import cargo and both export cargo and local freight maintained a practically constant level. (See Table 72.)

While import and export traffic make up 38% and 5% of the company's freight, respectively, local traffic constitutes 57%. The road has not substantially affected the position of the railroad. Almost all international cargo is transported by rail, and the railroad has continued to carry the same volume of local traffic for several years. This is because the railroad freight rates compete favorably

Table 72

Costa Rica: Rail Traffic, 1947-1951

	1947	1948	1949	1950	1951
<u>Passengers</u> (in thousands)	444	466	578	678	681
<u>Ferrocarril Eléctrico al Pacífico</u>					
Passengers	444	466	578	678	681
Passenger-kms.	19,069	19,521	24,708	21,414	27,468
<u>Northern Railway Co. Ltd.</u>					
Passengers	715	762	867	754	776
Passenger-kms.	26,760	26,687	33,011	27,086	26,173
<u>Freight<sup>a/</sup></u>					
<u>Ferrocarril Eléctrico al Pacífico</u>					
Import	54	33	61	67	85
Export	13	7	6	7	11
Local	<u>127</u>	<u>129</u>	<u>133</u>	<u>139</u>	<u>130</u>
Total	194	169	201	213	227
<u>Northern Railway Co. Ltd.</u>					
Import	47	44	56	56	60
Export	51	74	77	59	41
Local	<u>133</u>	<u>132</u>	<u>132</u>	<u>114</u>	<u>122</u>
Total	231	250	265	229	223

Source: Ferrocarril Eléctrico al Pacífico and Northern Railway Co. Ltd.

<sup>a/</sup> Thousands of metric tons.

with truck freight rates, because trucks cannot operate directly at the port of Puntarenas, and above all because the railway company imposes an extra port charge of 5 colones per ton on all cargo which

/it does

it does not haul. This extra charge may be considered somewhat monopolistic and discriminatory.

Passenger fares are 0.077 colones per km. first class and 0.055 second class, or 1.4 and 1.0 cents respectively. In contrast to the situation on most Central American railroads, rates for local freight are higher than those for import and export cargo. (See Table 73.)

After having operated at a loss during 1947 and 1948, the economic situation of the railroad is satisfactory at present. The operating ratios have been as follows: 1947, 97%; 1948, 116%; 1949, 107%; 1950, 91%; 1951, 85%.

(b) Northern Railway Company. Another name for this railway is Costa Rica Railway Company. This last-named company was organized in London in 1886, with the purpose of completing the construction of the railway from Alajuela and San José to the Atlantic, and operating it. In 1905 it was leased to the Northern Railway Company, which is a subsidiary of the United Fruit Company. Later, by a contract dated July 1, 1941, the Costa Rica Railway Company acquired without payment the capital stock of the Northern Railway Company, this company's outstanding debt with the United Fruit Company, and various railway branch lines belonging to the Compañía Bananera de Costa Rica. The railroad's concession expires January 1, 1990, at which time it will be turned over to the government without compensation. Besides the railway, this company owns and operates the port facilities of Puerto Limón, which are a considerable source of revenue.

Table 73

Costa Rica: Freight rates on the Ferrocarril al Pacifico for selected import and export products, 1951

	Per metric ton (Colones)	Per Ton-Km. (Cents)
<u>Imports</u>		
<u>Puntarenas-San José (116 kms.)</u>		
Wheat	15.66	2.4
Wheat flour	15.66	2.4
Cement	13.92	2.1
Reinforcing steel	18.79	2.8
Newsprint	15.66	2.4
Textiles, all kinds	29.00	4.4
Industrial or agricultural machinery	9.2	2.8
Automobiles and trucks	100.00	\$ 17.60 <sup>a/</sup>
<u>Exports</u>		
<u>San José-Puntarenas (116 kms.)</u>		
Coffee	18.00	2.7
Abacá	23.20	3.5
Cacao	18.00	2.7
Lumber	23.20	3.5

Source: Transport Mission, from data supplied by the Ferrocarril Eléctrico al Pacifico.

<sup>a/</sup> Each.

The trunk line, San José-Puerto Limón, is 165 kms. long.

The most important branch line, San José-Alajuela, covers 21 kms. The line's total length, including the branches in the banana region, is 523 kms. All locomotives are steam. There are 34, very old, with an

/average

average age of more than 50 years. Considering this poor tractive force and the difficult profile of the line, it is not surprising that operating costs are excessive. The line has grades up to 4.6% and curves as high as 35°, which considerably reduce the tonnage that can be hauled<sup>1/</sup>. Moreover, maintenance of the line is very costly, due to the heavy floods and washouts. During the rainy seasons of 1949 and 1951 the line was badly damaged, and service was interrupted for some time.

The rolling stock of this railroad consists of two motor cars, 46 passenger cars, 396 covered freight cars, 236 flat cars, and 206 cars of other kinds. If there were more and better locomotives, normal traffic needs could be adequately covered, but besides this limitation, operations at the custom house are slow, and there is frequent congestion.

From the point of view of the number of passengers transported, passenger traffic was 8% higher in 1951 than in 1947. On the other hand, there is a slight decline in passenger-kilometers. (See Table 72 above.)

Freight traffic in 1951 dropped 3.5% from 1947, and 16% from 1949, which was the heaviest traffic year in the last 5 year period. This decline is due primarily to the fact that although import cargo increased 28%, this increase did not compensate the fall in export cargo and local freight, which was 20% and 3.5% respectively in

<sup>1/</sup> The maximum weight that can be hauled on the trunk line with single traction, using the line's most powerful locomotives, is only 135 tons gross.

comparison to 1947. (See Table 72.)

The passenger fare first class is 0.028 gold colones (2 colones to the dollar, old par value) and for second class 0.018 per mile, or 1.7 and 1.1 cents per passenger-kilometer respectively. This fare is somewhat higher than that of the Ferrocarril Eléctrico al Pacífico. As for local freight rates on basic foodstuffs or other products which constitute the bulk of local traffic, the tapering principle is applied. For import and export freight, the rates are generally fixed for each commodity and for each specific run. Some are very high --in certain cases three and four times higher-- when compared to the freight rates of the Ferrocarril al Pacífico. (See Table 74.) This is an important factor in the high cost of basic foodstuffs and of other commodities for domestic consumption, and also bears heavily on transport costs of export goods.

In spite of these high rates, operating costs of this railroad are so excessive that every year from 1947 through 1951, it has been incurring losses. These losses reflect the frequent interruptions of traffic during the last two years due to washouts and floods. Operating ratios in the five year period 1947-1951 have been as follows: 1947, 119%; 1948, 113%; 1949, 110%; 1950, 140%; 1951, 136%<sup>1/</sup>.

The Mission believes that in order to reduce appreciably the high operating costs of this railroad, it would be necessary above

<sup>1/</sup> The railroad showed a small net profit in 1952 due to a considerable increase in freight traffic and to the increase in rates put into effect in June 1951.

Table 74

Costa Rica: Comparative rail freight rates for imports and exports, 1951

(Cents per ton-kilometer)

	Northern Railway Limón-San José	Ferrocarril Elec- trico al Pacífico Puntarenas-San José
<u>Imports</u>		
Wheat flour	5.3	2.4
Wheat	5.3	2.4
Cement	2.7	2.3
Reinforcing steel	2.4	2.9
Wrapping paper	2.9	2.4
Newsprint	3.3	2.4
Agricultural and Industrial Machinery	9.2	2.8
<u>Exports</u>		
Coffee	6.8	2.7
Cacao	13.8	2.7
Abacá	13.8	3.5

Source: Ferrocarril Eléctrico al Pacífico and Northern Railway.

all to carry out important projects in order to reduce to a minimum the damages caused by floods and washouts, to use Diesel locomotives, and to improve the permanent way adapting it for heavier locomotives. But even after carrying out these improvements, traffic is so light that the railroad would have to keep its rates and fares at a high level. The situation would improve if the United Fruit Company carries out its project of opening up new plantations of considerable size in the hinterland of Puerto Limón, and uses the lines of the

/Northern

Northern Railway and the port facilities of this company for banana exports.

(c) Railroads of the Compañía Bananera de Costa Rica (United Fruit.) These railroads are virtually private carriers. They fulfill the industrial and agricultural transportation requirements of the company in its Quepos and Golfito Divisions. There is also one United Fruit rail line (Panama Division) which enters Costa Rican territory and follows the Caribbean coast for about 40 kms. The total system is 631 kms. long. Equipment consists of 42 locomotives (most of them electric Diesels), 1,404 motor cars, and miscellaneous freight cars.

## 2. Port and Maritime Situation

After Panama, Costa Rica is the Central American country having the longest coastline in proportion to its area. However, it may be said that it has only two national deep water ports: Puerto Limón on the Atlantic and Puntarenas on the Pacific. The other two deep water ports --Golfito and Quepos on the Pacific-- belong to the Compañía Bananera de Costa Rica, and they handle almost exclusively private traffic.

In 1951 Puerto Limón's total volume of imports and exports was 154,601 tons, while at Puntarenas the total was 126,413. However, some years Puntarenas has more international traffic than Limón, although this seems to be due to the interruptions in the rail service between San José and Limón. Puntarenas is also the center of /considerable



considerable cabotage with the coast of the Gulf of Nicoya.

(a) Puerto Limón. Situated on the Atlantic coast, east of San José, Puerto Limón is well sheltered on the north, from where the prevailing winds come, but not on the northeast nor on the east. There is seldom a strong wind from the east, but when there is, it is usually necessary to cast off lines and anchor the ships. The only means of communication with the rest of the country is the Northern Railway. This company owns the principal pier and controls its operations.

The pier is cast iron with a wooden superstructure. The tide is 18 inches. There are three principal berthing areas, with depths of 22, 26 and 28 feet. The offshore face of the pier is more than 1,000 feet long and one of the inshore faces is around 350 feet. These two are the only ones used, since when ships are loading or discharging at these sections it is not possible to operate simultaneously at the third section. Unlike most piers in Central America, the one at Puerto Limón has mechanical cranes mounted on tires which discharge cargo and deposit it directly in the freight cars. There is also a small government-owned wooden pier which is used for cabotage and for some banana exports.

Of the total international freight handled by Puerto Limón in 1951, 87,500 tons were imports and 67,100 exports. Although the volume of imports was a little larger than the volume of exports, traffic was well-balanced in general. Its distribution throughout the year was also quite regular. It increased during the first and last months of the year, but the variation was not very marked.

/According

According to information supplied by the port authority, 275 ships in international service called at Puerto Limón in 1951, or an average of 23 ships per month; 36% were fruit company vessels, 8% belonged to the Royal Netherlands Steamship Company, and the rest belonged to other companies. The average capacity of the ships was 3,000 tons.

The Northern Railway, which controls the port, does not have warehouses for storing merchandise. The customs have 5 warehouses with an approximate area of 11,446 square meters, which means that there is 1 square meter of storage space for every 13 tons of traffic. Although this ratio reflects an excess of freight for the available storage space, the principal causes of the prevailing congestion in this port are the inadequacy of access facilities which prevent prompt clearing of the merchandise, and the fact that importers keep their goods in the customs overtime. What makes the situation even worse is the fact that since the customs are overstocked, cargo is left in the freight cars for a long time.

Pier charges at Puerto Limón are 12.26 colones per metric ton for imports as well as exports (except lumber and animals). Ocean freight rates are those established by the Caribbean Classification.

(b) Puntarenas. The port of Puntarenas is situated on a long peninsula which extends out into the Gulf of Nicoya. It is connected with the capital by railway and by a road, all-weather as far as San Ramón, and paved from this point to San José. The port

/facilities

facilities belong to the Ferrocarril Eléctrico al Pacífico.

The pier was built at the southeastern end of the port for greater depth, but since the Gulf is very large and faces directly south, ships at the pier have little protection, and it is necessary to tie them with powerful cables during loading and discharging operations. The pier is steel and "L" shaped. The berthing area on the offshore face is 488 feet long (149 meters) and on the inshore face 396 feet (121 meters). The depth on the offshore face is 40 feet at high tide and 30 feet at low tide. The highest tide, in October, is approximately 11 feet. The pier is not very well maintained, but some repairs are being carried out. In any event, capacity is scarcely sufficient for present demand, and ships often have to anchor out in the Gulf awaiting a berth.

In spite of the fact that Costa Rica's principal export and import markets are on the Atlantic coast of the United States, Puntarenas plays an important part in the country's international maritime traffic. In 1951 this port handled 45% of the imports and exports (excluding the traffic of the ports of Golfito and Quepos). Traffic here is much more unbalanced than at Puerto Limón. In 1951 the volume of imports was almost five times greater than that of exports. This tends to increase all costs -- ship, railroad, and terminal charges in general. Distribution of traffic throughout the year is also quite irregular: the volume of exports in October and November is only one-tenth of that of the first months of the year. Imports also fluctuate very much. This is probably due to the traffic of oil tankers and

/tramp

tramp ships, which usually arrive irregularly and with complete cargoes. In 1951 the principal export product was coffee (10,354 tons); in second place fish and frozen seafoods (1,477 tons). The port also handled a considerable quantity of re-exported fuel. As for imports, fuels and cement are the most important (27,000 tons each), second is flour (12,600 tons), and third, wheat (5,300 tons).

In 1951, 140 ships in international service called at Puntarenas, or an average of 12 ships per month. Of these vessels, 30% belonged to the Grace Line, 14% to European lines, 13% to the Independence Line, 10% to the fruit company, and the rest to other firms. The Grace Line service was very regular, but the European lines, although operating much less regularly, together handled a greater volume of imports. Of total exports, the Grace Line handled 47%, the Independence Line 22%, and European lines 11%.

There is a private warehouse belonging to the railroad which is mainly used to store cement. It has a capacity of some 600,000 sacks, while the custom house can hold 170,400. Yet, total capacity is not sufficient for current traffic, especially in the first months of the year. At Puntarenas importers also fail to move their goods out promptly.

Part of Costa Rica's traffic with the rest of the Central American countries, particularly with Nicaragua and El Salvador is handled through this port. In 1951, total traffic with other Central American ports amounted to 658 tons of imports and 290 of exports.

At Puntarenas there is also one single terminal charge,

quarta)

/but

but higher than at Puerto Limón. At present it is 15 colones per metric ton. Ocean freight rates are the same as in the other Central American Pacific ports, with the exception of the two Nicaraguan ports, where an additional surcharge is imposed.

### 3. Highways

The total length of Costa Rica's roads is only 2,500 kms<sup>1/</sup> of which 1,800 are all-weather roads, and the rest dry-weather. Of the all-weather roads there are 800 paved kms. and about 1,000 kms. non-paved (with or without a wearing surface).

The ratio of roads to population<sup>2/</sup> is 1 kms. of all kinds of roads for every 338 inhabitants, in comparison with 1 km. per 249 inhabitants in El Salvador, and 1 kms. for every 462 inhabitants in Guatemala. In Costa Rica, for every kilometer of all-weather roads there are 468 inhabitants, as against 1,280 inhabitants in El Salvador and 704 in Guatemala. For every square kilometer of territory there are 49 linear meters of roads of all kinds and 35.4 meters of all-weather roads. In El Salvador for every square kilometer there are 366 linear meters of all kinds of roads and 72 meters of all-weather roads. In Guatemala this same ratio is 1 to 60 and 1 to 39 respectively.

The Costa Rican road network<sup>3/</sup> consists of one single

<sup>1/</sup> Included in this figure are only some 700 kms. of the more important dry-weather roads. The Highway Department estimates that "there are about 6,000 kms. of dry-weather roads", but the details and classification of these are unknown.

<sup>2/</sup> This ratio has been determined according to the population estimate in 1952, on the basis of the 1950 census.

<sup>3/</sup> See Appendix I at the end of this Chapter.

trunk highway not yet complete (the Inter-American Highway), and a compact network of small primary and secondary branch roads on the central plateau in the vicinity of San José. The average length of the primary branch roads (all-weather roads) leading off the Inter-American Highway is 17 kms., and the maximum length of some of these roads is 54 kms. The average length of secondary roads (isolated ones or others which are independent of the Inter-American Highway) is 12 kms., and the maximum is 56 kms. With a road network of this nature, concentrated on the central plateau, only very limited sections contiguous to the Provinces of San José, Cartago, Alajuela and Heredia are communicated with each other, and yet, this central rectangular zone has a total width of only 40 kms.

Road transport for international trade is very limited due to the circumstances described above. Mention need be made only of the Inter-American Highway, which may eventually have some importance for intra-regional trade when completed, and the road from Barranca to Puntarenas, which connects the Inter-American Highway with this Pacific port.

(a) Inter-American Highway. This highway crosses the country lengthwise from northwest to southeast, and once completed will have a total length of about 658 kms. between the borders of Nicaragua and Panama. It will connect directly the capital of Costa Rica with the capitals of the Provinces of Guanacaste, Alajuela, Heredia, and Cartago, and indirectly, also with the capital of Puntarenas. Of all the provincial capitals only that of Limón is not

/connected

connected to this highway. The length of the section completed and opened to traffic in December 1952, was 346 kms.; a considerable part of the remainder is still to be surveyed and located.

The government of Costa Rica planned and constructed the two paved sections --San Ramón-San José (75 kms.) and San José-Cartago (22 kms.)-- and commissioned the U. S. Bureau of Public Roads to survey, locate, and construct the southern section from Cartago to San Isidro del General (114.4 kms.) and the northern section from San Ramón to Las Cañas (112 kms.)<sup>1/</sup>

The grading, basing and surfacing on the first section was completed in 1948, and on the second section in 1952. Neither has been paved. (See Table 75.)

The specifications assigned for the construction of this international route in Costa Rica will exceed those applied to the stretches already built. It is intended to improve these sections in order to have a uniform geometric design all the way through and the same quality of construction on the whole highway. More than 200 kms. of the highway still have to be located, about 310 kms. constructed, and some 560 kms. paved. (See Table 75.) The original location between Paso Real and the Panamanian border will be altered, according to an agreement reached. The new project is to follow the margin of the Diquis River, then continue parallel to the rail line

<sup>1/</sup> In addition to the two sections mentioned above, the U.S. Bureau of Public Roads constructed the access road from San Isidro del General to Dominical (40 kms.), an important inlet on the Pacific. This road was used to bring in the equipment and materials for the construction of the Inter-American Highway.

Table 75  
 Costa Rica: Inter-American Highway

Section	Length in Kms.	Present Condition
1. Nicaraguan border-Basaces	105	Impassable (being located)
2. Pagaces-Las Cañas	22	Passable (graded and drained)
3. Las Cañas-Río Lagartos	39	All-weather (graded, drained)
4. Río Lagartos-Macacona	35	All-weather (graded, drained and surfaced)
5. Macacona-San Ramón	39	All-weather (graded, drained and surfaced)
6. San Ramón-San José	75 <sup>a/</sup>	Paved
7. San José-Cartago	22	Paved
8. Cartago-San Isidro del General	114 <sup>a/</sup>	All-weather (graded, drained and surfaced)
9. San Isidro del General-Buenos Aires	60	Impassable (not graded, being located)
10. Buenos Aires-Paso Real	30	Impassable
11. Paso Real-Margin of the Diquis River-La Cuesta-Panamanian border <sup>b/</sup>	117	Impassable (being surveyed for future location)
<b>Total</b>	<b>658</b>	

Source: Transport Mission, from field data, supplemented by U.S. Bureau of Public Roads, Costa Rican section.

<sup>a/</sup> The first 3 kms. of section 6, beginning at San Ramón, are not paved, while the first 12 kms. of section 8, beginning at Cartago, are paved, so that the total paved length is 106 kms. instead of 97.

<sup>b/</sup> The original location (Paso Real-Sabanilla-Panamanian border) has been changed with the authorization of the Costa Rican government. According to the change proposed the road will follow along the coastal plain near the vast banana plantations in the region of Golfito.

of the Golfito Division and join the Inter-American Highway of Panama near the point called La Cuesta. This change will mean an approximate 100% increase in length on this terminal section; or probably not less

/than



than 58 kms.

The unconstructed 105 km. stretch between the Nicaraguan border and Bagaces is in a region of volcanic soil, a mixture of decomposed ash and lava fragments, where a new location is in progress. This section will connect with the short border stretch (still to be completed) on the present Inter-American Highway in Nicaragua.<sup>1/</sup>

The sections Bagaces-Las Cañas (19 kms.) and Las Cañas-Río Lagartos (39 kms.), which have been graded, can be considered as practically all-weather roads. At present the Bureau of Public Roads is hard at work surfacing them with stone, constructing permanent bridges and drainage structures, and relocating some stretches that will be much improved. From Lagartos to Macacona (35 kms.) a surface of crushed stone has already been applied. The specifications followed in building this road are excellent: width of wearing surface, 6 meters; minimum total width, 10 meters; good horizontal and vertical alignment (long tangents, easy curves and good visibility); grades not greater than 6% and good drainage. All temporary structures have been or are being replaced by permanent structures, whose quality and capacity correspond to the first-class specifications assigned to the highway.

The central camp of the Bureau of Public Roads is now located at Macacona,<sup>2/</sup> which is the focal point of operations on the

<sup>1/</sup> From La Cruz, a Costa Rican village 20 kms. from the border, a new location is in project which is to join the proposed Rivas-San Juan del Sur stretch of the Inter-American Highway in Nicaragua.

<sup>2/</sup> For the construction of several bridges and for the grading of new stretches, several other camps have been set up between Macacona and the Nicaraguan border.

northern section, up to the Nicaraguan border.

Between October 1952 and December 1953, work is to proceed on 50 kms. in order to finish the grading, drainage, basing and surfacing. For this project new equipment and materials have been brought in, the technical and administrative personnel, and the labor have been increased.

The section between Macacona and San Ramón (39 kms.) is not yet paved, but the structures as well as the transverse section have been practically completed so they can withstand the heavy commercial traffic. However, it is still necessary to improve the horizontal and vertical alignment in order to eliminate some curves, increase the radius, width, and super-elevation of others, and also reduce excessive grade changes. Some of the bridges and culverts require enlargement or improvement.

Between San Ramón and San Cristóbal del Norte (12 kms. south of Cartago), there are 106 kms. of pavement. From a midpoint between Alajuela and Heredia, there is concrete pavement to Cartago. (more or less 28 kms.), and the rest is asphalt.

On the section between San Ramón and Alajuela there are several stretches which, in addition to having bad horizontal and vertical alignment, numerous curves of small radius, frequent grade changes and poor visibility), require widening and improvement, especially on the sections located on hillsides or on the edge of ravines.

The section from San José to Cartago (22 kms.), constructed in 1928, is mostly concrete, and the rest asphalt. It has an average width of 5.50 meters, good horizontal and vertical alignment

/(in some

(in some stretches only fair), relatively easy curves and grades of not more than 6%. At present the pavement is in good condition, except at km. 10 from San José. At the end of the center line of the city of Cartago the asphalt pavement of the highway terminates. From there on, towards the town of San Isidro it has only a light bituminous surface.

Between Cartago and San Isidro del General (114 kms.) there are only 10 or 12 kms. of bituminous surface, the rest being completely graded, based, and surfaced with crushed rock. After passing the San Isidro de Cartago River bridge (about 7 kms. from Cartago), there begins an up grade of some 3 kilometers with bad horizontal alignment and many curves. The width of this section is about 6 meters up to the point where the slope ends, and then increases up to 8 meters; the horizontal and vertical alignment and the visibility are much better, and the grades are relatively gentle (maximum of approximately 7%). The highway is in good condition for both heavy and high speed traffic.

Of the entire length of the highway already constructed, this stretch has been the most difficult to locate and construct, for this is also the most rugged zone of the entire route. Leaving Alajuela, at 900 meters above sea level, the highway begins with a strongly positive mean grade and climbs to 3,330 meters on the peak of La Muerte (110 kms. from Alajuela). From here it descends to about 750 meters at San Isidro del General (47 kms. from the highest point on the road)<sup>1/</sup>

<sup>1/</sup> Between Alajuela and Asunción (the highest point on the highway, on the peak of La Muerte) the mean gradient is 2.2%; and between Asunción and San Isidro, 5.5%.

(b) Barranca-Puntarenas (16 Kms.) This route

branches off from the Inter-American Highway and provides a means of transportation for the few export and import products and the products of local traffic which are not transported by rail from San José to Puntarenas. It is a water-bound macadam road with deficient characteristics and specifications, and is poorly maintained. It is almost parallel to the railway branch line Esparta-Puntarenas<sup>1/</sup> and will no doubt assume considerable importance when the western branch of the Inter-American Highway is finished, and when this branch complements the basic system of secondary and feeder roads. This system is essential for transporting cereals, sugar, and livestock products from the Provinces of Guanacaste and Puntarenas, and from the southern zone of Alajuela.

4. Air Transport

San José is the only capital in the Western Hemisphere without landing facilities for four-engine aircraft. It is served primarily with twin-engine DC-3 shuttle services connecting with the international mainliners at Managua and Panama. Even these shuttle services find it difficult to maintain schedules in the afternoon during the rainy season. Since some 95% of all persons visiting Costa Rica arrive by international airline, these difficulties inherent at La Sabana airport have long given the government cause for

<sup>1/</sup> Esparta (Province of Puntarenas) is on the Inter-American Highway, 4 kms. east of Barranca.

concern. In November 1951, following an exhaustive series of studies, a new site was selected at El Coco, near Alajuela, some 19 kms. northwest of the capital, adequate to meet present and future needs of international air transport. A total expenditure approaching \$ 2 million is contemplated for grading, drainage, paving, terminal buildings, access roads, utilities, etc. Clearing and grading was begun in the spring of 1952, and by expediting the work, the airport is expected to be completed by the latter part of 1954.

There are three major international airlines currently serving San José, namely Pan American World Airways (PAA), TACA International Airlines (TACA) and Royal Dutch Airlines (KLM), all three with DC-3 planes. In addition, the local domestic carrier, Lineas Aéreas Costarricenses (LACSA) also flies a number of important international routes, using C-46 aircraft: three weekly round trips between Miami and Panama, via Havana and San José; three shuttle round trips weekly between San José and Panama; and twice a week to Managua, under a pooling arrangement with LANICA, of Nicaragua. Every other week LACSA operates a special tour to Mexico City and return.

In 1951 LACSA transported 780,000 kilograms of cargo on international routes, which was more than 60% of the total of 1,285,000 kilograms carried by all four international operators; and 17,217 passengers of the 45,918 travelling by international airlines. PAA transported 20,829 passengers and 308,000 kilograms of express. Upon completion of the new airport, permitting the through main line planes to stop in Costa Rica, international air traffic may be expected to increase substantially.

/International

International fares and rates on PAA, TACA and KLM do not differ much from those described in other chapters of this report. Cargo rates are about 20 cents per metric ton-kilometer for large shipments and about twice as much for small shipments of less than 45 kilograms. One-way passenger fares average 5.3 to 5.6 cents per passenger-kilometer. For LACSA, however, no such general statement is possible. Its one-way passenger fares vary from 5.9 cents per kilometer on the San José-Havana route, where there is no direct competition, to 3.1 cents per kilometer on the special San José-Mexico City flight. LACSA has carried large consignments of tomatoes from San José to the Canal Zone at 4 cents per pound, or 14.7 cents per metric ton-kilometer.

Northbound to Miami, low specific commodity rates are offered in an effort to counter-balance the heavy southbound cargo movement, the minimum rate is 5 cents per pound, or 6 cents per metric ton-kilometer.

### III. Means of Transport for Domestic Economic Activity

Except for the railroads, which link the central plateau with the Provinces of Limón and Puntarenas, and the airlines, the outstanding characteristic of Costa Rica's transport system for domestic economic activity is its relatively compact road network in the central zone and its lack of roads radiating outwards to the coast and borders. On the central plateau lives 70% of the population, and although agricultural production is large, it is mainly coffee. Except for sugar, panela and potatoes, which are also largely produced on the plateau,

/the other

the other basic foodstuffs --corn, beans, rice and manioc-- have to be brought up from the coastal areas. (See Table 76). especially from Guanacaste and Puntarenas. A somewhat similar situation prevails with beef cattle.

At present a considerable amount of traffic is cabotage on the Gulf of Nicoya, from the Province of Guanacaste and that part of the Province of Puntarenas located on the Nicoya Peninsula, to the port of Puntarenas, where transshipment is made to the railroad or to trucks running on the highway up to San José. The few roads that go from the central plateau to the above-mentioned provinces are also used to some extent, but on a much smaller scale. As for the Province of Limón and the low-lying parts of the Provinces of San José and Cartago, and the northern region of the Province of Alajuela, there is no doubt that the lack of communications is a factor which has held back the development of their agricultural production.

#### 1. Railroads

As explained in the previous section,<sup>1/</sup> the railroads offer considerable service in transporting goods locally; this traffic in 1951 amounted to 56% of the total rail traffic. On the Ferrocarril al Pacifico this local traffic was 57%, and on the Northern Railway, 55%. On both lines freight rates for local traffic are based on the tapering principle, and vary with the type of merchandise from 15 centavos per metric ton-kilometer for rice and cement, up to 75 centavos for domestic textiles on the Ferrocarril al Pacifico --that is

<sup>1/</sup> See Section II, point 1, of this chapter, p. 293

Table 76

Costa Rica: Production of Principal Farm Products by Provinces

(In metric tons)

	Corn <sup>a/</sup>	Beans <sup>a/</sup>	Rice	Coffee	Sugar	Panela	Brown Sugar blocks	Potatoes	Manioc
Totals	57,522	10,672	18,919	20,336	23,851	31,503	3,228	7,062	7,107
San José	12,415	3,091	2,577	6,403	601	6,203	1,579	210	317
Alajuela	9,110	3,024	4,616	3,273	12,499	12,299	1,465	641	1,950
Cartago	4,360	547	93	5,898	10,056	5,775	84	5,999	590
Heredia	1,298	185	62	4,324	695	2,119	5	26	29
Guanacaste	15,484	2,566	4,808	319	--	2,778	13	68	324
Puntarenas	11,323	1,241	6,715	105	--	1,211	--	114	1,854
Limón	3,532	18	47	14	--	118	82	4	2,443

Sources: For corn, beans, rice, coffee, potatoes and manioc: data from the Censo Agropecuario 1950 for the 1949/50 harvest. For centrifugal sugar: Anuario Estadístico 1949 for the 1948/49 season. For panela and brown sugar blocks, Censo de la Caña, 1948.

a/ The fanega of corn (768 lbs.) was converted to kilograms at the ratio of 1 to 353.28; the fanega of coffee in berries was converted to washed coffee at 46 kilograms; the box of beans (32 lbs.) at 14.72 kilograms.

to say, 2.6 and 13.2 cents respectively. (See Table 77.)

On the Northern Railway freight rates are generally higher than on the Ferrocarril al Pacifico.

2. Roads and Highways

Besides the Inter-American and the Barranca-Puntarenas Highways described above,<sup>1/</sup> which are also used for local traffic, the

<sup>1/</sup> See Section II, points 3 (a) and 3 (b), pp. 308-314, respectively



Table 77

Costa Rica: Rail Freight Rates for Local Traffic

	Per metric ton-kilometer	
	Cents	
<u>Ferrocarril Eléctrico al Pacífico</u>		
Husk rice	2.6	
Domestic corn	3.5	
Beans, domestic unhusked rice	4.4	
Cement	2.6	
Diesel oil	6.2	
Domestic cottonseed oil	3.5	
Textiles (domestic)	13.2	
<u>Northern Railway</u>		
	<u>San José-Limón</u>	<u>Turrialba-San José</u>
Unhusked rice, beans	4.1	5.6
Corn	3.7	5.0
Cement	2.7	8.0

Sources: Ferrocarril Eléctrico al Pacífico and Northern Railway.

other most important routes in the road system of Costa Rica are the following:

(a) Cartago-Turrialba (34 kms.). It is entirely paved with asphalt, but is not well maintained. The grades are relatively gentle, and the horizontal and vertical alignment is fair.

(b) San Juan-Villa Quesada (52 Kms.). Constructed 12 years ago, it is paved as far as Villa Quesada, where a road branches off to Aguas Zarcas and Los Chiles and another one to Florencia and Quebrada Azul, both unpaved but passable the year round. The section as far as Villa Quesada, which has required considerable maintenance

/work,

work, is 5 meters wide, has relatively gentle grades, and fair alignment (except in a few stretches where there is an excessive number of curves, some of them sharp). At present, grading, drainage, and paving work is going ahead on the roads to Los Chiles and Pital, and to Florencia, Quebrada Azul, and Santa Clara. The present state of the work on these roads is very deficient. The economic zone of influence of these roads is important because of its potential for the development of livestock raising and derived industries.

(c) San Isidro del General-Dominical (40 kms.). This road was constructed as an access route from the Pacific coast to the Inter-American Highway, pending completion of that part of the highway between Cartago and San Isidro. Its specifications are those for a provisional traffic route, but it is an all-weather road. Today it constitutes an important route for shipping products in and out of the San Isidro del General region, thus supplementing the convenient cabotage route via the port of Dominical. It is also a route for bringing fish into the interior of the country. Dominical is a tourist resort as well. Although all the necessary permanent bridges are lacking, the government as well as private interests help to keep this highway in an acceptable state of repair.

(d) Other roads. The roads branching out from the Inter-American Highway in the central region are numerous. They constitute an important network for local traffic, and are also important as feeder roads for export traffic to the railroads. Most of these roads are short; and many of them are paved and well maintained. Unfortunately their economic zone of influence is very limited. To

/increase

increase their usefulness it will be necessary to build other trunk and secondary routes, and to increase the number of farm-to-market roads.

### 3. Public Expenditures on Roads and Highways

Budgetary allocations for the years 1948-1950 and 1952, covering the costs of the technical and administrative personnel as well as the construction and improvement work on some projects, are very small, considering the high cost of these activities in Costa Rica. Thus, from 1948 to 1950 the annual average expenditure on roads was scarcely \$ 550,000, and in the last three years it increased to an average of only \$ 810,000. (See Table 78.)

From 1941 to 1952 Costa Rica spent \$ 3.7 million on the Inter-American Highway. In addition to \$ 755,000 spent for study, maintenance and other work, the government of the United States had contributed a total of \$ 21 million up to the end of 1952 on this highway. (See Table 79.)

The budgetary allocations for roads for 1952 can be considered insufficient even to take care of the maintenance on the 1,800 kms. of all-weather roads. In former years, at least 40% of the budget for roads must have been spent on maintenance work. Consequently, even in those years when greater sums were allocated, the balance to be spent on the construction of new roads and on the improvement of existing ones, aside from the Inter-American Highway, had to be very small. The amount allocated for the Inter-American Highway in 1952 was such, that undoubtedly this is the reason why so little was allocated to

Table 78

Costa Rica: Budgetary Allocations on Construction and Maintenance of Roads

	Thousands of Colones	Thousands of Dollars
1948	3,145.3	554.7
1949	2,882.4	508.4
1950	3,180.7	561.0
1951	4,734.1	834.9
1952	4,467.7	788.0
1953	4,580.4	807.8

Source: Transport Mission. Estimate based on the Ley del Presupuesto General de la República.

Note: These figures do not include the sums allocated for the Inter-American Highway nor the portion that corresponds to the Highway Department from the total sums allocated to purchases of mechanized equipment and accessories. Neither do they include general administrative expenses nor others incurred in operating the central work-shop which depends directly from the Department of Public Works.

Table 79

Costa Rica: Expenditures on the Inter-American Highway  
 (In thousands of dollars)

Year <sup>a/</sup>	Total	United States	Costa Rica
1941	8,400	5,600	2,800
1942	800	800	--
1943	12,000	12,000	--
1952	3,500	2,600	900
Totals		21,000	3,700

Source: Transport Mission, from official data.

<sup>a/</sup> Only those years are listed when there were expenditures.

/other

other roads. It seems obvious that in order to improve the transport situation in general, Costa Rica will have to proceed in such a manner so as to spend more money on roads and highways.

#### 4. Road Transport Conditions

During recent years road transport has been developing rapidly. At present there are 9,935 motor vehicles in the country, excluding motorcycles and vehicles for official use; in addition, there are more than 10,000 ox-carts, and a large number of pack animals. These numbers can be considered satisfactory when compared to the extent of all-weather roads available to motor traffic, inasmuch as they represent about one vehicle for every 81 inhabitants.

According to official figures, motor vehicles are divided about evenly between private cars (5,220), and commercial vehicles (4,715), including in this last figure, jeeps and station wagons whose use is divided between private and commercial activities. Of the commercial vehicles, 775 are buses, 650 taxis, and 3,290 trucks. (See Table 80).

Trucks represent a third of the total number of motor vehicles, and although the number of buses may seem low in comparison to the total number of vehicles of all kinds, due consideration should be given to the concentration of population in certain areas, and to the lack of roads and highways in general. The largest number of motor vehicles are concentrated in the capital city and the neighboring districts, while in provinces such as Alajuela, Heredia and Limón, there are very few.

Table 80

Costa Rica: Type and Number of Vehicles, 1952

Automobiles	5,520 <sup>a/</sup>
Buses	775
Taxis	650
Trucks	3,290
Government vehicles	350
Motorcycles	675
Bicycles	8,975

Source: Departamento Comercial, Ministerio de Economía y Hacienda.

a/ Including jeeps and others.

The cost of trucks is very high:

<u>Trucks of</u>	<u>Colones</u>	<u>Approximate price in dollars</u>
1 1/2 ton	19,200	3,400
3 1/2 ton	20,500	3,600
4 ton	28,700	5,200
5 ton	35,100	6,200

As in other Central American countries, high ocean and rail freight rates, port charges, and customs duties, all contribute greatly to increase the cost of vehicles. Thus, the rail freight rate for the 115-km. haul from Puntarenas to San José is 100 colones (\$17.60), to which 20 colones (\$3.50) are added for port charges; and for the 165-km. haul from Puerto Limón to San José, there is a charge of 1.28 colones (22.5 cents) per cubic foot, with an additional 12.26 colones (\$2.15 dollars) for port charges.

Equipment and motor fuel are also high. Tires measuring

/700 x 20

700 x 20 cost around 1,000 colones (\$176); gasoline is 2.80 colones (50 cents) a gallon, and Diesel oil 1.90 colones (33 cents) a gallon. A few buses and the largest trucks use Diesel oil.

Vehicle taxes are reasonable. For example, for a truck they amount to about 145 colones (\$ 25), which includes license and registration charges, etc.

There are few companies operating a large number of trucks; in most cases the vehicles are operated by their owners. However, there are some companies operating 5 or 6 buses. The average capacity of a truck is 5 tons. The number of trailers is very small.

As the import-export traffic is almost wholly handled by the railroads, highway and road transport is mainly used to move imported products from the capital to other population centers, and to move export products to the railroad stations. Besides, local traffic on the central plateau is also moved by road. The highways with the greatest traffic link with the finished portion of the Inter-American Highway and use it as a trunk line, that is, from San José to Cartago to the south, and from San José to San Ramón in the north. There are no official regulations governing rates charged for road transport of merchandise, but on the basis of information received directly from the trucking companies, some rates can be quoted. (See Table 81).

As can be seen, the average rate is about 40 centavos per ton-kilometer, a reasonable rate considering the condition of the roads, operating costs, and the cost of service.

/Table 81

Table 81  
 Costa Rica: Road Transport Freight Rates, between San José and other points

From San José to:	Distance (Kms.)	Cost per 100 lbs. (colones)	Per ton-kilometer (centavos)	(cents)
Liberia	235	6	40	7
Bagaces	210	5	40	7
Las Cañas	188	4	40	7
Puntarenas	130	3	45	7.5

Source: Transport Mission; from data provided by the companies.

Table 82  
 Costa Rica: Type of Transportation Used to Move Farm Products

	Number of farms enumerated	Per Cent
On foot	2,274	5.3
On pack animal	11,461	26.6
By cart	19,007	44.2
Train or tramway	496	1.2
Truck	2,075	4.6
Barge or boat	1,252	3.0
Airplane	8	--
Others	6,513	15.1
	43,086	100.0

Source: Dirección General de Estadística y Censos, Censo Agropecuario de 1950.

Since



Since the Inter-American Highway is not yet completed to the borders of Nicaragua and Panama, there is no international motor traffic with these countries. If the highway were finished, traffic could be considerable.

In Costa Rica transportation by animal traction is extremely important. (See Table 82.) According to the 1950 Agricultural Census, the ox-cart is by far the most important transporting unit in farm operations, followed by the pack animal. It is worth noting that only 4.6% of the farms in Costa Rica use trucks, in spite of the increase in the total number of motor vehicles --especially commercial ones-- in recent years.

The importance of the cart in Costa Rica is also evident in the craftsmanship conspicuous in their construction and in the beautiful colors and artistic designs with which they are decorated. Unfortunately, the narrow wheels of these carts damage the paved surface of the highways.

There are approximately 700 buses in operation, a number which seems reasonable when compared to the extension of the country's present road network. Of this total number of buses, 200 serve the city of San José itself, and the remainder are used in inter-urban service.

Urban bus service is covered by some 40 companies owning an average of 4 to 6 vehicles each. These buses are kept in acceptable running condition, specially considering that some of them have been in service for over 10 years. The body is in most instances wood, and of

/local

local manufacture. The fare is 15 centavos (about 3 cents), which may be considered quite reasonable, specially if compared with the present fare in Panama City, which on the average is 10 cents. In view of a petition recently presented by the operators requesting an increase in fares, the government made a study of costs. From the information obtained, several interesting conclusions were arrived at which could apply to most of the other Central American countries. Operating costs per kilometer of a bus using gasoline amount to 1.10 colones, while of one using Diesel oil, operating costs are 1.02 colones. This difference is due to the greater economy in fuel consumption of the Diesel type vehicle, which more than counterbalances the greater maintenance costs. There are also interesting comparisons on consumption and cost of fuel. While gasoline motor vehicles average 11 to 16 kms. per gallon, the average for Diesel vehicles is 16 to 21 kms. per gallon, so that the fuel cost per kilometer is 21 centavos for buses using gasoline, compared with 13 centavos for those using Diesel oil. Thus, the saving through the use of Diesel vehicles is quite evident.

Since the average passenger travels a distance of 4 kms. from the foregoing figures it follows that the present fare of 15 centavos would be equivalent to 3.75 centavos per kilometer. Since operating costs are 1.10 colones per kilometer, it would be necessary for a bus to carry a minimum of 30 passengers during the whole trip in order to break even. Apparently the government has approved a fare increase of 5 centavos for buses that have been in

/service

service less than 4 years, and which operate on runs of more than 2.5 kms.

The government regulates and controls all public passenger services by virtue of Decree No. 1277 of 1951, known as the Ley de Transportes. This law created the Consejo Superior de Transportes, which is responsible for the regulation of fares and the authorization of specific routes for passenger vehicles. There is no government regulation for freight carriers.

#### 5. Air Transport

Three airlines currently serve domestic routes: Expreso Aéreo Costarricense (EXACO), Aerovías del Valle (AVE), and Líneas Aéreas Costarricenses (LACSA). EXACO, which was organized early in 1951, operated a charter service along the east coast, using small planes capable of landing on runways which are often little more than cleared strips on the beach. Without this air transport, most of these coastal settlements, from Colorado near the Nicaraguan border to Sixaola on the Panamanian border, would be virtually isolated.

AVE, with headquarters at San Isidro del General, performs much the same type of service for some eight communities in the Valle del General. Its three single-engine Cessna type aircraft shuttle all day long across the chain of mountains separating the Valley from the coastal banana centers of Palmar and Puerto Cortés. During the month of October, 1952, a total of 600 passengers and 77,000 kilograms were carried. The carrier averages at least 50 landings a day, and the number of services between the Valley and Palmar run from 3 to 10 daily.

/LACSA

LACSA was organized by Pan American World Airways, as one of four Central American affiliates. PAA holds 40% of the stock, the government 20%, and Costa Ricans the balance. In the late summer of 1952 TACA of Costa Rica, which had been operating since 1939, sold its equipment to LACSA, and the latter took over the operation of all the major domestic routes in the country. In addition to its international operations, already described, LACSA maintains a complex network of domestic services six times a week to some 26 points, using a fleet of four C-46's and four DC-3's. It is the only carrier in Central America that does not abruptly halt local operations at the border, but continues on into the neighboring country of Panama, serving Puerto Armuelles and David on the west coast, and Changuinola and Bocas del Toro on the east. The airline is vital to the country's economy, for it carries fresh milk, cheese, butter, eggs, and other farm produce up to the central plateau, and lettuce, tomatoes, and similar products down to the banana plantations on the coast.

During 1951, the last year in which LACSA and TACA de Costa Rica both operated as separate companies, they carried altogether over 140,000 passengers and almost 11,000 tons of cargo. At the time TACA de Costa Rica sold out to LACSA, it was reported to be operating at a good profit. Earnings were reported between \$155 and \$160 per flying hour, against expenses of about \$130 per hour. Utilization of its fleet was between four and five hours per plane per day. Maintenance and overhaul of LACSA's fleet is handled by Servicios Aerotécnicos Latino-Americanos (SALA), operated by the former owners of TACA de

/Costa

Costa Rica. The shop is the best of its kind in Central America, and is one of the very few in all Latin America to receive a certificate from the U. S. Civil Aeronautics Administration as an approved repair station.

A new schedule of domestic rates for all air carriers was approved by the government in March, 1951, equivalent to from 4.3 to 5.0 cents per passenger-kilometer on most of the principal flights. The lowest rate --3.9 cents per kilometer-- is on the run to Puerto Limón, where LACSA is in competition with the railway. In the Valle del General, fares are about 0.6 cents per passenger-kilometer higher than the general average. Round trip fares are 10% less. A 15% one-way, or 23.5% round-trip discount is allowed government employees travelling on official business, as well as personnel of the Institute of Inter-American Affairs and of similar organizations.

Freight rates appear to be dependent more or less on what a finca owner or shipper is willing to pay. Thus, rates equivalent to around 23 cents per metric ton-kilometer are quoted for fresh milk, cream, cheese, butter, lard, etc. moving up to the capital, while other commodities pay about twice as much. To the two major banana centers of Palmar and Golfito, rates are 68 and 54 cents per metric ton-kilometer, respectively; between the capital and Puerto Limón, 29 cents per metric ton-kilometer. In the Valle del General and along the east coast rates are roughly double the general level.

AVE has developed an interesting combination fare for travellers southbound from San José to the Valle del General, and  
/beyond.

beyond. For example, an employee of the fruit company stationed at Gelfito can go by bus on the Inter-American Highway from San José to San Isidro, fly to Palmar and continue by train to Gelfito, for a total cost of 30.40 colones against a normal airfare of 50.00 colones. In a region where most people only afford to spend a minimum on transportation, no matter how circuitous the route may be, this represents an important saving.

#### 6. Cabotage

This type of traffic is very important in Costa Rica for the movement of local freight, particularly on the Pacific.

According to data of the Dirección General de Estadística, 138 ports along the Pacific have cabotage service with Puntarenas, although statistics refer only to the ports whose annual traffic with Puntarenas exceeds 300 tons or 50,000 colones yearly. The majority of these ports are located between the Bahía de Salinas, on the Nicaraguan border, and the Peninsula of Nicoya, and many of them are river ports. Some of the ports situated south of Puntarenas are on inlets or estuaries.

The total volume of merchandise --exclusive of livestock-- discharged at Puntarenas in 1949<sup>1/</sup> was 46,428 tons. The deadweight of the various craft calling at port was estimated at about 83,000 tons. Incoming traffic also included 54,943 passengers and 31,810 head of livestock.

<sup>1/</sup> Latest year for which figures are available.

Cabotage traffic was very much distributed among innumerable ports, the most important of which being Puerto Jesús. From here an all-weather road leads 24 kms. into the Peninsula of Nicoya to the town of Nicoya. Cargo consisted primarily of grains, lumber, and beans. The total volume of these products during 1949 was 4,795 tons.

Second in importance was Bebedero, a river port on the Bebedero river, situated to the north of the confluence of this river with the Tempisque, at the extreme northwest of the Gulf of Nicoya. Of the 3,779 tons of cargo shipped through this port, more than half was lumber and steers.

From Ballena, another river port on the Tempisque River inland in the Nicoya Peninsula, 3,665 tons of cargo were shipped --mainly rice, steers, and corn. (See Table 83.)

Cabotage traffic through Puerto Limón was less, but significant. In 1949, 17,339 tons of merchandise were discharged at this port from other ports along the Atlantic Coast, mainly from Barra de Colorado, on the delta of the San Juan River near the Nicaraguan border. Of the total cabotage craft calling at Limón, 85% were from Barra de Colorado, 10% from Puerto Viejo, near the Panamanian border, and 5% from the rest. Of the 14,726 tons originating in Barra de Colorado, 11,400 were bananas, and approximately 2,000 lumber. The traffic from Puerto Viejo was also primarily bananas; there were some shipments of lumber and cacao. (See Table 84.)

The reason for this intensive traffic is primarily the lack of land communications. The Peninsula of Nicoya is almost completely

Table 83

Costa Rica: Cabotage Shipping Through Puntarenas, 1949<sup>a/</sup>

Port of embarkation	Metric tons	% of Total
Puerto Jesús	4,795	10.3
Bebedero	3,779	8.1
Ballena	3,665	7.8
Tambor	2,449	5.3
Ario	2,030	4.4
Others	29,710	64.1
<b>Total</b>	<b>46,428</b>	<b>100.0</b>

Source: Dirección General de Estadística, San José, Costa Rica.

a/ The principal products were: lumber, 16,760; rice, 8,080; corn, 6,480; salt 4,411.

Table 84

Costa Rica: Cabotage Shipping Through Puerto Limón, 1949

Port of embarkation	Metric tons	% of Total
Barra de Colorado	14,728	84.9
Puerto Viejo	1,772	10.2
Others	839	4.9
<b>Total</b>	<b>17,339</b>	<b>100.0</b>

Source: Dirección General de Estadística, San José, Costa Rica.

/isolated



isolated from the rest of the country. Even if the road network is extended, a considerable volume of trade will continue to be sea-borne, as ocean transport requires no outlay on way but only on terminal facilities and on the craft itself. This cabotage traffic will continue, especially with products as lumber which at present make up a considerable volume of the tonnage carried.

APPENDIX I

COSTA RICA: ROAD NETWORK

	Length in Kilometers		
	Paved	Non-paved all-weather roads	Total Built
<u>I. All-weather roads</u>			
<u>A. Trunk Routes</u>			
1. Inter-American Highway (total length: 658 kms.)	106	240	346
<u>B. Branches of the Inter-American Highway</u>			
2. Liberia-Los Filtros	--	6	6
3. Liberia-Planta Eléctrica	--	4	4
4. Las Cañas-Tilarán	--	23	23
5. Las Cañas-Bebedero	--	24	24
6. Las Juntas-Junction I.A.H.	--	3	3
7. Las Juntas-Dos Amigos	--	6	6
8. Miramar-Junction I.A.H. (Barranca)	--	7	7
9. Barrance-Boca de Barranca	--	5	5
10. Puntarenas-Junction I.A.H.	--	20	20
11. Barrance-Judas de Guacimal	--	28	28
12. Guacimal-Cañas	--	58	58
13. San Ramón-towards Silencio	3	--	3
14. Palmares-Zaragoza	4	--	4
15. Palmares-La Granja	--	22	22
16. San Juan-Villa Quesada	52	--	52
17. Quebradas-San Pedro de Terrubares	--	4	4
18. Sarchi-La Luisa	--	6	6
19. Sarchi-Eva	1	--	1
20. Sabanilla-San Luis	--	1	1
21. San Roque-Junction I.A.H.	5	--	5
22. Cooperativa-Victoria-Grecia	3	--	3
23. Grecia-El Mesón-San Pedro Sabana Redonda	7	7	14
24. Tacares-La Argentina	--	3	3
25. San Pedro-Junction I.A.H.	8	--	8
26. La Garita-Atenas	--	5	5
27. Atenas-towards S. Mateo-Rio Grande-Junction I.A.H.	25	8	33
28. Alajuela-Montecillos	--	3	3
29. Alajuela-San Isidro-Sabanilla	6	4	10
30. Alajuela-San Pedro Poas	13	--	13
31. Las Ventanas-Ciruelas-Alajuela	15	--	15

/32. Alajuela

	Length in Kilometers		
	Paved	Non-paved all-weather roads	Total Built
32. Alajuela-Tuetal	--	21	21
33. Río Segundo-San Antonio Heredia	13	--	13
34. Heredia-Vara Blanca-S. Miguel-La Virgen	21	22	54
35. San Joaquín-Junction Heredia-La Virgen	6	3	9
36. Heredia-towards Capilla del Monte La Cruz	7	3	10
37. Heredia-San Isidro de Heredia	7	--	7
38. San Jerónimo-Junction I.A.H.	5	11	16
39. Heredia-Santo Domingo-San José	10	--	10
40. S. José-Villa Colón-Stgo. de Puriscal-Barbaceas	26	22	48
41. San José-Aserril-San Ignacio de Acosta	19	4	23
42. San José-Cascajal	18	--	18
43. San José-Junction S. José-S. Ignacio de Acosta	7	3	10
44. Junction I.A.H.	3	--	3
45. Cartago-Volcán Irazú	30	--	30
46. Cartago-Turrialba	40	--	40
47. Juan Viñas-Infiernillo	3	--	3
48. Cartago-Dulce Nombre-Fres Ríos	3	4	7
49. Dulce Nombre-El Cas	--	4	4
50. Coris-Junction I.A.H.	--	7	7
51. Copey-Junction I.A.H.	--	10	10
52. Santa María-Junction	--	14	14
53. Junction-San Marcos	--	3	3
54. San Isidro del General-Dominical	--	40	40
55. Limón-Airport	--	2	2
56. Limón-Portete	--	4	4
	360	416	776
<b>C. Other secondary roads</b>			
57. Puerto Jesús-Nicoya-Santa Cruz	24	32	56
58. Mansión towards Hoja Ancha	--	3	3
59. Branch towards Colonia Carmona	--	7	7
60. Turrucarens-Piedras Negras	3.5	7	10.5
61. Oretina-San Mateo	4	--	4
62. Turrubares-Quebradas	--	8	8
63. San Rafael-Cooperativa Victoria	--	6	6
64. Villa Quezada-Quebrada Azul	--	16	16

	Length in Kilometers		
	Paved	Non-Paved all-weather roads	Total Built
65. Villa Quezada-La Marina-Aguas Zarcas-Los Chiles	--	23	23
66. Florencia-La Vieja	--	4.5	4.5
67. Ojo de Agua-Río Segundo	5	--	5
68. Volcán de Paos-Junction Heredia- La Virgen	6	--	6
69. San Isidro-La Laguna	--	2	2
70. Vara Blanca-San Rafael	--	7	7
71. Branch to Heredia-La Virgen	4	--	4
72. Branch to Escazú a S. José-Stgo. de Puriscal	1	--	1
73. Branch to S. José-Stgo. de Puriscal	1	--	1
74. Alajuelita-La Verbena	--	1.5	1.5
75. San José-Alajuelita-San Josecito	9.5	--	9.5
76. Alajuelita-Concepción	--	3.5	3.5
77. Branch from Mata de Plátano a S. José Cascajal	4	--	4
78. Tierra Blanca-Ipis (two stretches)	--	15	15
79. Cot-Santa Rosa	6	--	6
80. Cot-Cruce-Pacayas-Capellades	15	4	19
81. Santiago-Juan Viñas	--	4	4
82. Turrialba-Santa Cruz	4.5	7	11.5
83. Turrialba-Angostura	5	--	5
84. Turrialba-La Suiza	--	43	43
85. Santa Cruz-Alto de Umaña	--	5	5
86. Paraíso-Cuchi	5	6	11
87. Paraíso-Tapanti	20	--	20
88. Tejar-Tablón	9	--	9
89. Short stretch of previous branch	--	6	6
90. Pavones-La Suiza	--	7	7
91. Río Macho-Palomo Cachi	--	8	8
92. Angostura-Pavones	--	4	4
93. Santa Ana-Lindora	6	--	6
94. Santa Ana-Salitral	--	2.5	2.5
95. San Rafael-Paso Ancho	--	3	3
96. San José- Y Griega	2.5	--	2.5
97. San José-Tibás	3	--	3
98. San José-Paso Ancho	4	--	4
99. San José-San Sebastián	5	--	5
100. Santo Domingo-La Valencia	2.5	--	2.5
101. Tibás-Colima	1	--	1
102. Tibás-Llorente	2	--	2
103. Tibás-Santo Domingo	3	--	3
104. San Pedro-Montes de Oca	6	--	6
105. San Pedro-Sabanilla-Montes de Oca	4	--	4

/106. Comentario

	Length in Kilometers		
	Paved	Non-Paved all-weather roads	Total Built
106. Comentario-Escazú-Santa Ana	--	1.5	1.5
107. Coronado-San Jerónimo	--	3.5	3.5
108. Coronado-Durazno	1	--	1
109. Coronado-El Rodeo	3	--	3
110. Coronado-La Holanda	7	--	7
111. Cinco Esquinas-La Uruca	1.5	1	2.5
112. Coronado-Preventorio	2	--	2
113. Curridabat-Zapote	--	2	2
114. Desamparados-Paso Ancho, S. Sebastián	--	4.5	4.5
115. Desamparados-San Antonio Pa- tarrá	8	--	8
116. Desamparados-San Miguel Higuito	--	6	6
117. El Rodeo-San Pedro Coronado	--	1.5	1.5
118. Escazú-San Antonio	2	--	2
119. Guadalupe-Cinco Esquinas	1.5	--	1.5
120. Guadalupe-Ipis (Coronado)	5	--	5
121. Guadalupe-La Paulina	1	--	1
122. Guadalupe-Moravia	1	--	1
123. Guadalupe-Mata de Plátano	5	--	5
124. Guayabal-San Jerónimo	--	6	6
125. Hatillo-María Aguilar	1.5	--	1.5
126. Hatillo-San Sebastián	--	2	2
127. Ipis-Rancho Redondo	5	6	11
128. La Holanda-Cascajal	4	--	4
129. La Sabana-Pavas	5	--	5
130. La Uruca-Eléctrica	--	6	6
131. Lourdes-Cedros	3	--	3
132. Moravia-Guayabal	2	--	2
133. Moravia-Tibás	3	--	3
134. Pavas-La Uruca	--	2.5	2.5
135. Rancho Redondo-LLano Grande	--	--	--
136. Río Tiribí-Las Mercedes	--	3	3
137. San Antonio-Curridabat	--	3.5	3.5
138. San Francisco Dos Rios-Zapote	--	1.5	1.5
139. Y Griega-Desamparados	2.5	--	2.5
140. Y Griega-San Francisco San Antonio	3.5	--	3.5
141. Y Griega-San Pedro Coronado	2	--	2
142. Alajuela-Carrizal	--	5	5
143. Itiquis-Tacacorí	--	1.5	1.5
144. San Josecito-La Garita	10	--	10
145. San Ramón-San Juan	--	3	3
146. San Ramón-La Paz	--	--	--
147. San Ramón-San Rafael	--	3.5	3.5

/148. Santa

	Length in Kilometers		
	Paved	Non-paved all-weather roads	Total Built
148. Santa Cruz-Aquianes	3		3
149. Volcán-Tierra Blanca	1		1
150. Got-Cruce St. Ana: Turrialba	--	1	1
151. Infiernillo-Tucurrique	--	--	--
152. Llano Grande-Rancho Redondo	--	3	3
153. San Pedro Barba-Barba	--	4.5	4.5
154. Barba-San Roque	--	3	3
155. Cariblanco-San Miguel	--	7	7
156. San Pablo-San Isidro	1.5	--	1.5
157. Sarapiquí-San José de la Montaña	4	--	4
158. Cinchona-San Rafael Vara Blanca	--	5	5
159. Santa Bárbara-Zetillal	1	2	3
160. Frayjanes-Cariblanco	5	9	14
161. Frayjanes-Volcán Poas	6	3	9
162. Heredia-Barrio Mercedes	2	--	2
163. Heredia-Frayjanes	34	--	34
164. Heredia-Santo Domingo	5	--	5
165. Heredia-San Pablo	2.5	--	2.5
166. La Fuente-San Joaquín Flores	--	6	6
167. La Valencia-Barreal	4	1.5	5.5
168. Poasito-Vara Blanca	5	--	5
169. Río Segundo-La Claudia	1.5	--	1.5
170. San Joaquín-Santa Bárbara	4	--	4
171. San José-San Rafael	--	3	3
172. San Josecito-San Isidro	--	1	1
173. Santa Bárbara-San Lorenzo	--	5	5
174. Santa Bárbara-San Pedro	--	2	2
175. San Pablo Heredia-Rincón	--	1	1
176. San Antonio de Belem-Ojo de Agua	--	4.5	4.5
177. Santa Bárbara-Santo Domingo	--	--	--
178. El Roble	2	2	4
179. San Francisco-Barreal	2	0.5	2.5
180. Santa Lucia-Getsemani	4.5	--	4.5
181. Santo Domingo El Roble-Setillal	--	2	2
182. Santo Domingo-Santo Tomás	--	2	2
183. Santo Domingo-La Valencia	2	--	2
184. Liberia-La Cruz I.A.H.	--	--	--
185. Heredia-San Antonio de Belén	10	--	10
	<u>343</u>	<u>366</u>	<u>709</u>
<u>Total length of all-weather roads:</u>			<u>1,831</u>

/II. Dry-weather

II. Dry-weather roads

Length in Kilometers

185.	La Cruz-Puerto Seley-Frontera Nicaraguense	8
186.	Santa Rosa-Peña Bruja	15
187.	Santa Rosa-Puerto Castillo	18
188.	Santa Rosa-Comunidad-Filadelfia-Bolsón	72
189.	Junction I.A.H.-El Pelón-Potrerillos Junction I.A.H.	19
190.	Branch Río Salto to Carretera Comunidad Bolsón	18
191.	Liberia-Comunidad-Sardinal-El Coco	37
192.	Liberia-Puerto Culebra	22
193.	Filadelfia-Santa Cruz	29
194.	Bolsón-Sta.Cruz-San José Pinilla	49
195.	Veintisiete de Abril-Junction Sta. Cruz- S. José Pinilla	9
196.	Bagaces-Río Negro	32
197.	Bagaces-Bebedero	15
198.	Puerto Humo-San Antonio	16
199.	Nicoya-Quirimán	10
200.	Hoja Ancha-Junction Puerto Jesús-Nicoya road	11
201.	Branch to Colonia Carmona y Puerto Thiel	17
202.	Chomes-Guacinal-Junction I.A. H.	13
203.	La Fortuna-La Vieja	28
204.	Quebrada Azul-El Muelle	8
205.	Aguas Zarcas-San Miguel	8
206.	Zaragoza-Atenas	8
207.	Esparta-San Mateo-towards Atenas	26
208.	Esparta-San Ramón	28
209.	San Ramón-Silencio	4
210.	La Luisa-Junction C. San Ramón-Silencio	12
211.	Turrucares-La Carita	5
212.	La Guácima-San Rafael	5
213.	Alajuela-Santa Bárbara	7
214.	San Jerónimo-La Hondura	15
215.	Jorco-Los Frailes-Junction I.A.H.	15
216.	Tarbaca-Los Frailes-San Marcos	28
217.	San Marcos-Jardín-Junction	12
218.	San Isidro del General-Repunta	17
219.	Other routes	70

706

Total length of the roads of Costa Rica:

2,500

/III. SUMMARY

III. SUMMARY <sup>a/</sup>

	<u>Kms.</u>
1. Paved highways	800
2. All-weather roads (unpaved)	1,000
3. Most important dry-weather roads	700
	<u>2,500</u>

Source: Transport Mission, from official data.

a/ Round figures.



## Chapter VI

### PANAMA

#### I. Introduction

The Republic of Panama is on the Isthmus between Costa Rica and Colombia. It was part of Colombia until it obtained its independence in 1903. Panama lies between 7° and 9° 30' north latitude and 77° and 83° west longitude. The country's area is 74,010 square kilometers (excluding the Canal Zone which has an area of 1,432 square kilometers) and its population is 805,285,<sup>1/</sup> or 10.9 inhabitants per square kilometer. Of the gainfully employed population -30% of the total population- 55% is engaged in agriculture, 16% in services of all kinds, 8.2% in commerce, 7.4% in various Canal Zone activities, 7.4% in manufacturing industries, and the rest in other activities, such as construction, transportation, electric power, etc.

The country --whose width varies between a minimum of 60 kms. and a maximum of 177 kms.-- is crossed from west to east along the central part by the mountain range which enters Panama from Costa Rica and descends gradually to the Canal Zone. Beyond the Canal Zone the mountain range again increases in altitude towards the Colombian border.

The climate is warm, and the rivers are short in

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<sup>1/</sup> 1950 Census.

most cases since the country is both narrow and mountainous along the central part. It has about 800 kms. of coastline on the Caribbean and more than 1,200 on the Pacific.

The Republic of Panama has 9 provinces and 2 districts (San Blas and Barú). The population is concentrated around the Canal, mainly in the Provinces of Colon and Panama. However, according to the figures of the 1950 census, 58% of the population lives outside these two provinces.

The country may be divided into the following economic zones:

(a) The zone adjacent to the Canal -commonly called in Panama the Zona Canallera- which includes the cities of Panama and Colón, and which is the most active region economically. It is the principal market for all the country's products and the main source of public revenue. Its activity depends primarily on the traffic through the Canal. The opening up of this waterway and its utilization as a commercial channel or as a United States defense route have given Panama a peculiar economic structure. A considerable part of the population lives in this area and derives its income directly from work in the Canal Zone or from the traffic through the Canal. Income from both these activities is appreciably higher than that derived from agriculture, and it is a strong attraction to workers who often leave their work out in the country and in the cities, to look for higher salaries in the Canal Zone. On the other hand, expenditures made by the United States government for defense and in maintaining troops, have a considerable effect upon the national income, and particularly upon

ticularly upon that of this area. This peculiar economic situation is summed up in a classical phrase: "Panama lives on and for the Canal".

(b) The zone west of the Canal and south of the mountain range (north of this range the country is almost completely uninhabited), which includes the Provinces of Coclé, Veraguas, Herrera, Los Santos, and the western part of the Province of Chiriquí. This is the farming and livestock region which supplies with agricultural products the central part of the country. Rice, corn, coffee, sugar cane, potatoes, oranges, vegetables, etc., are grown here. There is also considerable livestock, especially in Chiriquí.

(c) The southwestern zone of the Province of Chiriquí, where the banana plantations of the Chiriquí Land Company -an affiliate of the United Fruit Company- are located. Bananas are the main product of this zone, but sugar, coffee, potatoes, oranges and vegetables are also grown in Potrerillos and Boquete, and rice, corn, and coffee in Concepción.

(d) The western zone of the Province of Bocas del Toro, on the Atlantic coast, which was at first the center of banana cultivation. When the region was abandoned because of the diseases that attacked the plantations, bananas were partially replaced by abacá fiber and cacao plantations. For the last three years the United Fruit Company has been spending large sums reconditioning this land in order to plant bananas again.

(e) The islands and the coastal zone of the District of San Blas, on the Atlantic, towards the Colombian border, with an indigenous population. This area produces a substantial quantity of coconuts, most of which are smuggled into Colombia.

/ (f) The Province

(f) The Province of Darién, on the Pacific, contiguous to Colombia and thinly populated. The land is very fertile, and bananas and plantains are grown here. Mechanized rice production has recently been introduced.

In spite of the difficulties which it has had to overcome, industry has achieved some development in recent years. The principal industrial plants are: the cement factory located on the highway between Colón and Panama City, with capacity to supply the needs of Panama and of the Canal Zone, and even to export; the plywood factory, ten miles from Panama City, which employs more than 300 workers, not counting those engaged in cutting and transporting timber; the factory producing vegetable oils, fats and soap in Panama City, which supplies most of the country's demand for these products; the meat-packing house in Panama City, with modern equipment and a capacity in excess of livestock supply; the milk products company in the Province of Coclé, which pasteurizes milk from this province as well as that from the Provinces of Veraguas, Los Santos and Herrera; the national brewery, which is the country's largest industrial enterprise; and many other smaller plants engaged in producing clay and chinaware articles, alcoholic and soft drinks, furniture, dresses, shirts, flour products, and other articles.

Despite this comparatively significant industrial development, most of the manufactured articles as well as a large quantity of the food-stuffs consumed in Panama are imported. The leading exports are bananas, (50%), abacá (10%), and cacao (8%); then cement, sugar, and cattle hides. Lumber, seafoods and coconuts are also of some importance.

The distinctive trait of the transport situation in

Panamá is the almost total lack of means of communication between the zone around the Canal and the rest of the country, and the concentration of means of communication in this area. The Inter-American Highway is the only trunk route connecting the capital and the Canal Zone with the agricultural provinces in the west. The eastern part of the country is practically devoid of roads, and cabotage is practically the only means of transportation between eastern and central Panamá. As a result, the development of production in areas of relative economic importance is limited by the lack of roads for transporting their products, and whole regions remain outside the country's economy.

## II. Means of Transport for International Trade

Panama's foreign commerce is handled almost completely by sea from foreign ports to Canal ports, although there is also a small volume of air transport. Traffic from the ports to the chief inland markets moves by rail and highway.

Bananas, the country's principal export item, are shipped chiefly through Puerto Armuelles, in the Province of Chiriquí.

### 1. Railroads

Two public railroads operate in Panama:

- (a) The Panama Railroad, which is part of the Panama Canal Company, and the property of the United States government, and
- (b) the Ferrocarril Nacional de Chiriquí in the Province of Chiriquí, which belongs to the Panamanian government.

The Chiriquí Land Company and the United Fruit Company

/own two railway

own two railway systems for the service of the banana plantations: one in the Chiriquí region, for exports through Armuelles on the Pacific coast, and another in the Province of Bocas del Toro, with an exit point at Almirante on the Atlantic coast.

(a) Panama Railroad. This company was incorporated in 1849 in the State of New York, but became United States government property in 1904, when construction of the Panama Canal was started. It is part of the Panama Canal Company 1/.

The trunk line extends from Colón to Panama City and is 81.6 kms. long. The total length is 260 kms. The gauge is broader than standard 2/: 5 feet, or about 1.52 meters. The ballast is crushed rock, and the rails are 45 and 50 kilograms per meter. The line is well maintained, and runs on level land: maximum grade 1.25% and maximum curvature 7°. The signal system is automatic block.

The locomotives are electric Diesel and steam. There are 5 electric Diesels of 1,000 HP, 3 of 1,600 HP, and 6 steam. The rolling stock consists of 34 passenger cars, 8 miscellaneous cars and 602 cars of all kinds.

The bulk of its traffic consists of freight imported through the port of Cristóbal, bound for the Canal Zone and Panama City. Exports are shipped to Panama City, and from there to Cristóbal. The Panama Railroad moves yearly a total of almost half a million passengers and a little over 200,000 tons of freight. (See Table 85).

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1/ Effective July 1951, the organization was changed and two separate units were formed: The Panama Canal Company and the government of the Canal Zone. The Company is to handle all commercial matters pertaining to traffic through the Canal and affiliated services; the government's jurisdiction is to be limited strictly to government matters.

2/ Standard gauge: 1.435 meters (4 feet 8 1/2 inches).

Table 85

Panama: Panama Railroad Traffic

Years	Train-Kms. (thousands)	Passengers (thousands)	Freight (thousands of short tons)
1947	394	616	386
1948	353	501	387
1949	335	397	291
1950	296	318	223
1951	369	446	234

Source: Panama Railroad.

Both passenger and freight traffic have been diminishing. In 1951 the volume of freight had dropped 39% from 1947, and the number of passengers 25%. This is due to the competition of the excellent highway between Panama City and Colón, which parallels the railway. To face this competition, the railroad, which operates the port, has established a through freight rate a combination of rail, port and ocean charges. For example: the through rate for general cargo from New York to Panama City, via Cristóbal, is \$21.00 per ton <sup>1</sup>/<sub>;</sub> 25% of this charge, or \$5.25 is rail freightage and \$2.20 are port charges. But if a Panamanian importer should receive his goods at Cristóbal, and send them by road to Panama City, he would have to pay the ocean freight rate for Cristóbal, which is \$18.50 (including discharging). There would be a balance of \$2.50, which in many cases would not cover the cost of truck transport. For this reason the Panama Railroad does not quote separate import and export rates. Due to this rate structure there are frequent complaints on the part of business firms and road transport companies. The rail service, both passenger and freight, is satisfactory in general. Although the

<sup>1</sup>/<sub>;</sub> Rate in effect when the Mission visited Panama. /passenger cars

passenger cars are not modern, they are quite comfortable for the short run between Colón and Panama City. Transshipment is carried out promptly when there are no customs delays at Cristóbal.

For the last three years, the company's financial returns have been unsatisfactory. In 1949 it had a deficit of \$219,000 (operating ratio 110%); in 1950, \$165,000 (operating ratio 110%); and in 1951, \$129,000 (operating ratio 108%).

(b) Ferrocarril Nacional de Chiriquí. It belongs to the government and connects the city of David, capital of the Province of Chiriquí, with the port of Armuelles, in the District of Barú. Its total length is 120 kms. The trunk line (David-Puerto Armuelles) is 81 kms. long. There are also two small lines: David-Dolega (11 kms.) and David-Pedregal (4 kms.) and two branch lines: one to San Andrés (17 kms.) and another to Potrerillos (7 kms.). At present another branch line is being constructed, to Divalá which is 12 kms. long.

The track is narrow gauge: 0.914 meters (36 inches), with rails of 28 and 35 kilograms per meter. The maximum curvature is 16°, and the maximum grade is 5%. The condition of the permanent way is very poor except for the 21 kms. stretch that crosses the concession of the Chiriquí Land Company, in charge of maintaining it.

The rolling stock consists of 4 mechanical Diesel locomotives, 1 steam locomotive, 12 motor cars, 7 passenger trailers, and 62 miscellaneous freight cars. All the rolling stock is very old and worn out. It would have to be almost completely replaced if the company were to offer an efficient service. This would also reduce operating costs.

The railroad depends for its traffic very much on the  
/Chiriquí land



Chiriquí Land Company. The passenger traffic is almost exclusively limited to the movement of employees and workers of this company, and is much more important than the freight traffic. From 1946 to 1951 there was an increase of 27% in passenger traffic while freight traffic declined 60% <sup>1/</sup>.

The port of Armuelles is managed by the railroad. The traffic consists almost exclusively of banana exports and of imports for the Chiriquí Land Company. Goods to or from David constitute less than 10% of this port's total movement.

The railroad crosses the properties of the banana company, which utilizes 21 kms. of the line to move its own-trains to Puerto Armuelles. The charge for this right of way is the railroad's chief source of revenue, which amounted to \$140,455 in 1951, or 50% more than the freight revenue.

The rate for import freight via Puerto Armuelles bound for David, is 9 cents per ton-kilometer. The port charges at Puerto Armuelles are one dollar for handling and two for wharfage per ton, but if the freight is bound for railroad stations, the wharfage is only 80 cents.

The railroad also operates the small port of Pedregal connected with David by a 4 km. line. Since there is a good road between Pedregal and David, the railroad charges a port fee of 80 cents per short ton for freight using the railway and \$2.40 for freight going by road.

The railroad is not in a position to compete with the road and has had to scrap the line to Boquete. The rails and other material are being used to construct a branch line to Divaló (already

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<sup>1/</sup> 48,000 tons in 1946 and 19,800 in 1951. /served by the

served by the David-Alanje-Divalá road).

In spite of its high tariffs, the railroad has been losing money in recent years. Operating ratios were 104% in 1950, and 103% in 1951. Traffic revenue is insignificant, and future prospects are not promising. On the contrary, once the section of the Inter-American Highway from Concepción to the Chiriquí Viejo River is opened up, and the short branch road between Concepción and Divalá is built, the railroad will lose most of the traffic it has left.

(c) Railroads of the Chiriquí Land Company and the United Fruit Company. The Chiriquí Land Company has a 207 km. railway in the Puerto Armuelles Division with 11 locomotives, 40 passenger cars, and 559 freight cars. The United Fruit Company owns a 268 km. line in the Bocas del Toro Division with 15 locomotives, 37 passenger cars, and 275 freight cars. These systems are not common carriers and are used exclusively for the freight and passenger transport of the banana companies.

## 2. Port and Maritime Situation

The traffic through the Panama Canal is considerable. About 7,000 ships per year go through this important international traffic channel. First in importance is the traffic from United States Atlantic ports to South American Pacific ports and Asia, and in second place, traffic from European ports to United States and Canadian west coast ports.

In spite of this important traffic, there are few port facilities in the Republic of Panama. Almost all the country's traffic moves through Cristóbal, located in the Canal Zone on the Atlantic coast, and through the port of Balboa, adjacent to Panama City.

/- Besides these

Besides these, there are four other principal ports: Panama City and Colón, which are public ports but have little traffic and the other two already considered, Puerto Armuelles and Almirante. The latter two are primarily banana ports serving the fruit companies.

From the point of view of the country's economy and of commerce with Central America, Panama offers interesting possibilities which will be discussed in the Part II of this report.

### 3. Highways

The total length of Panama's roads is approximately 1,700 kms., of which 1,200 are all-weather roads and the rest are dry-weather roads. Of the all-weather roads some 620 kms. are paved with concrete or asphalt, and 580 kms. are non-paved roads with a broken stone base with or without a wearing surface. In Panama the ratio of road length to population is one kilometer of all kinds of roads for every 497 inhabitants and one kilometer of all-weather road for every 704 inhabitants. In El Salvador there is one kilometer of all kinds of road for every 249 inhabitants. The road density of Panama is 23 linear meters of all kinds of roads and 16.2 linear meters of all-weather roads for every square kilometer of area. In El Salvador there are 366 linear meters of roads of all kinds and 72 meters of all-weather roads per square kilometer of area.

Panama's road network <sup>1/</sup> consists of only two trunk highways (the Inter-American and the Trans-Isthmic), some small scattered secondary roads, which for the most part are branch roads of the Inter-American Highway, and a number of dirt roads which are difficult to travel and are connected directly or indirectly with the Inter-American Highway. Unlike Costa Rica and El Salvador, Panama has no

<sup>1/</sup> See Appendix I to this chapter.

/zone with a

zone with a high concentration of roads. It is a country devoid of surface communication, and certain zones -Bocas del Toro, Darién, the eastern section of Panama, and the northern section of Veraguas and Coclé- are almost entirely lacking in means of transport. Most of the territory in the other provinces is outside the sphere of influence of the few roads which exist.

From the point of view of international commerce, the most important roads are the two main highways: the Inter - American Highway, not because of the relatively small part it now plays in foreign commerce, but because of the importance it will have when it is completed; and the Trans-Isthmic Highway, because of the traffic passing over it between the Canal ports and the principal cities in the canal zone.

(a) Inter-American Highway. Of this road's probable total length (900 Kilometers), only 572 kilometers have been built, of which 290 are paved and the rest graded, based and/or surfaced. It will cross Panama from west to east, directly connecting the provincial capitals of Chiriquí, Veraguas, Coclé, and Panama and indirectly connecting the capitals of Herrera and Los Santos. (See Table 86).

The first 23 kilometer section, contiguous to the Costa Rican border, has not been constructed yet, but it has recently been relocated and it is about to be built. This section has been surveyed by photogrammetric reconnaissance permitting the establishment of the international point of connection. According to the original plan, the Panamanian section was to follow the road already built from Concepción to Volcán, and continue from Volcán to the border, and form a junction at the point called La Unión. The new route /will follow a

will follow a line which is practically east to west.

Table 86

Panama: Inter-American Highway

<u>Section</u>	<u>Length in Kms.</u>	<u>Present Condition</u>
1. Costa Rican border- Concepción	23	Impassable (being located)
2. Concepción-David	24	All-weather (graded, based and sur- faced)
3. David-Remedios	95	All-weather (graded, based and sur- faced)
4. Remedios-Soná	92	All-weather (graded, based and sur- faced) <u>a/</u>
5. Soná-Santiago	47	All-weather (graded, based and sur- faced)
6. Santiago-Divisa	36	Paved
7. Divisa-Aguadulce	23	Paved
8. Aguadulce-Natá	10	Paved
9. Natá-Penonomé	33	Paved
10. Penonomé-Río Hato	30	Paved
11. Río Hato-Bejuco	46	Paved
12. Bejuco-La Chorrera	42	Paved
13. La Chorrera-Panamá	33	Paved
14. Panamá-Tocumén	25	Paved
15. Tocumen-Pacora	12	Paved
16. Pacora-Chepo	24	All-weather (graded, based and sur- faced) <u>b/</u>
17. Chepo-Colombian border	305	Impassable (not located)
	<u>900</u>	

a/ Traffic is difficult during periods of heavy rain.

b/ With large amount of loose broken stone.

Between Concepción and David the highway has been relo

/cated and

cated and reconstructed. It has a width of seven meters, good horizontal and vertical alignment, gentle grades and a crushed rock surface in good condition. Shortly before the Second World War, three modern permanent bridges were built, but there are seven temporary bridges which need to be replaced by permanent ones and several which need widening and, perhaps, improving.<sup>1/</sup> The Concepción section was partially paved three years ago, but the asphalt surface is seriously deteriorating.

The sections between David and Santiago vary at present in their features and physical condition. Starting from David a section of about 50 kilometers has been relocated and is now being rebuilt on contract. Eight permanent bridges will be constructed, four of which have been completed. Between David and the Chiriquí river (approximately 8 kilometers) the route of the existing road has been followed, and a modern suspension bridge has been built.

From the point where this 50-kilometer stretch ends, the new location follows the present roadbed very closely, but the alignment and the width of the curves are better than before as far as Remedios.

The western part of the Province of Chiriquí has undergone a remarkable agricultural, livestock, and forest development since the construction of the main highway and its branch roads.

Between Remedios and Soná (about 92 kilometers) the final road location will be about 10 or 15 kilometers inland, since

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<sup>1/</sup> The bridges over the Piedra river (a few kilometers from Concepción) and the Mula river (at Concepción) are very narrow as related to the traffic capacity of the Inter-American Highway.

/the very narrow

the very narrow present road runs through a region of scanty population and rough ground, swampy in some places. This terrain presents serious difficulties for good alignment, and almost all bridges are narrow for the present and future traffic demand. The new route will connect three towns (Telé, Las Palmas, and La Mesa) and will have a good location where it rejoins the present road.

In the section between Soná and Santiago (47 kilometers) the old road has been regraded, widened and surfaced without any important changes in its horizontal and vertical alignment. At present there are some stretches (6 to 7 meters wide) with fair alignment, numerous curves, poor visibility, several steep grades and narrow bridges. <sup>1/</sup> The wearing surface is in fair condition but, from lack of moisture and agglutination of its components, there is now much dust and some disintegration under traffic. This phenomenon may also be observed on the unpaved surface of some of the other sections of the Inter-American Highway and of other roads in Panama.

Between Santiago and Panama City the highway is completely paved: with asphalt as far as the point called Río Hato (132 kilometers) and with concrete from Río Hato to Panama City (121 kilometers). Part of this pavement is very old and has not been kept in satisfactory condition. As a result of this the condition of the entire section shows considerable variation. For example, between Santiago and Aguadulce almost all of the asphalt surface is wearing out and has disappeared altogether in some stretches of 60 meters or more. Between Natá and Penonomé it is also in very bad condition. But between Natá and Aguadulce all the concrete-surfaced stretch (Río

<sup>1/</sup> There are ten bridges in this section, of which 9 are rigid and one is a suspension bridge. Of the rigid ones, seven are narrow with steel frameworks and two have fairly wide concrete structures. The suspension bridge is an old, narrow bridge over the San Pablo river.  
/Hato-Panama

Hato-Panama City) is in better condition and fairly well maintained.

Between Santiago and Río Hato there are about 21 narrow bridges and one wide one, all old, with steel trusses which are in good condition, although their maintenance has been neglected.

Between Río Hato and Panama City there are 16 bridges of which only three or four are steel (and they are old and narrow), and the rest are concrete, relatively modern and wide. The alignment between Aguadulce and Río Hato is good, and the grades are easy. The present road between Santiago and Natá will be largely used for relocation and rebuilding. Between Natá and Bejuco (109 kilometers on the present road) a new route is planned, the exact position of which has not yet been determined, but which will probably run through Penonomé and Río Hato in view of the importance of these places.

The concrete road (Río Hato-Panama City) has good to fair horizontal and vertical alignment, easy curves <sup>1/</sup> and gentle grades although in certain short stretches there are some unnecessary curves, poor visibility and defective vertical alignment.

All the paved section (Santiago-Panama City) bears heavy commercial and tourist traffic, and because of this, the government plans to improve some stretches and rebuild others in the near future.

The section between Panama City and Chepo consists of a stretch paved with concrete as far as Tocumen and with asphaltic macadam up to Pacora. From Pacora to Chepo it is graded, based and surfaced with crushed rock permitting all-year traffic. This section is now being improved and completed. The original road location

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<sup>1/</sup> Some curves need widening and longer radii, as well as more super-elevation. /has been changed



has been changed, and it has been decided to use the paved stretch leading to the airport at Tocumen. The asphalt stretch between Tocumen and Pacora -built on contract in 1950- has already worn out, although it has a base of acceptable thickness and materials.

Leaving Panama City, the concrete stretch is 24 feet (7.32 meters) wide and later narrows to 22 feet (6.71 meters). Horizontal and vertical alignment is good, gradients are gentle, and the road is in very good condition. Several bridges are still temporary, and others are narrow.

There is an asphalted detour to Pacora, which is 4.50 meters wide, and another surfaced with rock to Cerro Azul. Part of the section between Pacora and Chepo was macadamized with bituminous material, but the pavement deteriorated from the excessively heavy machinery traffic.

(b) Trans-Isthmic Highway: Panama City-Colón (80 kilometers). This route, which was built and financed by the Panama Canal Company, is completely concrete-paved, has good horizontal and vertical alignment, easy grades (less than 6%) easy curves and it is in very good condition. It begins with a width of 6 1/2 to 7 meters at the outskirts of Panama City, from which it continues with a width of only 5 meters up to its end where it widens to 7 meters again.

#### 4. Air Transport

International airline operations are centered at Tocumen airport, 24 kms. to the northeast of Panama City. The airport, built at a cost of some \$3 million, has a concrete runway, and was opened to international traffic in 1949. It is adequate for the largest modern airliners. The airport and the local control tower are owned and operated by the Panamanian government. A new terminal building  
/-stands

stands unfinished, awaiting \$750,000.00 of additional funds, expected to be raised by a government bond issue.

Due to the presence of various restricted flying areas in the proximity of the Canal, responsibility for flight control as well as servicing of air transport operations, is shared with the U.S. Air Force and the Civil Aeronautics Administration. The former provides meteorological information and air traffic control, and the latter provides radio communications. Both are stationed at Albrook Air Force Base, 29 kms. away and connected by underground cable with the civil airport. This three-way distant control arrangement has functioned remarkably well; while traffic at Tocumen has steadily increased, delays in airway clearances have been held to a minimum, and there have been no accidents or injuries of any kind. 1/

Four international air carriers connect Panama with Central America, namely: Pan American World Airways (PAA), Royal Dutch Airlines (KLM), Líneas Aéreas Costarricenses (LACSA), and, since February 1953, TACA International Airlines. Other air carriers serving Panama on routes to the north, south, and east include: Braniff Airways System, Pan American Grace Airways (PANAGRA), Aerovías Nacionales de Colombia (AVIANCA), Aerovías Ecuatorianas, and other non-scheduled services. British Overseas Airways Corporation (BOAC) operated through Panama until April 1951, and a Peruvian airline -Aerovías Nacionales del Sur- maintained services from January to August, 1951.

During 1951 a total of 101,110 persons entered or left Panama by air, via Tocumen, and there were an additional 72,904 transit passengers with destination other than Panama. Some 99% of all

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1/ In April 1953, after the Mission visited Panama, an Ecuadorean plane had an accident and caught fire, but there were no casualties.

/persons entering

persons entering or leaving Panama by air pass through Tocumen. A few persons traveling from western Panama to San José and beyond, may transfer from COPA, the domestic carrier, at David, or Changuinola, to the Costa Rican airline, LACSA, and thus avoid an unnecessary trip to Panama City.

In addition to its regular daily passenger schedules, PAA makes an all-cargo DC-4 flight once a week as far as El Salvador, stopping at Managua en route.

A substantial air freight business has developed carrying goods prepared for foreign distribution in the Free Zone at Colón, by the large drug, soft drink, and other companies which have established assembly plants there. Special sealed trucks bring these shipments to Tocumen airport, across the Isthmus. PAA reports a spectacular increase in cargo revenue in Panama, amounting to 485% for the first nine months of 1952.

International fares and rates between Panama and Central American points follow the general pattern of other Central American countries, that is, about 5.6 cents per passenger-kilometer one way, and around 41 cents per metric ton-kilometer for packages weighing less than 45 kilograms down to 17-20 cents per metric ton-kilometer for considerably larger shipments.

### III. Means of Transport for Domestic Economic Activity

The lack of inland communications -except for the Inter-American Highway- is one of the greatest barriers to the development of the Panamanian economy. The greatest concentration of population and income is in the Canal Zone, and consequently, in this area consumption is considerable, especially of food products, which could be supplied domestically /for the most

for the most part. At present, imports of food and beverages are very large, while extensive areas possessing great fertility are practically uncultivated due to lack of sufficient means of communication.<sup>1/</sup> With reference to export crops, there are possibilities depending on the cultivation of existing fertile areas as yet untouched also because of their isolation.

The country needs to increase its exports in order to balance its international payments. At present, the country's economy depends too much on services rendered to canal traffic.

The present production of the country (see Table 87) is chiefly centered in the towns west of the Canal in the Pacific region, which produces part of the foodstuffs consumed in the central zone. Even in these provinces there is a possibility of further agricultural development, which could be carried out if the means of communication were extended to fertile zones now isolated. Other regions, such as the Province of Darién, have hardly begun to develop agriculturally because of lack of means of transportation.

Table 87

Panama: Production of Some Farm Products by Provinces,  
1950.

(metric tons)

	<u>Rice</u>	<u>Corn</u>	<u>Beans</u>	<u>Panela</u>	<u>Potatoes</u>	<u>Coffee</u>	<u>Sugar Cane</u>
Totals:	48,585	63,286	7,237	3,565	1,640	2,826	355,472
Bocas del Toro	59	204	14	4	-	-	2,235
Coel�	3,766	3,813	298	337	64	110	135,688
Col�n	1,497	1,650	156	9	-	497	2,821
Chiriqu�	10,115	13,719	2,643	2,876	1,576	15	70,518
Dari�n	1,050	932	77	5	-	996	1,720
Herrera	4,779	7,578	422	5	-	6	47,620
Los Santos	8,267	14,408	1,010	31	-	258	44,100
Panam�	5,135	7,142	436	65	-	120	15,341
Veraguas	13,917	13,850	2,131	233	-	774	35,429

Source: Primer Censo Nacional Agropecuario, 1950

<sup>1/</sup> In 1949 and 1950, the average annual value of imported foodstuffs, beverages, and tobacco was \$18.7 million, and in 1951, \$16 million, out of a total value of imports of approximately \$30.9 and \$55.7 million for 1950 and 1951 respectively.

1. Railroads

Railroads have little importance for domestic economic activity. The Panama Railroad has lost some of its importance for local traffic since the opening up of the Transisthmian Highway, and because of its exorbitant fares for local service. Passenger fares first class from Panama City to Colón are \$1.25 one way and \$2.00 round trip; second class fares are \$0.78 and \$1.25 respectively, or about 15 and 9 mills per passenger-kilometer.

The rates for local freight are high, but the runs are short and there is little traffic from station to station. The rates fluctuate between \$3.00 and \$8.00 per short ton, according to classification, for distances up to 40 kms. and between \$4.00 and \$10.00 for distances between 40 and 80 kms. The maximum length of the main trunk line is 80 kms. (See Table 88).

Table 88

Panama: Freight Rates. Panama Railroad.

	(Per short ton)							
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class R	Class 26
<u>Any Distance:</u> (in dollars)								
Up to 25 miles (40 kms.)	8	7	6	5	4	3		5
Any distance from 25 to 50 miles (40 to 80 kms.)	10	9	8	6	5	4		6
<u>Per ton-kilometer in</u> <u>80 kms. (in cents)</u>	12.5	11	10	7.5	6	5		7.5

Source: Panama Railroad.

Note: Lumber and coconuts C.L. (car load), class 6; bananas C.L. 5; animals 2, sugar C.L. 5, L.C.L., 4; automobiles and accessories C.L., except tires and tubes C.L., 4, L.C.L., 2; coal C.L. 6; vegetables, 5 and 4. Products from the Republic of Panama and/or the Canal Zone, manufactured or not, have a discount of 50%.

/The Ferrocarril

The Ferrocarril Nacional de Chiriqui -whose rates are even higher than those of the Panama Railroad- has lost about 60% of its traffic, and has even had to abandon lines such as the one from Dolega to Boquete. Since the opening of the highway, the majority of freight goes by road.

The passenger fare is 2.5 cents per kilometer first class, and 1.6 cents second class. Freight rates are extremely high. The rate for general merchandise is 20 cents per ton-kilometer in small lots, and 15 cents in lots up to 7 tons and distances greater than 30 kms; for more than 7 tons there is a 15% discount. The rate for basic commodities is 10 cents, with a discount of 25% when shipped in lots of more than 3 1/2 tons and for distances greater than 50 kms.

## 2. Highways and Roads

Highways constitute the only important means of transport serving the interior. Except for the coastwise shipping carried on in the province of Darión and in some other places, all interior traffic passes along the Inter-American Highway and the Trans-Isthmic Highway, along the branches of the first, and along secondary or dry-weather roads. (See Appendix I).

### (a) Inter-American Highway <sup>1/</sup>

This highway is undoubtedly the main artery of Panama's internal traffic flow inasmuch as almost all agricultural products from the western regions that enter the Canal Zone pass along this route through the Arraiján Customs. (See Table 89). There are several roads

<sup>1/</sup> See Section II, point 3 (a) of this chapter, p. 354

branching off from the Inter-American Highway and adding up to about 439 kilometers which give access to several agricultural zones (See above Table 86).

(b) Trans-Isthmic Highway <sup>1/</sup>

This highway is the principal means for the transport of food and other local freight from Panama City to Colón.

(c) Divisa-Chitre-Las Tablas (68 Kms.)

This is the largest and perhaps the most important branch of the Inter-American Highway connecting the latter with the capitals of the Provinces of Herrera and Los Santos. It is completely paved with asphalt and penetrates the important agricultural and livestock region of the Peninsula of Azuero. It has been improved and is in good condition, bearing a rather active commercial traffic the year round, for it provides an easy and economical means of transport to the capital, the Canal Zone, and the ports and coastal provinces.

Table 89

Panama: Farm Products entering Panama City through Arraijan Customs

1950 <sup>a/</sup>  
(metric tons)

Origin	Cattle	Hogs	Chickens	Milk (fresh)	Corn	Rice	Sugar	Total
Totals:	<u>11,822</u>	<u>2,402</u>	<u>875</u>	<u>1,146</u>	<u>914</u>	<u>6,131</u>	<u>7,756</u>	<u>31,046</u>
Chiriquí	2,456	560	8	-	3	936	12	3,975
Veraguas	1,756	403	54	-	97	3,631	38	5,979
Los Santos	3,199	1,030	376	-	101	61	2	4,769
Herrera	2,229	321	123	6	180	477	484	3,820
Coclé	1,736	48	58	1,116	7	790	7,220	10,975
Panamá <sup>b/</sup>	446	40	256	24	526	236	-	1,528

Source: Ministerio de Hacienda y Tesoro, Arraijan Customs.

Note : The weight of each head of cattle was estimated at 350 kilos; each hog at 80 kilos, each hen at 2 1/2 kilos; a liter of milk at 1 kilo. One quintal is equal to 46 kilos.

<sup>a/</sup> The Arraijan Customs is on the Inter-American Highway, just on the border between the Canal Zone and the western part of the Republic of Panama.

<sup>b/</sup> Referring to the part of the Province of Panama situated to the west of the Canal Zone.

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(d) David-Boquete Road (40 Kms.)

This road, which has recently been paved with asphaltic macadam, connects the capital of the Province of Chiriquí (passing near the town and railroad station of Dolega) with the center of a mountainous region of agricultural and commercial importance. The greater part of the route has good horizontal and vertical alignment, grades of less than 6% and it is in good condition. Its prolongation will become the natural route to the Almirante Gulf, on the Caribbean Sea.

(e) Concepción-El Hato (Volcán) Road (50 Kms.)

Some stretches of this road--which was the original route of the Inter-American Highway--have poor vertical alignment, others have been imperfectly graded, and some have been improved. However, at present only very limited maintenance operations are being carried out, and there is still much to be done along the greater part of its length, since the rough broken terrain of the region it crosses did not permit the construction of a better highway due to the small amount of money set aside for the work.

Upon leaving La Concepción, the road goes steadily upward until it reaches an altitude of 1,000 meters at Cuesta de Piedra, a short distance from the hydroelectric plant of Macho de Monte, which supplies electrical energy to David; at Volcán it reaches an altitude of 1,320 meters, and a branch road leads to Cerro Punta at an elevation of 1,900 meters. (The peak of the volcano is at 3,500 meters).

During the last war a road was constructed from Volcán to the Costa Rican border which, strictly speaking, is an access road, difficult to travel (even in a jeep) during the rainy season, but which

/-is frequently



is frequently used during the dry season or the months of little rainfall. It has already some importance and considerable potential value as a means of transportation of certain products of this zone which is beginning to develop.

### 3. Public Expenditures on Highways

The expenditures on road construction and maintenance during the years 1948-1951 were high as compared with those of other Central American countries. Only Guatemala --a larger country-- spent amounts nearly equal to those of Panama for the same years. (See Table 90.)

Table 90

Panama: Expenditure on Construction and Maintenance of Roads and Highways  
1948-1951  
(In thousands of dollars)

1948	2,621.2
1949	2,713.8
1950	3,647.5
1951	3,394.7

Source: Transport Mission. Estimates based on information obtained from the Contralor de la Republica.

### 4. Conditions of Highway Transportation

Although the highway system of Panama is limited to the presently finished sections of the Inter-American and Trans-Isthmic Highways, the number of motor vehicles in the country is by far the largest of any country in Central America. It amounted approximately to 20,000 vehicles in 1952, not including official vehicles or the 15,000 vehicles used by Canal Zone employees, which if added together would make a total of more than 35,000 vehicles. About 60% of these are private automobiles, and the rest are commercial vehicles; recently the percentage of private automobiles has increased still more. About 75% of these operate in Panama City and vicinity, while provinces such as Los Santos and Veraguas have less than 200 vehicles each. (See Table 91)

/- Table 91

Table 91

Panama: Registration of Vehicles, by Provinces, December 31

1950

	Total	Private	Commercial	Belonging to Canal Zone employees.
Coclé	486	252	234	---
Colón	5,461	864	781	3,816
Chiriquí	1,133	456	677	--
Herrera	380	150	230	--
Los Santos <sup>a/</sup>	181	121	60	--
Panamá	24,523	7,622	5,462	11,219
Veraguas	197	76	121	--

Source: Policía Nacional, Inspección General del Tránsito.

<sup>a/</sup> Registration as of May 31, 1950.

The most usual type of truck employed is the 1 1/2 ton truck (load capacity of 4 tons), but in the last 2 or 3 years there has been an increase in the use of heavy trucks. At the present time, there are 19 ten-ton trucks in activity, compared to 4 or 5 a few years ago, and the number of 5-ton trucks has doubled in the last five years. Judging by the registration of trucks in Panama City and Colón, their number has remained more or less stationary since 1948 (See Table 92)

Table 92

Panama: Commercial Automobiles for Freight Transport Registered in the Municipal Treasury of Panama City and Colón, December,

1952 <sup>a/</sup>

Year	Total	No. of automobiles	
		Panama City	Colón
1946	1,723	1,357	366
1947 <sup>b/</sup>	1,813	1,430	383
1948 <sup>c/</sup>	1,962	1,585	377
1949 <sup>d/</sup>	1,769	1,401	368
1950	1,977	1,606	371
1951	1,821	1,479	342

/(Table 92)

(Table 92)

Source: Municipal Treasuries of Panama City and Colón.

- a/ Refers to trucks, delivery and pick-up trucks. Excludes those with official license plates.
- b/ Registered as of May 31.
- c/ Registered as of June 30.
- d/ Registered as of February 28.

This fact is further confirmed by a study of imports, which show a tendency for truck imports to diminish in 1951 (See Table 93).

Table 93

Panama: Imports of New and Used Automobiles, by Type: 1943-1950 and 1951, by month a/

Year	Total	New Automobiles				Used Automobiles				
		Passen-ger Cars	Trucks	Chassis Others <u>b/</u>	Total	Passen-ger Cars	Trucks	Chassis Others <u>b/</u>		
1946	1,550	682	296	351	181	822	265	438	11	108
1947	2,638	1,505	583	328	222	968	256	545	3	164
1948	2,543	2,004	248	181	110	563	302	149	5	107
1949	2,724	2,052	275	111	286	849	572	118	8	151
1950	2,400	1,829	163	175	233	1,257	783	254	5	215
1951	2,417	1,994	96	171	156	751	594	78	3	76

Source: Contraloría General de la República, Dirección Consular-Comercial.

- a/ Excludes automobiles completely exempt from import duties.
- b/ Includes busses, station wagons, motor-bicycles, pick-up trucks, trailer trucks, tow-cars, fire trucks, etc.

There are no statistical figures for ox carts or pack animals. However, the agricultural census of the Province of Los Santos indicates that in 1945, out of a total of 8,949 fincas, 6,652 used pack animals, 1,741 employed carts, 167 used trucks, and 389 used other means of transport for their products. As can be seen, the truck is at the end of the list, and represents only 2% of the total.

Probably the number of trucks has increased since then,

/but it is still

but it is still insignificant. The cost of transportation by pack animal is very high, and official information indicates that it fluctuates between 40 and 60 cents per ton-kilometer.

The cost of vehicles is high. A 1 1/2 ton truck (four-ton load capacity) costs \$3,765 with body and \$3,465 without. The prices of automobiles are more reasonable. They cost from \$1,970 up. Passenger busses with body cost from \$5,000 to \$6,000. Maritime freights influence these prices to some extent. A common type of automobile pays \$257 freight from New York to Cristóbal when its destination is the Republic of Panama, and only \$125 if it is going to the Canal Zone for the use of a resident. There are credit facilities granted for the purchase of vehicles. For example, one can acquire an automobile upon payment of a third of the cost, the rest payable in installments over a period of 24 months.

Gasoline is also high. The retail price of gasoline is 38 cents a gallon, of which 5 cents is tax. Diesel oil has a reasonable price: 18.5 cents a gallon.

Taxes are not high. Aside from the annual tax of \$36 for private automobiles and of \$50 for passenger busses and trucks, the passenger busses pay a special tax based on the number of seats. Thus, busses with a capacity up to 10 passengers pay \$4 a month; of from 10 to 22 passengers, \$5 a month; and of more than 22 passengers \$7.

The trucking business in Panama is not carried on by small proprietors, as in most of the other Central American countries. There are various trucking concerns operating 20 to 30 vehicles, giving good service and under an efficient administration. A company giving service between Panama City and Cristóbal may be cited as an /example. The

example. The vehicles used by this company have an average life of 10 years, or 160,000 kilometers, and their tires yield on the average 30,000 kilometers of service. These figures show a considerable margin over those which could be obtained in neighboring countries, and not all of it can be attributed to operating conditions on the Trans-Isthmic Highway, because in other parts of Central America there are also some good highways. The working conditions of the employees seem satisfactory and the drivers are well paid and enjoy social security benefits.

Aside from the import traffic, there is a heavy traffic of cement coming from the factory which is located at the side of the road. From Panama City to Colón the traffic is less dense and consists for the most part of cacao, meat, hides, coconuts, etc. The trucks are able to utilize from 25% to 30% of the capacity of the vehicles on the return trip. The distance between Panama City and Colón by road is 80 kilometers; the freight rates vary from \$2.50 to \$5.00 per ton --the equivalent of 5-6 cents per ton-mile for large lots and 5-8 cents per ton-mile, for smaller lots-- that is, 3.1 to 3.7 and 3.1 to 5 cents per ton-kilometer.

Merchandise coming from Europe as well as several other products pay \$ 5.00 including port charges.

The Mission was able to observe with satisfaction the use of heavy trucks, trailer-trucks, and semi-trailers, which are the most economical means of transport by road where the traffic is regular and where the roads are in good condition. The transport by trucks on the Cristóbal-Panama City route is very satisfactory. The most adequate types of trucks are used, the vehicles are new or in good running condition, the service is regular, and both cargo and vehicles are insured.

On the Inter-American Highway, traffic is concentrated /-between Panama

between Panama City and David and the towns in between. The stretch having the greatest movement is situated between Santiago and Panama City, where the rate is \$8 to \$10 per ton of 2,000 pounds. The rate for transporting cattle to Panama City, which is one of the most important cargoes hauled, is \$4.50 from Antón, in the Province of Coclé; \$6.50 from Santiago, in the Province of Veraguas; and \$11.50 from Remedios, in the Province of Chiriquí. These prices seem to be somewhat high. A typical example of the movement of food products is the big traffic in rice which constitutes the basic food of the population of Panama. The Provinces of Coclé, Chiriquí, and the western region of Panama normally have a deficit of 3,800 tons, which has to be supplied from the 9,500 tons surplus of Herrera, Los Santos, and Veraguas.

Although there is very little information about present means of inter-urban freight transport, it seems that it is made on pack animals and ox-carts from the producing centers to the important cities and from there on by truck. Then it is distributed again by ox-cart and pack animals.

The rates for these services were mentioned before, \$8 to \$10 per ton plus the cost of local transport by pack animals or carts.

As regards passenger traffic, at the present time in Panama there are about 800 passenger busses, the majority of which operate on the route between Panama City and Colón and serve urban traffic of these two cities.

City bus services are granted as concessions to two large companies which operate the principal routes in the city of Panama. On the other routes there are no concessions, and consequently, anyone  
/obtaining a

obtaining a licence can provide bus service, generally with 16 -seat vehicles. Rates range from 5 to 15 cents in the city and suburbs, and are fixed by the concession contract. The big companies generally have busses of modern type that are usually kept in very good condition, while the smaller vehicles of the independent concerns are not always in satisfactory condition. The large number of small operators on the secondary routes gives rise to hard competition among drivers, whose principal objective is to get the largest possible number of passengers regardless of safety or comfort conditions. This situation is further aggravated by the fact that the greater part of these small vehicles are rented by their proprietors to the drivers at the rate of \$5 for a period of 8 hours.

At the present time the authorities have limited the granting of permits for small busses of this type, in order to prevent this situation from becoming even worse.

The most important inter-urban bus service is between Panama City and Colón, in direct competition with the railroad. The latter charges a fare of \$2 round trip in first class, and \$1.25 in second class, whereas the bus charges a fare of \$1.25 round trip, that is, less than one cent per passenger-kilometer. The largest company operating on this route has 52 modern busses in good condition and the service is satisfactory. Other inter-urban services are run from Panama City to Chilibre (29 kilometers), charging a fare of 25 cents per passenger; from Panama City to Chorrera (33 kilometers), the fare is 35 cents, Panama City to Santiago (253 kilometers) \$4.50, and the regular service from Panama City to David (487 kilometers) costing \$10 for which 7 passenger vehicles are used (station wagons). At the present time there is no governmental regulation of passenger or freight rates, /but it seems

but it seems that the recent provisions concerning price control will also permit controls in the field of transportation.

One of the most serious problems facing transportation in Panama is the competition existing between the Panama Railroad and the trucking and bus companies using the Trans-Isthmic Highway. In the section relating to Railroads <sup>1/</sup> reference has been made to the difference in rates established in the Port of Cristóbal with the object of favoring railroad freight. Furthermore, in a manner similar to what happens in most Central American ports, the entrance of trucks belonging to private companies into the port premises -- which are the property of the Canal Company -- is prohibited, and for this reason the trucks cannot load import merchandise directly at the docks. They have to load it at the railroad warehouses outside the port precincts. This prohibition was put into force during the second world war, while formerly trucks were permitted to enter the port inclosure.

On the other hand, neither are trucks permitted to make delivery from the Balboa docks to the freight warehouse of Panama City (a distance of 4 kilometers) because this operation is a monopoly of the railroad, although a part of this freight could be handled more rapidly by truck. The return traffic -- that is to say from Colón by the way of Balboa -- is also a monopoly of the railroad company.

Rates for city passengers and freight services outside of the Canal Zone are high. This may be due in part to the high cost of vehicles and gasoline and to the unbalanced freight traffic between the trip going and the trip returning. In principle, a reduction of these rates seems to be feasible. It is encouraging to note that the

<sup>1/</sup> See Section II, point 1 (a), of this chapter, p. 348 /government



government has paid attention to one of the principal causes of the high cost of operation, which is the lack of proper maintenance. With the aid of "Point Four", a program has been initiated for the training of automobile and truck mechanics.

It seems evident that Panama possesses a sufficient number of motor vehicles to provide a regular and efficient service throughout the country, and if the motor vehicle fleet were distributed more uniformly outside the Canal Zone, it would greatly benefit the development of agriculture. The principal obstacle to this development is the lack of farm to market roads.

#### 5. Air Transport

The principal domestic air carrier is the Compañía Panameña de Aviación (COPA), a Pan American World Airways affiliate in which PAA owns 33% of the stock, while Panamanian citizens hold the balance. COPA commenced operations in 1947, after receiving a two-year permit to use Albrook Field, in the Canal Zone, with two DC-3 planes purchased from PAA for \$120,000 and later modified in SALA's shops, in Costa Rica, to seat 34 passengers. After Tocumen Airport was opened, COPA operations were transferred there.

Three times a week COPA flies in both directions around the western half of the country stopping at Colón, Bocas del Toro, Changuinola, Puerto Armuelles, and David. The other three days of the week a plane makes the round trip from Tocumen to David, and back, in the morning. A total of five points are thus connected with the capital, and only one of them is served more often than three times a week.

During 1951 COPA flew 242,705 miles and carried 14,301 passengers, of which 6,570 entered and 5,605 left from Tocumen. When not operating on its published schedules, COPA's planes are used extensively by

extensively by PAA on charter cargo service, particularly to Medellín, Colombia. Utilization of equipment appears to be under 3 hours per plane per day. Outside of Tocumen, the most important traffic generating point on its scheduled services is David. Some 66% of the passengers and 82% of the cargo transported during the month of October 1952, were carried between David and Tocumen. The company has installed a cold room at the airport at David and has a contract to transport to the Canal tomatoes, strawberries, and other farm produce grown in the Chiriqui highlands.

An important source of revenue for the company are its earnings as general traffic representative for PAA in Panama. While the company enjoys no subsidy from the Panamanian government, operations appear to be very profitable. During the ten months to October 1952, for example, a net profit of \$56,000 was reported on a capital of \$100,000; and annual dividends of about 50% are reported to have been declared.

Early in 1952 a company known as Aerovías Interamericanas de Panamá (AVISPA) was organized with Panamanian and American capital and recognized as a Panamanian-flag carrier. It applied to various countries, including the United States, to operate international routes, and in the meantime commenced domestic operations paralleling COPA's routes, with a borrowed DC-3. The plane was damaged landing at Bocas del Toro and since then operations have been suspended.

From time to time a number of small operators with light planes have undertaken to establish domestic scheduled or charter services. The only one which has continued for any length of time is Aviación General, S. A. (AGSA), which maintains its principal base at Marcos A. Gelabert (Paitilla) airport on the outskirts of Panama City, and a subsidiary base at Santiago. Principal operations, using primarily Piper single-

rily Piper single-engine planes, are along the San Blas coast to the east of the Canal, and in the general area of Santiago to the west. The company also has a mail contract with the government, and carries a limited amount of mail from Panama City to Aguadulce and Santiago. Some of the areas served, like the rich southern tip of the Peninsula de Azuero; or the coffee fincas around Santa Fe, or Veraguas, would be virtually isolated in the rainy season without the air service of this company.

AGSA's passenger fares on the route from Colón along the San Blas coast are 8 cents per mile (equivalent to about 5 cents per km.). Considering the jungle nature of the terrain over which the carrier flies, and the primitive character of the landing strips on which it operates, this charge does not appear unreasonable. Cargo rates to and from the San Blas Islands average about \$1.00 to \$1.50 per ton-mile (\$0.68 - \$1.03 per metric ton-km.). In the Santiago area freight rates are at about the same general level, while passenger fares are somewhat higher. COPA's passenger fares vary from a low of 7.2 cents per mile (4.5 cents per-km.) up to 14 to 20 cents per mile (8.7 to 12.4 cents per km.) on the short flights between David and Puerto Armuelles, or Bocas del Toro and Changuinola. Published tariffs for cargo shipments over 45 kilograms run between \$0.50 and \$1.50 per ton-mile (\$0.34 - \$1.03 per metric ton-km.).

Between David and Panama City, where truck transport offers some competition, COPA has a special bulk rate of 3 cents per pound, equivalent to 26 cents per ton-mile (18 cents per metric ton-km.) While truck charges are less than half this rate, the spoilage factor by surface transport on perishables, due to the combination of bad road and tropical weather, is said to be almost prohibitive, running as high  
/as 80% for tomatoes

as 80% for tomatoes, for example.

During World War II the United States built an extensive system of airfields with paved runways throughout the country, which were turned over to the Panamanian government after the war and now, for the most part stand idle. The principal exception is at David, in Chiriquí Province, which is served by both COPA and by LACSA from San José, Costa Rica. Paitilla Airport, now re-named for the former Director General of Civil Aviation, Marcos A. Gelabert, has been allowed to deteriorate badly since the establishment of Tocumen International Airport. Within reach by taxi in a few minutes from El Panamá Hotel, or by bus for 10 cents from the center of Panama City, it offers an ideal starting point for domestic travelers. Serious consideration should be given to eliminating domestic operations from Tocumen, 24 kms, away, and initiating a vigorous program of local air transport development, using Marcos A. Gelabert airport as the focal point.

There appear to be remarkable opportunities for air cargo operations within the country which have not been adequately developed. The possibility of Chiriquí Province serving as a source of garden crops for the Canal Zone has scarcely been tapped. A thorough analysis of internal routes and services and an enlarged program of government encouragement of local air freight will pay the country substantial economic dividends in the long run.

APPENDIX I

PANAMA: ROAD NETWORK

	<u>Length in kilometers</u>		
		<u>Based</u>	<u>Total</u>
	<u>Paved</u>	<u>and/ or</u>	<u>Built.</u>
		<u>surfaced</u>	
<b>1. <u>All-weather roads</u></b>			
<b>A. <u>Trunk routes</u></b>			
1. Inter-American Highway (total length 900 kilometers) a/	290	282	572
2. Trans-Isthmic Highway (Panama City-Colón)	80	--	--
	370	282	652
<b>B. <u>Branches of Inter American Highway</u></b>			
3. La Capitana-Chepo	--	2	2
4. Pacora-Junction I.A.H. b/	3	--	3
5. Cerro Azul-Junction I.A.H.	4	6	10
6. Panamá Viejo-Juan Díaz-junction I.A.H.	8	--	8
7. La Chorrera-Nuevo Emperador	--	22	22
8. La Chorrera-Puerto Caimito	4	3	7
9. Capira-Lídice	--	3	3
10. Capira-Cermeño	3	--	3
11. Campana-Junction I.A.H.	--	2	2
12. Bejuco-Puerto de la Zona	--	3	3
13. Nueva Gorgona-junction I.A.H.	--	2	2
14. Part of the Laguna junction I.A.H.	--	4	4
15. El Valle-Junction I.A.H.	28	6	34
16. La Ermita-Junction I.A.H.	--	2	2
17. Antón-Puerto Obaldía	--	11	11
18. La Senadora-Junction I.A.H.	--	5	5
19. Penonomé-La Pintada	14	--	14
20. Penonomé-Puerto Posada	--	22	22
21. Pocrí-Junction I.A.H.	--	1	1
22. Aguadulce-Puerto Aguadulce	--	5	5
23. El Cristo-Junction I.A.H.	--	4	4
24. Llanos Sánchez-Junction I.A.H.	--	6	6
25. El Roble-Junction I.A.H.	--	2	2
26. Divisa-Chitré-Las Tablas	68	--	68
27. Ocú-Junction I.A.H.	19	--	19
28. Atalaya-Junction I.A.H.	--	2	2
29. Santiago-San Francisco	--	19	19
30. Santiago-La Colorada	--	17	17
31. La Peña-Junction I.A.H.	--	3	3
32. Río de Jesús-Junction I.A.H.	--	5	5
33. Remedios-Puerto Remedios	--	7	7
34. Lejas-Junction I.A.H.	--	3	3

		<u>Length in kilometers</u>		
		Based		
		and/or Total		
		Paved	surfaced	Built.
35.	San Félix-Junction I.A.H.	-	2	2
36.	Horcencito-Junction I.A.H.	-	4	4
37.	Gualaca-Chiriquí	-	18	18
38.	David-Boquete	40	-	40
39.	David-Pedregal	5	2	7
40.	Concepción-El Hato (Volcano)	-	50	50
	...Cerro Punta	-	50	50
		196	243	439
<b>C. Other secondary roads</b>				
41.	Piña-Chagres-Salud	-	12	12
42.	Piña-Escobal	18	-	18
43.	Chitré-Puerto Chitré	4	-	4
44.	Trinidad-Pesé-Junctkn-C. Divisa	-	-	-
	Chitré Road	18	10	28
45.	La Yeguada-Sabana grande-	-	-	-
	C. Junction Divisa-Chitré Road	17	6	23
46.	Las Tablas-Puerto Mensabé	-	13	13
47.	Las Tablas-La Palma	-	12	12
48.	Ponuga-Junction- C. Divisa-	-	-	-
	Chitré Road	-	2	2
49.	Dolega-Potrerrillos	-	13	13
50.	Boquete-Alto Lino	-	3	3
		57	71	128
<u>Total length of all-weather roads</u>				1,219
<b>II. Dry-weather roads</b>				
<b>D. Summer Routes</b>				
51.	Part of the Laguna-I.A.H. Junction	-	-	10
	road	-	-	10
52.	La Sonadora-Pajonal	-	-	13
53.	Trinidad-Los Pozos	-	-	6
54.	La Yeguada-Macaradas	-	-	10
55.	La Palma-Pocrí-Pedasi	-	-	21
56.	La Colorada-Puerto Mutis	-	-	18
57.	La Peña-La Mesa-Las Palmas-	-	-	-
	I.A.H. Junction	-	-	80
58.	Volcán-Costa Rica border	-	-	26
59.	David-Alanje-Divalá	-	-	28
60.	Alanje-Boquerón	-	-	18
61.	San Francisco-Santa Fé	-	-	36
62.	El Roble-Calobre-San Francisco	-	-	63
63.	Ocú-Pesé	-	-	13
64.	Río de Jesús-Montijo	-	-	7
65.	La Peña-Romance	-	-	28
66.	San Pablo-Cañazas	-	-	30
67.	Cañazas-Junction La Peña-Romance	-	-	17

/68. Calobre-Santa

	<u>Length in kilometers</u>		
	<u>Paved</u>	<u>Based and/or surfaced</u>	<u>Total Built</u>
68. Calobre-Santa Rosa- I.A.H. Junction	-	-	22
69. Las Minas-Pesé	-	-	19
70. El Cristo-Santa Rosa-Pocri- I.A.H. Junction	-	-	23
71. Santa Rosa-Junction I.A.H.	-	-	8
	-	-	496
<u>Total length of roads in Panama</u>			<u>1715</u>

3. SUMMARY

1. Paved roads	623
2. All-weather roads (unpaved)	596
3. Most important dry-weather routes	496
	<u>1,715</u>

Source: Transport Mission, from official data.

a/ The unbuilt stretch between Chepo and the Colombian border has not yet been located. Its length has been estimated at 300 kilometers.

b/ I.A.H. Inter-American Highway.

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UNITED NATIONS  
ECONOMIC  
AND  
SOCIAL COUNCIL



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*Van Meir*

ECONOMIC COMMISSION FOR LATIN AMERICA  
TECHNICAL ASSISTANCE ADMINISTRATION

TRANSPORTATION IN CENTRAL AMERICA

Report of a Mission appointed by the United Nations  
Technical Assistance Administration and the Secretariat  
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Volume II

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PART TWO

REGIONAL TRANSPORT PROBLEMS AND RECOMMENDATIONS  
FOR THEIR SOLUTION

Chapter I

ROADS AND HIGHWAYS

I. The Road and Highway System of the Central American Countries

In the six countries comprising the Isthmus of Central America there is a grand total of approximately 23,000 kilometers of roads of all kinds, of which only half are all-weather roads, the rest being passable only in the dry season. The total length of paved highways is 12% of the total.

El Salvador, with 7,700 kilometers, has the most extensive network of roads of all kinds, but Guatemala has the greatest length of all-weather roads: 4,360 kilometers, a figure which represents 38% of the total of all-weather roads for all of Central America. Costa Rica follows with 16%, Honduras with 14%, El Salvador with 13%, Panama with 11%, and Nicaragua with 9%. Costa Rica has more kilometers of paved highways than any other Central American country. It has 810 kms.; Panama has 620 and El Salvador 600. (See Table 94.)

On the other hand, if one compares the road density figures for these countries with those for population density, the situation is different. El Salvador is the country with the highest road



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations. The text also mentions that proper record-keeping is essential for identifying trends and making informed decisions.

2. The second part of the document focuses on the role of technology in streamlining processes and improving efficiency. It highlights how digital tools can help reduce manual errors and save time. The document also notes that technology can facilitate better communication and collaboration among team members.

3. The third part of the document addresses the need for regular training and development for employees. It states that continuous learning is key to staying competitive in a rapidly changing market. The text suggests that organizations should invest in various training programs to enhance their workforce's skills and knowledge.

4. The fourth part of the document discusses the importance of maintaining a strong relationship with customers. It emphasizes that excellent customer service is a key differentiator for many businesses. The text suggests that organizations should focus on understanding their customers' needs and providing personalized solutions. It also mentions that regular communication and feedback loops are essential for building trust and loyalty.

5. The fifth part of the document focuses on the importance of financial management. It highlights that effective budgeting and cost control are critical for the long-term success of any organization. The text suggests that organizations should regularly review their financial statements and make adjustments as needed. It also notes that maintaining accurate financial records is essential for compliance and reporting.

6. The sixth part of the document discusses the importance of maintaining a strong brand identity. It emphasizes that a clear and consistent brand message is essential for building a strong reputation in the market. The text suggests that organizations should invest in branding efforts, such as creating a logo and developing a brand voice. It also notes that maintaining a strong online presence is crucial for reaching a wider audience.

7. The seventh part of the document focuses on the importance of maintaining a strong relationship with suppliers and vendors. It emphasizes that reliable and high-quality suppliers are essential for ensuring the smooth operation of a business. The text suggests that organizations should carefully select their suppliers and maintain open communication with them. It also notes that negotiating favorable terms and conditions is a key part of this relationship.

8. The eighth part of the document discusses the importance of maintaining a strong relationship with the community. It emphasizes that being a responsible corporate citizen is essential for long-term success. The text suggests that organizations should engage in social responsibility activities, such as supporting local charities and environmental initiatives. It also notes that maintaining a strong relationship with the community can help build a positive reputation and attract talent.

Table 94

Central America: Length of Roads classified by Type

	<u>All-weather roads</u>		Total	<u>Dry-weather roads</u>	
	<u>Paved</u> (concrete or asphalt)	<u>Unpaved</u> (based and/or surfaced)		<u>Dirt</u>	Total
	(kilometers)				
<u>Central America</u>	2,660	8,790	11,450	11,370	22,820
Guatemala	330	4,030	4,360	2,170	6,530
El Salvador	600	900	1,500	6,200	7,700
Honduras	--	1,570	1,570	160	1,730
Nicaragua	300	670	970	1,640	2,610
Costa Rica	810	1,020	1,830	700	2,530
Panama	620	600	1,220	500	1,720
	(percentage distribution)				
<u>Central America</u>	100.0	100.0	100.0	100.0	100.0
Guatemala	12.4	45.9	38.1	19.1	28.6
El Salvador	22.6	10.2	13.1	54.5	33.7
Honduras	--	17.9	13.7	1.4	7.6
Nicaragua	11.3	7.6	8.5	14.4	11.5
Costa Rica	30.4	11.6	16.0	6.2	11.1
Panama	23.3	6.8	10.6	4.4	7.5

Source: Transport Mission, from partial data furnished by the official organizations.

density, with 366 meters of roads of all kinds per square kilometer, and 72 meters of all-weather roads, followed by Guatemala with 60 and 39, and Costa Rica with 49 and 35, respectively. These three countries also have the highest population densities, in the order named; (see Table 95.) Nicaragua, which has the largest area, has the smallest population density and the fewest all-weather roads. For roads of all kinds, Honduras is the country with the lowest density figure (15 meters of road per square /kilometer ).

kilometer ).

Table 95

Central America: Comparison of Road Density with Population Density

	Area in square kilometers	Estimated Population density a/ Inhabitants per sq. km.	Road density: meters of road per square kilometer Of all types. All-weather	
Central America	517,900	17.4	44	22
Guatemala	108,900	27.1	60	39
El Salvador	20,900	92.0	366	72
Honduras	115,200	12.4	15	14
Nicaragua	148,000	7.1	18	7
Costa Rica	50,900	16.4	49	35
Panama	74,000	10.9	23	16

Source: Transport Mission, from partial data furnished by the official organizations.

a/ 1950 or 1952; see basic data in respective Chapters of Part I.

If one compares the length of existing roads with the population figures of these countries (see Table 96), El Salvador is in first place, for it has the smallest number of inhabitants (249) per kilometer of roads of all kinds, while in Honduras there is one kilometer of roads of all kinds for every 868 inhabitants, the lowest ratio for the Central American countries. Costa Rica is in first place in all-weather roads, with 468 inhabitants per kilometer of highway, Guatemala is in second place with 668, and El Salvador last with 1,280.

/Table 96

Table 96

Central America: Population-Road Ratios

	Estimated population for 1952 (Thousands of inhabitants)	Number of inhabitants per 1 km. of roads	
		All types	All-weather
<u>Central America</u>	9,229	404	805
Guatemala	3,000	460	688
El Salvador	1,921	249	1,280
Honduras	1,500	868	954
Nicaragua	1,120	431	1,150
Costa Rica	843	338	468
Panama	845	497	704

Source: Transport Mission, from partial data furnished by the official organizations.

1. The Road System in Relation to National and Regional Communications Needs

Since the Central American countries have similar geographical and climatic conditions, and there is a similarity in economic aspects and historical background, it is possible to attempt a comparative analysis of their transportation systems. In dealing with highways, account must be taken particularly of the extent and condition of the roads, the direct relation which should exist between the location and characteristics of the road system, and the territorial extension, the geographic position of the most important centers of population, production and consumption, and the degree of coordination between the road network and other means of transportation.

Bearing these factors in mind, it is seen that in El

/Salvador

Salvador they all combine to form a road system of relative efficiency for transport, while in Honduras, Nicaragua and Panama there are serious problems for the movement of imported products, and of local products for export and for domestic consumption. While, in the case of El Salvador, the only thing needed is to improve and integrate the existing basic road system, complementing it with systems of secondary and farm to market roads in a way that will parallel the development of production, in the other three countries, the construction of almost the entire basic system of roads and highways is required, as well as its progressive expansion with secondary and feeder roads. In the special case of Guatemala, the 4,400 kms. of all-weather roads which now exist are still insufficient,<sup>1/</sup> aside from the fact that along most of their length their physical features are inadequate for economically and rapidly converting them into better quality roads for greater traffic capacity at low operating costs. For this reason it is essential for Guatemala to complete its basic road network by building new roads, by improving those that now exist, as far as it is economically possible, by coordinating them with one another and with other means of

<sup>1/</sup> This is due to various causes: (a) The present location of the road network does not include a widespread zone of economic influence in relation to the country's area, nor with the areas of departments through which the roads pass; (b) the location of most of these roads has not been done within efficient technical standards in relation to the topographical, geological, and hydrographical conditions of the region; (c) their construction features do not meet the standards for roads where low-cost automotive transport is possible; (d) high annual expenditures for their maintenance are required, because of their low standards of construction; (e) in certain areas of the country there are still no direct connections (and in some not even indirect) between the main highway routes and the important production or population centers, and in others there are merely very inferior quality secondary branch roads.



transportation more effectively, and finally, by complementing the basic road system with feeder systems.

Costa Rica also is a special case, because of the disconnected and highly concentrated nature of its road network. It can be said that this network only meets the needs of the economy of the central region of the country, so that what is needed is the location and construction of other routes, --including secondary and feeder roads-- which would expand their area of service.

Furthermore, in all the countries mentioned, it is necessary to carry out at the same time large-scale improvement and organization of transport services on a basis which would be economical for the public, the operators, and the government.

Thus it may be seen that the general transportation problem becomes even more acute when considered from a regional standpoint. If each one of these countries has had to face great difficulties of one kind or another in the building up of transport systems which are still inadequate for effectively helping to develop their national economies, it might seem paradoxical that they should undertake the building up of a vaster system, of an international scope, for which they are probably as yet unprepared, and the cost of which could mean in the end definite limitations in the programs of improvement and extension of their national road systems. Nevertheless, various factors should be taken into account which would help to increase the general usefulness of the national road networks once they have been coordinated and integrated into the international highway system.

/In the first

In the first place, the most important trunk highway in all the Central American countries <sup>1/</sup> is the Inter-American Highway, which has been planned and built for international traffic. The national road systems now in existence serve local markets of limited size, and their general usefulness as transport routes could be greatly increased, if, by means of their connection with the Inter-American Highway, part of the inter-Central American freight traffic could be carried in addition to local traffic -principally in border areas where there is potential traffic of a certain importance- to say nothing of the traffic for importing and exporting outside the area. If it is considered that there are no public international rail communications in Central America (except between El Salvador and Guatemala), that air transport has only a limited field of application, and that the system of maritime communications is inadequate -then an international network of highways seems to be the most appropriate means for transporting a large part of the products in the region.

Moreover, the relatively short distances separating the Central American capital cities also favors this type of traffic, particularly in view of the fact that the bulk of inter-Central American commerce is carried on between the capitals and a few other centers of consumption and production of neighboring countries. In general, the distances separating one from another are not too large to make highway passenger and freight transport feasible.

The regional economic integration which the Central American countries are striving for would necessarily bring as a result an

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1/ Honduras may be considered an exception to this in many respects.

expansion of markets and an additional demand for means of transport. It can be foreseen that the existence of a road network of international scope will enlarge the operating areas of business, will tend to increase the scale of production, and will be an effective means for attaining the specialization and integration that are being attempted.

Finally, any basic plan for the improvement of the local transport systems, which normally would require high expenditures of capital, could bring greater general economic advantage if it were coordinated with an international highway system which would facilitate the movement of products within and in and out of the region. In other words, the substantial investments in road transport systems would be economically sounder and more profitable if at the same time other investments were made on international roads permitting a rapid increase in commercial and tourist traffic; a gradual reduction in the cost of transportation, and an indirect amortization, in a shorter time, of the investments on the project.

## 2. Highway and Road System for International Transport Proposed by the Mission

In the present Report a possible basic highway plan for Central America is proposed comprising both international highways and domestic road systems (with the exception of farm to market roads). This plan, which could be carried out over a period of seven years, would require a total investment of \$206 million, of which \$118 million corresponds to international highways, or highways used internationally, and \$88 million to the internal road systems. The plan could be carried out in two stages: an immediate one of two years costing \$75 million (37.5 annually), and a

Table 97

Central America: Estimated cost of a seven-year international and domestic highway plan, by countries and by stages. General summary.

(Stage I - 2 years; Stage II - 5 years)  
 (millions of dollars)

	Total	International System	Domestic System
Guatemala	67.1	26.0	41.1
Stage I	16.7	8.4	8.3
Stage II	50.4	17.6	32.8
El Salvador	22.2	16.2	6.0
Stage I	8.9	7.5	1.4
Stage II	13.3	8.7	4.6
Honduras	40.0	32.7	7.3
Stage I	18.1	18.1	—
Stage II	21.9	14.6	7.3
Nicaragua	22.0	10.1	11.9
Stage I	13.0	7.1	5.9
Stage II	9.0	3.0	6.0
Costa Rica	27.4	17.5	9.9
Stage I	10.6	5.0	5.6
Stage II	16.8	12.5	4.3
Panama	27.1	15.1	12.0
Stage I	7.5	3.0	4.5
Stage II	19.6	12.1	7.5
Totals	205.8	117.6	88.2
Stage I	74.8	49.1	25.7
Stage II	131.0	68.5	62.5

Source: Transport Mission

/second stage

second stage of five years costing \$131 million (26.2 annually).<sup>1/</sup> (See Table 97) Of the overall plan the first stage relating to the international system would require \$49 million (24.5 annually) and the second stage would demand \$69 million (13.7 annually). The investment in the domestic system would be \$26 million (13 annually) in the first stage and \$63 million (12.6 annually) in the second.<sup>2/</sup>

The plan is necessarily based on certain assumptions regarding construction costs and on a classification of the highways according to the category assigned to them which also affects the estimated costs. In the Appendix to this Chapter will be found a note on costs and on the classification of the highways, with the corresponding specifications.

The only route along which effective international automotive traffic is now carried along the countries of the region is the Inter-American Highway, though there are other routes of less importance on which a certain amount of international traffic is also carried. Among the latter are the following: (1) The Northern Highway in El Salvador, reaching Nueva Ocotepeque in Honduras; (2) the Military Route in El Salvador, which connects San Miguel with a point on the Inter-American Highway near the Honduran border, and along which a considerable amount of commercial traffic from El Salvador,

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<sup>1/</sup> The choice of seven years for the plan is based on the consideration that a shorter period of time would require perhaps too high an annual investment whereas a longer period might prove to be inadequate and inefficient due to the difficulty of foreseeing its full scope and cost. In any case, the first stage of two years is assumed to be an intensive stage, since it is necessary to achieve initially a large degree of progress, thus offsetting the slow rate of increase of highway construction in the past.

<sup>2/</sup> A detailed discussion of the proposed domestic road systems will be found in Chapter II of Part III of this Report.

Honduras, and Nicaragua is carried; (3) the Southern Highway in Honduras, which constitutes for all practical purposes a prolongation of the Inter-American Highway connecting the capital of Honduras with the neighboring countries; (4) National Route No. 1 in Guatemala, which runs from the central region to the Talismán bridge, making a direct connection between Talismán and Tapachula, in Mexico, which in turn is connected by railroad, and from a point in Mexico's interior, by highway with Mexico City; (5) other routes with sporadic traffic passable with difficulty even in the dry season, of little importance, short in length, and having limited international penetration.

Table 98

Central America: General Seven-year International Highway Plan, by countries

	Total		First Stage				Second Stage						
	Kms	Millions of dollars	Kms	Millions of dollars		Kms	Millions of dollars						
				Year I	Year II	Total	Year III	Year IV	Year V	Year VI	Year VII		
Guatemala	726	26.0	201	8.4	4.2	4.2	525	17.6	3.2	5.2	3.8	2.8	2.6
El Salvador	483	16.2	352	7.5	3.7	3.8	131	8.7	4.2	2.8	1.7	--	--
Honduras	1,413	32.7	840	18.1	7.9	10.2	573	14.6	8.7	4.0	1.2	0.7	--
Nicaragua	434	10.1	353	7.1	4.0	3.1	81	3.0	1.9	1.7	--	--	--
Costa Rica	461	17.5	127	5.0	2.5	2.5	334	12.5	2.8	2.5	2.5	2.5	2.2
Panama	413	15.1	95	3.0	1.5	1.5	318	12.1	3.4	3.3	2.3	1.8	1.3
Central America	3,930	117.6	1,968	49.1	23.8	25.3	1,962	68.5	24.2	18.9	11.5	7.8	6.1

Source: Transport Mission

The international highway plan recommended by the Mission is based on the conclusion of the Inter-American Highway and the construction /or improvement

or improvement of other international roads such as those described. The first, two-year stage, includes specifically the construction, improvement and necessary paving to establish through traffic on the Inter-American Highway from the Mexican border to San José, Costa Rica, and to better transport conditions in the Panama section of that highway; similar work in Guatemala, El Salvador, Honduras, and Nicaragua, to establish the Pacific Coastal Highway, including the construction of new sections, the establishment of permanent traffic on the Inter-Oceanic Highway between El Salvador and Honduras; conclusion of the Honduran Inter-Oceanic Highway; a connection between Eastern Honduras and Northern Nicaragua; and a third international road between Guatemala and El Salvador. (See Tables 98 and 99.)

In the second stage, the international highway plan includes the conclusion and total paving of all the highways comprising the first stage, and furthermore the construction of a third road between El Salvador and Honduras, and the termination of a first route between Guatemala and Honduras.

Table 99

Central America: Seven-year International Highway Plan, by Stages and by Highways

	<u>First stage: 2 years</u>			
	<u>Length in kilometers</u>	<u>Expenditure in millions of dollars</u>		
		Total	Year I	Year II
(a) <u>Inter American Highway a/</u>	514	19.2	10.2	9.0
				<u>/Guatemala b/</u>

Table 99 (Continued)

Guatemala <sup>b/</sup>	75	4.7	2.3	2.4
El Salvador	34	0.5 <sup>c/</sup>	0.5	—
Honduras	96	2.9	1.5	1.4
Nicaragua	37	3.1	1.9	1.2
Costa Rica	127	5.0	2.5	2.5
Panama	95	3.0	1.5	1.5
<b>(b) Pacific Coastal Highway</b>	<b>528</b>	<b>11.0</b>	<b>5.2</b>	<b>5.8</b>
Guatemala	86	2.9	1.5	1.4
El Salvador	163	4.2	2.0	2.2
Honduras	45 <sup>d/</sup>	0.6	—	0.6
Nicaragua <sup>e/</sup>	224	3.3	1.7	1.6
<b>(c) El Salvador-Honduras Inter-Oceanic Highway</b>	<b>396</b>	<b>8.2</b>	<b>2.9</b>	<b>5.3</b>
El Salvador	96	1.6	0.6	1.0
Honduras	300	6.6	2.3	4.3
<b>(d) Honduras Inter-Oceanic Highway</b>	<b>256</b>	<b>4.9</b>	<b>2.5</b>	<b>2.4</b>
Honduras <sup>f/</sup>	256	4.9	2.5	2.4
<b>(e) Eastern Highway of Honduras and Northern Highway of Nicaragua</b>	<b>181</b>	<b>3.8</b>	<b>2.0</b>	<b>1.8</b>
Honduras	139	3.1	1.6	1.5
Nicaragua	42	0.7	0.4	0.3
<b>(f) Other highways</b>				
2) <b>Third International Guatemala-El Salvador Route</b>	<b>99</b>	<b>2.0</b>	<b>1.0</b>	<b>1.0</b>
Guatemala	40	0.8	0.4	0.4
El Salvador <sup>g/</sup>	59	1.2	0.6	0.6

Second Stage: 5 years

	Length in kilometers	Total	Expenditure in millions of dollars				
			Year III	Year IV	Year V	Year VI	Year VII
<b>(a) Inter American Highway</b>	<b>1,149</b>	<b>39.8</b>	<b>10.9</b>	<b>8.9</b>	<b>6.8</b>	<b>7.1</b>	<b>6.1</b>
Guatemala	308	11.4	2.0	2.0	2.0	2.8	2.6
Honduras	108	1.3	1.3	—	—	—	—
Nicaragua	81	2.5	1.4	1.1	—	—	—
Costa Rica	334	12.5	2.8	2.5	2.5	2.5	2.2
Panama	318	12.1	3.4	3.3	2.3	1.8	1.3

7(b) Pacific Coastal Highway



Table 99 (Continued)

(b)	<u>Pacific Coastal Highway</u>	193	11.0	4.4	4.1	2.5	--	--
	Guatemala	117	3.9	1.2	1.9	0.8	--	--
	El Salvador	76 <sup>h/</sup>	6.1	2.2	2.2	1.7	--	--
	Honduras	h/	0.5	0.5	--	--	--	--
	Nicaragua	h/	0.5	0.5	--	--	--	--
(c)	<u>El Salvador-Honduras Inter-Oceanic Highway</u>		2.8	2.8	--	--	--	--
	El Salvador	-- <sup>h/</sup>	0.8	0.8	--	--	--	--
	Honduras	h/	2.0	2.0	--	--	--	--
(d)	<u>Honduras Inter-Oceanic Highway</u>		6.2	2.2	2.3	1.0	0.7	--
	Honduras	360	6.2	2.2	2.3	1.0	0.7	--
(e)	<u>Eastern Highway of Honduras and Northern Highway of Nicaragua</u>	h/	1.2	1.2				
	Honduras	--	1.2	1.2	--	--	--	--
	Nicaragua	--	--	--	--	--	--	--
(f)	<u>Other highways</u>							
	<u>Third International Guatemala-El Salvador Route</u>	145	4.7	2.7	2.0	--	--	--
	Honduras	90	2.9	1.5	1.4	--	--	--
	El Salvador	55	1.8	1.2	0.6	--	--	--
	<u>First International Guatemala-Honduras Route</u>	115	2.8	1.6	1.2			
	Guatemala	100	2.3	--	1.3	1.0	--	--
	Honduras	15	0.5	--	0.3	0.2	--	--

Source: Transport Mission.

- a/ The improvement that some already paved stretches in El Salvador and Costa Rica need has not been considered, in the belief that it can be done later.
- b/ It is possible that the expenditures in Guatemala might be slightly higher than the total estimated amount, but it is probable that experience and a greater and more efficient use of mechanical equipment might reduce construction costs.
- c/ The actual expenditure will be approximately 750,000 dollars, by agreement between the government of El Salvador and the U.S. Bureau of Public Roads (San Salvador office), which will mean an expenditure of about 22,000 dollars per kilometer, but it is not known what work in addition to the paving will be done.

/d/ Estimated

- d/ Estimated length.
- e/ Completion and paving of Managua-Chinandega section and construction and paving of Managua-Granada section.
- f/ Not including the San Pedro Sula-Puerto Cortés stretch, since it has already been included in the El Salvador-Honduras Inter-Oceanic Highway.
- g/ Construction of 42 new kms. between San Francisco (Gotera) and the border, and improvement of the 13 km. existing stretch (Military Route-San Francisco)
- h/ Length in kilometers does not appear since the only work is that of paving.

(a) Inter-American Highway. It is estimated that the total length of the Inter-American Highway in Central America will be approximately 2,900 kilometers upon its completion. In the chapters on each of the Central American countries <sup>1/</sup> it has already been stated that some sections are still impassable. (See above Table 100.)

2,238 kilometers of the highway have been constructed, of which 963 kilometers are paved, and the rest graded, based, and surfaced. (See Table 101.)

The length already paved represents 33% of the total, the part that is built but unpaved, 44%, and the part still to be built, 23%. Along the sections considered impassable there are stretches, such as that in Costa Rica between Bagaces and the Nicaraguan border, which have been used during the dry season. In the present year (1953), this stretch has again been opened to traffic while natural conditions permit.

Of the countries of Central America, Panama has the longest

<sup>1/</sup> See Chapters 1-6 of Part I of this Report.

/paved section

paved section of this highway (290 kilometers) followed by El Salvador and Nicaragua (273 and 215 kilometers, respectively). Costa Rica has paved only 106 kilometers and Guatemala 79. Honduras has no paved highways. <sup>1/</sup> The countries with the longest impassable sections at the present time are Panama, Costa Rica and Guatemala.

Table 100

Central America: Present condition of the Inter-American Highway, by countries and by sections

	<u>Length in kms.</u>	<u>Present Condition</u>
<u>Guatemala:</u>	510	
1. Mexican border-Km.303	40	Impassable
2. Km.303-San Cristóbal	122	All-weather
3. San Cristóbal-Sumpango	143	All-weather
4. Sumpango-Guatemala a/	37	Paved
5. Guatemala-Kilometer 22	23	Paved
6. Kilometer 22-Asunción Mita	126	All-weather
7. Asunción Mita-Kilometer 160	13	Paved
8. Kilometer 160-Salvadorean border	6	Paved
<u>El Salvador:</u>	307	
1. Guatemalan border-Santa Ana	31	Paved
2. Santa Ana-San Salvador	66	Paved
3. San Salvador-Cojutepeque	33	Paved
4. Cojutepeque-Cuscatlán Bridge (Lempa River)	57	Paved
5. Cuscatlán Bridge-San Miguel	48	Paved
6. San Miguel-Sirama	38	All-weather
<u>Honduras:</u>	160	
1. Salvadorean border-Jícaro Galán	40	All-weather
2. Jícaro Galán-San Lorenzo	12	All-weather
3. San Lorenzo-Choluteca	38	All-weather
4. Choluteca-San Marcos	58	All-weather
5. San Marcos-Nicaraguan border	12	All-weather

<sup>1/</sup> With the exception of a short stretch of the Southern Highway between Tegucigalpa and Toncontín Airport, mainly within the urban limits of the capital, about 6 kilometers long. However, the asphalt surface is not in very good condition.

/Nicaragua:

Table 100 (continued)

<u>Nicaragua:</u>	383	
1. Honduran border-Somoto	19	All-weather
2. Somoto-Condega	32	All-weather
3. Condega-Esteli	36	All-weather
4. Esteli-Sébaco	46	All-weather
5. Sébaco-Managua	103	Paved
6. Managua-Jinotepe	46	Paved
7. Jinotepe-Rivas	66	Paved
8. Rivas-Costa Rican border	35	All-weather
<u>Costa Rica:</u>	658	
1. Nicaraguan border-Bagaces	105	Impassable
2. Bagaces-Las Cañas	22	Dry-weather
3. Las Cañas-Lagartos River	39	All-weather
4. Lagartos River-Macacona	35	All-weather
5. Macacona-San Ramón	39	All-weather
6. San Ramón-San José	75	Paved
7. San José-Cartago	22	Paved
8. Cartago-San Isidro del General	114	All-weather
9. San Isidro del General-Buenos Aires	60	Impassable
10. Buenos Aires-Paso Real <sup>b/</sup>	30	Impassable
11. Paso Real-La Cuesta-Panamanian border	117	Impassable
<u>Panama:</u>	895	
1. Costa Rican border-Concepción	23	Impassable
2. Concepción-David	24	All-weather
3. David-Remedios	95	All-weather
4. Remedios-Soná	92	All-weather
5. Soná-Santiago	47	All-weather
6. Santiago-Divisa	36	Paved
7. Divisa-Aguadulce-Natá-Penonomé	66	Paved
8. Penonomé-Hato River	30	Paved
9. Hato River-Bejuco-La Chorrera	88	Paved
10. La Chorrera-Panamá-Tocumen	58	Paved
11. Tocumen-Pacora	12	Paved
12. Pacora-Chepo <sup>c/</sup>	24	All-weather
13. Chepo-Colombian border	300	Impassable (not constructed)
Total length of the Inter-American Highway	2,913	

Source: Transport Mission, from official data.

a/ It has not been possible to verify if the terminal point of this section is exactly 22 kilometers from the starting point.

b/ Estimated length.

c/ Estimated length based on the scale of the official map, allowing for marginal factor for additional length for its location.

Table 101

Central America: Present condition of the Inter-American Highway. Summary

	<u>All-weather length</u>				<u>Impassable length</u> (not constructed)				
	<u>Paved</u>	<u>% of</u>	<u>Based and/</u> <u>or surfaced</u>	<u>% of</u>	<u>Total</u>	<u>Length</u>	<u>% of</u>	<u>TOTAL LENGTH</u>	
	<u>Kilo-</u>	<u>Total</u>	<u>meters</u>	<u>Total</u>	<u>Kms. %</u>	<u>in Kms.</u>	<u>Total</u>	<u>Kms.</u>	
Guatemala	79	15.5	391	76.7	470	92.2	40	7.8	510
El Salvador	273	88.9	34	11.1	307	100.0	--	--	307
Honduras	--	--	160	100.0	160	100.0	--	--	160
Nicaragua	215	56.1	168	43.9	383	100.0	--	--	383
Costa Rica	106	16.1	240	36.5	346	52.6	312	47.4	658
Panama	290	32.4	282	31.5	572	63.9	323	36.1	895
<u>Central America</u>	<u>963</u>	<u>33.1</u>	<u>1,275</u>	<u>43.7</u>	<u>2,238</u>	<u>76.8</u>	<u>675</u>	<u>23.2</u>	<u>2,913</u>

Source: Transport Mission, from official data. See also Table 100.

The original agreement of the representatives of the American countries determined that the specific function of this highway --as that of the entire Pan American Highway-- would be the direct communication of the capitals of the respective countries, in this case Mexico and the Central American republics. At the present time this aim is being accomplished with relative effectiveness between Guatemala, El Salvador and Nicaragua, which are already connected, and indirectly between these countries and Honduras.

About 320 kilometers are still to be constructed in Panama, some 300 in Costa Rica, and 40 in Guatemala. However, in Guatemala it is still necessary to relocate and reconstruct practically 230 kilometers, apart from paving and other additional work. In Nicaragua the new location, construction (including several bridges) and paving of the section between the /Hondurean border

Hondurean border and Somoto is required; the improvement and paving of some stretches (including the building of several permanent bridges) of the section between Somoto and Sébaco; and finally, the 35-kilometer stretch next to the Costa Rican border needs improvement and paving. In Honduras the completion of grading and drainage work is required, as well as the replacement of temporary bridges with permanent ones, the construction of some bridges, the new location and improvement of the stretch between Kms. 110 and 120, and the relocation and construction of the short stretch of 4 kilometers next to the Nicaraguan border. In Costa Rica the requirements comprise the construction of the Nicaraguan border-Las Cañas section (127 kilometers), the locating and construction of the San Isidro del General-Panamanian border section (covering in itself an approximate length of 200 kilometers), the improvement of some already constructed stretches, and the paving of around 550 kilometers. Panama needs, besides the construction of the entire section between Chepo and the Colombian border, to improve some stretches, to relocate and build others, and to pave around 600 kilometers, apart from the construction and substitution of many bridges. Finally, in El Salvador only minor completion work and the total paving of the 34-kilometer stretch next to the Hondurean border are required, as well as the improvement of some already paved sections and the replacement of some temporary bridges with permanent ones.

At present it is possible to carry on international traffic on this route the year round only between Guatemala, El Salvador, Honduras and Nicaragua. During the dry season it is possible to travel on the still unbuilt section in Costa Rica, (Nicaraguan border-Bagaces) and to continue

/as far as

as far as San Isidro del General, 136 kilometers beyond San José, Costa Rica. The bulk of the heavy commercial traffic takes place along the section between El Salvador, Honduras, and Nicaragua.

Considering the importance of the international communication which will be carried on by means of the Inter-American Highway, and the magnitude of the work still required before it is entirely finished, it is appropriate to formulate a rational plan of execution envisaging the greatest possible benefit to be derived from a greater and earlier international utilization of this highway. It would be suitable to proceed to its execution in two well-defined stages:

The first stage would constitute the work needed to establish direct communication between the Mexican-Guatemalan border and San José, Costa Rica, by finishing the only presently impassable stretches of this section of the Inter-American Highway. These are the following: in Guatemala, Mexican border-Km. 303 (40 kilometers); in Honduras, Nicaraguan border-Km. 157 (4 kilometers); and in Costa Rica, Nicaraguan border-Las Cañas (127 kilometers). During this first stage it would also be possible, during the construction of the above-mentioned stretches, to do other important work in the three countries mentioned as well as in the other countries in order to establish traffic under the best conditions between the provisional terminal points (Mexican-Guatemalan border and San José, Costa Rica), and to improve other sections in Panama. The details of this work may be found in Table 102.

In the second stage, direct communication between the Central American countries and Panama City would be achieved, by constructing and paving the unbuilt section in Costa Rica and the Costa Rican border-

/Concepción

Concepción section in Panama. To this would be added the improvement and paving of all sections not finished during the first stage. (See above Table 102.)

It is estimated that to carry out the first stage a maximum of two years would be required, and a total approximate expenditure of \$20 million. The second stage would require a maximum period of five years and an expenditure of about \$40 million.

As a result of the completion of the first stage, the four countries which are now linked the year round by the Inter-American Highway (Guatemala, El Salvador, Honduras, and Nicaragua) would have permanent direct communication with Costa Rica, as well as with the countries of North America. The benefits which this communication would bring would furnish a great stimulus for going ahead with the building of the stretches between San José and Panama City. It is judged still premature to face at this time the problem of the construction of the eastern section of the route in Panama, which would require considerable expenditures and a great deal of time for construction in an undeveloped and very thinly populated area (around 300 kilometers). Furthermore, it would not yet be possible to establish communication with the Colombian part of the Pan American Highway, because Colombia has many miles of highway still to build in a swampy and unhealthy region.

#### RECOMMENDATION I

With regard to the Inter-American Highway:

(a) Priority should be given to the construction of the now impassable stretches between the Mexican-Guatemalan border and San José, Costa Rica.

/(b) Having finished.



(b) Having finished the first stage of construction, the entire section between the Mexican-Guatemalan border and Panama City should be completed.

In order to carry out part (a) of this recommendation, the construction of some 170 kilometers of highway will be required in Guatemala, Honduras, and Costa Rica, as well as other projects in each of those countries and every one of the other Central American Republics. The required expenditures in each one of the six countries would be as follows: Guatemala, \$4.7 million; El Salvador, \$0.5; Honduras, \$2.9; Nicaragua, \$3.1; Costa Rica \$5.0; and Panama, \$3.0 million.

When the second stage is finished, the Inter-American Highway will have been completely built and paved from the western border of Guatemala all the way to Panama City. The approximate expenditures which would be required in each one of the Central American countries during the second stage are as follows: Guatemala, \$11.4 million; Honduras, \$1.3; Nicaragua, \$2.5; Costa Rica, \$12.5; and Panama \$12.1.

Table 102

Central America: Inter-American Highway Plan

	<u>First stage: 2 years</u>	<u>Expenditures</u> (in millions of dollars)		
		<u>Kms.</u>	<u>Total</u>	<u>Year I</u> <u>Year II</u>
<u>Guatemala</u>				
(A) Construction and paving of the Mexican border-Km. 303 section	40	3.5	2.3	1.2
(B) Relocation and construction of Km. 303-Km. 268 section (without Paving)	35	1.2	--	1.2
			/El Salvador	

El Salvador

(A) Improvement and paving of the last Section: Sirama-Hondurean border	34	0.5	0.5	--
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Honduras

(A) Completion of the grading and drainage work, preparation of the sub-base and of the base, replacement of 3 temporary bridges with permanent ones, and paving of the Salvadorean border-Jicaró Galán section	40	1.0	1.0	--
(B) Completion and paving of the Jicaró Galán-San Lorenzo section	12	0.3	0.3	--
(C) New locating and construction (without paving) of the short-still-unbuilt stretch next to the Nicaraguan border	4	0.2	0.2	--
(D) Construction of 9 bridges (some to replace temporary ones) between Jicaró Galán and Choluteca	--	0.4	--	0.4
(E) New locating and improvement of the stretch between Kms. 110 and 120, and completion of others (without paving) on the Choluteca-San Marcos section	58	1.0	--	1.0

Nicaragua

(A) New location, construction and paving of the Hondurean border-Somoto section, and the building of several bridges	19	0.9	0.6	0.3
(B) Improvement of some sections 10 kms. long between Somoto and Condega and paving and completion of the whole section	32	0.7	0.3	0.4
(C) Improvement of Condega-Esteli section, including construction of permanent bridges	36	1.5	1.0	0.5

Costa Rica

(A) Construction of the sections between the Nicaraguan border and Las Cañas, including bridges	127	5.0	2.5	2.5
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Panama

(A) Improvement and relocation of certain stretches of the David-Remedios section, including the building of 4 bridges	95	3.0	1.5	1.5
--	----	-----	-----	-----

Totals 19.2 10.2 9.0

/Second stage:

Second stage: 5 years

Expenditures  
 (in millions of dollars)

	Kms.	Total	Year III	Year IV	Year V	Year VI	Year VII
<u>Guatemala</u>							
(A) Paving of the Km.303-Km.268 section	35	0.4	0.4	--	--	--	--
(B) Relocation, construction and paving of Km.268-San Cristóbal section	87	4.2	1.6	2.0	0.6	--	--
(C) Relocation, construction, and paving of San Cristóbal-Km. 120 section	60	2.8	--	1.4	1.4	--	--
(D) Relocation, construction and paving Km.22-Asunción Mita	126	4.0	--	--	--	1.4	2.6
<u>Honduras</u>							
(A) Paving of the San Lorenzo-Nicaraguan border section	108	1.3	1.3	--	--	--	--
<u>Nicaragua</u>							
(A) Improvement and paving of Estelí-Sébaco section	46	1.4	1.4	--	--	--	--
(B) Improvement and paving of Rivas-Costa Rican border section	35	1.1	--	1.1	--	--	--
<u>Costa Rica</u>							
(A) Paving of the Nicaraguan border-Las Cañas section	127	1.3	1.3	--	--	--	--
(B) Locating, construction and paving San Isidro del General-Paso Real section, including bridges	90	5.0	1.2	2.5	--	1.3	--
(C) Locating, construction and paving of Paso Real-Panamanian border section, including bridges.	117	6.2	0.2	0.1	2.5	1.2	2.2
<u>Panama</u>							
(A) Locating, construction and paving of Costa Rican border Concepción section	23	1.3	--	--	0.8	0.5	--
(B) Relocating, construction and paving Remedios-Soná	92	5.0	2.0	2.0	1.0	--	--
(C) Relocation, construction and paving Soná-Santiago	47	2.6	--	--	--	1.3	1.3
(D) Completion and paving Concepción-David	24	0.5	0.5	--	--	--	--
(E) Repaving Santiago-Hato River	132	2.7	1.0	1.2	0.5	--	--
Totals		39.8	10.9	8.9	6.8	7.1	6.1

/(b) Pacific Coastal

(b) Pacific Coastal Highway in Guatemala, El Salvador  
and Nicaragua

Sections of this route, which have been planned by the governments of the respective countries with the principal object of communicating the agricultural and stock-raising zones along the Pacific coast with the principal ports and consumption centers, are now in the process of construction in all three countries. Part of the above-mentioned zones are already in production, but others, still practically unused, require means of communication in order to expand acreage under cultivation and increase marketing facilities.

The location selected for the coastal highway in each of these countries is indicated on Map 1, and on Maps 2, 3, and 5, which show the respective transport systems of Guatemala, El Salvador, and Nicaragua.

(i) In the case of Guatemala it is believed that, besides increasing agricultural and livestock production, it will be possible to expand forestry and to establish some industry in this area. The location selected in this country will make use of the greater part of National Routes 6W and 6E, which are now passable the year round from Escuintla to Ayutla on the western border, and to Chiquimulilla, which is at the present time the eastern limit of the highway. The prolongation of this route from Chiquimulilla to Pijije, on the Salvadorean border, offers the possibility of it becoming another trunk highway extending along the entire length of Guatemala, which will absorb a considerable proportion of the international traffic which will develop between the countries of the north and Guatemala on the one hand, and El Salvador

/and the other

and the other Central American countries, on the other. The international connection with El Salvador will be accomplished by means of a short extension of the latter country's projected coastal highway to its western border. At present the project calls for the terminal point to be Hachadura.

(ii) The planned coastal highway in El Salvador now under construction calls likewise for a first-class road from the extreme southwestern region as far as Comalapa on the San Salvador-Zacatecoluca-San Marcos Lempa Highway. Beyond this junction this latter section will constitute the continuation of the coastal highway, passing through Usulután, and will end in a junction with a second-class branch road connecting the city of San Miguel with the Río Grande de San Miguel. The first section of this route, between Hachadura and Comalapa, now under construction, will be located a very short distance from the Pacific coastline, and will link the ports of Acajutla and La Libertad. The eastern section leaves the coast entirely, but crosses a region of greater potential agricultural and livestock raising importance, to which the government is trying to apply part of the benefits of a hydroelectric project, by means of a complementary project of irrigation and drainage. With this end in view an investigation is under way as to the possibilities for obtaining better utilization of the lands located along the southern side of the Lempa River. Considering the great importance of this project, and the high expenditures that will be necessary to carry it out, from every point of view it would be advisable to extend this highway to the east, as far as a point where it would be /feasible to build

feasible to build a connection with the Inter-American Highway by means of a branch leading to Sirama. In this way another means of international communication between Guatemala, Honduras, and El Salvador will be established.

(iii) The Managua-León-Chinandega Highway, now also under construction, is actually the coastal highway of this region of Nicaragua. Beyond Managua it will continue along the Managua-Masaya-Granada route (planned for construction), and the Managua-Costa Rican border eastern section of the Inter-American Highway. Official plans call for the construction of 124 kilometers between Managua and Chinandega, and 43 between Managua and Granada, at an approximate cost of somewhat more than \$3 million. The factors that have determined the importance of this project have already been stated,<sup>1/</sup> the predominant one being the competition with the Ferrocarril del Pacífico whose influence held up the construction of the highway for a time- but now on the other hand the highway project is considered an effective way of complementing the railroad, which has already reached the limit of its freight and general transport capacity. It should be added only that in order to increase even more the benefits that could be derived from this project it is suggested: (a) that the city of Chinandega, now considered the terminal point of this highway, be connected with the port of Corinto, so that part of the export-import traffic could be added to the local traffic that will be carried along this route;<sup>2/</sup> (b) that

<sup>1/</sup> See point 2 (e) in Section III, Chapter IV, of Part I, p. 256

<sup>2/</sup> See in Part III of this Report the recommendation on the Ferrocarril del Pacífico of Nicaragua.

an extension of the highway beyond Chinandega be built to Puerto Morazán and as far as the Honduran border of Nicaragua, with the object of connecting it, by means of a branch leading to Choluteca, with the Honduran section of the Inter-American Highway, and indirectly with the other two great international routes of El Salvador and Guatemala, etc.

With the execution of the entire proposed plan, not only will a new route communicating the capitals of five departments (Chinandega, León, Managua, Masaya, and Granada) be established, but also there will be a new outlet to another Pacific port (Corinto) for Honduras, and another international route for Nicaragua, especially useful for moving the import-export products that may be needed in the region of the Province of Choluteca.

#### RECOMMENDATION II

With regard to the Pacific Coastal Highway:

- (a) that the planned routes in Guatemala, El Salvador, and Nicaragua be constructed to first category specifications;
- (b) that the routes in Guatemala and El Salvador be connected directly with each other, and indirectly with the coastal highway of Nicaragua by means of a section of the Inter-American Highway in Honduras, and a Choluteca-Chinandega branch.

In the possible two-stage plan (see Table 103) for these routes, the cost for each country (Guatemala, El Salvador, Honduras, and Nicaragua, respectively) would be, \$6.8, \$10.3, \$1.1, and \$3.8 million. In this plan the order of priority is indicated, together with the work that it would be necessary to carry out gradually until completion and

/total intercommunication

total intercommunication of these routes.

Table 103

Central America: Plan for the Pacific Coastal Highway

		Expenditure (in millions of dollars)						
		Year	Year	Year	Year	Year		
	Kms.	Total	I	II	III	IV	V	
<b>1. Guatemala</b>								
<b>(Western section: Ayutla-Escuintla)</b>								
(A)	Improvement, relocation of some stretches, construction of bridges and paving of the Ayutla-Coatepeque section	35	0.7	--	--	0.4	0.3	--
(B)	New location, construction of new highway, bridges and paving of Coatepeque-Retalhuleu section	35	1.4	0.8	0.6	--	--	--
(C)	New location, construction of a new stretch, bridges and paving, Retalhuleu-Mazatenango section	21	0.6	0.6	--	--	--	--
(D)	Improvement, relocation of certain short stretches, construction of bridges and paving of Mazatenango-San Antonio S. section	5	0.1	0.1	--	--	--	--
(E)	New location, construction of new highway, bridges and paving of San Antonio S.-Rio Bravo section	25	0.8	--	0.8	--	--	--
(F)	New location, construction of new highway, bridges and paving of Rio Bravo-Popoya section	32	1.6	--	--	0.8	0.8	--
<b>(Eastern section: Escuintla-Pijije)</b>								
(G)	Relocation and new construction of some stretches, improvement and paving of Chiquimulilla-Cerritos section	20	0.4	--	--	--	0.2	0.2

/(H) Construction



(H) Construction and paving of dry-weather route between Cerritos, Pijije, and Río de la Paz, including half of cost of international bridge	30	1.2	--	--	--	0.6	0.6
		6.8	1.5	1.4	1.2	1.9	0.8
<b>2. El Salvador</b>							
(A) New location, construction of highway, bridges and paving of Río de la Paz-Hachadura-Acajutla-Sonsonate Highway section, including half of cost of international bridge	40	2.0	--	--	--	1.0	1.0
(B) Location, construction and paving of section between Sonsonate-Acajutla Highway and a point such as Comalapa on San Salvador-Zacatecoluca Highway	80	4.0 <sup>d/</sup>	1.1	1.2	1.2	0.5	--
(C) Completion, construction of bridges and paving between Zacatecoluca and San Marcos Lempa (probably some 15 kms. of total length of section)	23	0.5	0.5	--	--	--	--
(D) Location, construction of new highway, bridges, drainage structures and paving of San Marcos Lempa-Usulután-San Miguel-El Delirio section	60	2.4	0.4	1.0	1.0	--	--
(E) Location, construction of highway and bridges and paving of section between San Miguel-El Delirio junction and Sirama(I.A.H.)	36	1.4	--	--	--	0.7	0.7
		10.3	2.0	2.2	2.2	2.2	1.7
<b>3. Honduras</b>							
(A) Surveying, location, construction of highway and paving of southern branch of Inter American Highway, between Choluteca and a point of connection on the Nicaraguan border with the							

/prolongation

prolongation of Nicaraguan Coastal Highway	c/	45	<u>1.1</u>	--	<u>0.6</u>	<u>0.5</u>	--	--
			1.1	--	0.6	0.5	--	--
<b>4. Nicaragua</b>								
(A) Surveying, location, construction of highway, structures and paving between Chinandega-Puerto Morazán and Honduran border	c/	55	1.1	--	0.6	0.5	--	--
(B) Completion and paving of highway between Managua and Chinandega, including all kinds of structures		124	1.7	1.7	--	--	--	--
(C) Locating, construction of highway and all kinds of structures on Managua-Masaya-Granada section		45	<u>1.0</u>	--	<u>1.0</u>	--	--	--
			3.8	1.7	1.6	0.5	--	--

- a/ Following the new location, the distance may be shortened from 42 kilometers to about 35.
- b/ The Mission was able to verify the fact that in October, 1952, about 50 kilometers of the Nahualate-Mazatenango-Rio Ocosito section were in the process of construction.
- c/ Estimated length.
- d/ Including the amount to be expended on the project up to 1954.

(c) El Salvador-Honduras Inter-Oceanic Highway. For some time this name has been given to the road which, beginning at the port of La Libertad in El Salvador, leads to the capital of this country and continues along the Northern Highway of El Salvador to join the Western Highway of Honduras, which will connect Nueva Ocotepeque and Santa Rosa de Copán with San Pedro Sula and Puerto Cortés. Although almost all of the Salvadorean section is practically complete, and the Honduran section between San Pedro Sula and Nueva Ocotepeque is under construction, there has not yet been an official agreement between the two countries for the construction of the complete Inter-Oceanic Highway.

This project has the following advantages for El Salvador

/and Honduras:

and Honduras: (a) a part of the imports and exports which El Salvador now carries out through Puerto Barrios in Guatemala and probably a part also of the exports which are now moved through the Salvadorean ports of Acajutla and Cutuco could be transferred to the new route; (b) reciprocally, Honduras could receive an additional quantity of international traffic from the Salvadorean port of Cutuco and obtain imports also through other ports of that country; (c) both countries could increase their commercial interchange of agricultural, livestock, and industrial products and would have the potential opportunity of developing new zones which are now unexploited.

The realization of this project would call for specifications for a first class paved highway, with the object of reducing to the minimum the operating costs of automotive transport. Pertinent to this proposal would be the connection which this part of the highway would establish with the Honduran northern road in San Pedro Sula, as well as the possibility of an international connection with the Guatemalan road to Puerto Barrios, which is now under construction. Both roads would also be adequate for a busy heavy commercial traffic. (See Table 104.)

#### RECOMMENDATION III

With regard to the Inter-Oceanic Highway between El Salvador and Honduras, international communication should be established between the Salvadorean section and the San Pedro Sula-Nueva Ocotepeque section in Honduras, now under construction, and construction should be continued as far as Puerto Cortés in order to achieve completion of the full length of the highway.

Table 104

Central America: Plan for El Salvador-Honduras Inter-Oceanic Highway

	Kms.	Expenditures (in millions of dollars)			
		Total	Year I	Year II	Year III
1. <u>El Salvador</u>					
Improvement of some stretches, construction of some unbuilt structures, replacement of others and the paving of the whole road.	96	2.4	0.6	1.0	0.8
2. <u>Honduras</u>		2.4	0.6	1.0	0.8
(A) Surveying, location and construction of the highway and structures and paving of the Salvadorean border-Nueva Ocotepeque-Santa Rosa de Copán stretch.	100 <sup>a/</sup>	4.0	0.2	2.1	1.7
(B) Location of some stretches, construction of the highway and structures on the Santa Rosa de Copán-La Entrada section (now under construction).	40 <sup>a/</sup>	1.6	1.2	0.4	--
(C) Improvement, construction of bridges and drainage structures and paving of the La Entrada-San Pedro Sula section.	100	1.5	0.9	0.6	--
(D) Surveying, location, construction of the highway and structures and paving of the San Pedro Sula-Puerto Cortés section.	60	1.5	--	1.2	0.3
3. <u>Summary</u>		8.6	2.3	4.3	2.0
El Salvador		2.4	0.6	1.0	0.8
Honduras		8.6	2.3	4.3	2.0
Total		11.0	2.9	5.3	2.8

a/ Estimated length.

/(d) Honduras

(d) Honduras Inter-Oceanic Highway. This name has been given to the route which will connect the port of San Lorenzo (on the Pacific coast) with Tegucigalpa, San Pedro Sula, and Puerto Cortés (on the Atlantic coast). At present it is constructed only between San Lorenzo and Potrerillos, a total length of 379 kilometers (not including the length of the stretch between Jicaro Galán and San Lorenzo, which is included as a part of the Inter-American Highway). It is estimated that the additional section between Potrerillos and Puerto Cortés would amount to some 95 kms. The section between Jicaro Galán and Tegucigalpa--Southern Highway-- is 119 kms. long and is now being improved and paved. The section between Tegucigalpa and Potrerillos --Northern Highway-- is 260 kms. long, and its features and condition, which have been described in Part I of this report,<sup>1/</sup> are for the most part deficient and require considerable improvement work. Likewise, an account has been given of the difficult conditions under which transport is now effected along the whole route and the problems due to its incomplete and deficient construction. All this amounts to a high operating cost for motor transport, unnecessary transshipments and sluggish movements, as well as other disadvantages.

For all these reasons, it would appear to be necessary to undertake new location of sections of this road for the purpose of improving, completing and totally paving it between its terminal points. (See Table 105.) Also, this road constitutes the nerve center of the

<sup>1/</sup> See Section II, Point 4 (a) and Section III, Point 1 (a) of Chapter III, pp. 192 and 201, respectively.

entire Honduran road system and is the route of most importance for the national economy due to its close relation to import traffic from the Atlantic and the Pacific, and to its direct connection with the Inter-American Highway, which communicates it with El Salvador and Nicaragua. Finally, as it communicates the capitals of El Salvador and Nicaragua with that of Honduras, it therefore takes the place of the Inter-American Highway itself, which was to have gone through Tegucigalpa in order to fulfil the fundamental objectives originally assigned it.

RECOMMENDATION IV

Priority should be given to improvement of the constructed section and to the construction of the unbuilt stretches of the projected Honduran Inter-Oceanic Highway, between San Lorenzo and Puerto Cortés, with the object of carrying its construction through to its total paving.

Table 105

Central America: Plan for the Honduran Inter-Oceanic Highway<sup>a/</sup>

	Kms.	Expenditures (in millions of dollars)						
		Total	Year I	Year II	Year III	Year IV	Year V	Year VI
<u>Honduras</u>								
<u>Southern Highway</u> <sup>b/</sup>								
(A) Relocation and reconstruction of several sections, improvement of others, replacement of some bridges, construction of all drainage structures and total paving until it is converted into a first class highway.	119	4.8	2.0	2.0	2.0	--	--	--

/Northern Highway

Northern Highway

- (B) Improvement of the first 36 kilometers beginning at Tegucigalpa, relocation and reconstruction of the next 66 kms. as far as Comayagua, construction of several bridges and drainage structures and paving of the entire Tegucigalpa-Comayagua section.
- (C) Relocation of some stretches, improvement of others, construction of some bridges and drainage structures and paving of the entire Comayagua-Potreriillos section.
- (D) Construction, structures and paving of the Potreriillos-San Pedro Sula section.
- |       |      |     |     |     |     |     |     |    |
|-------|------|-----|-----|-----|-----|-----|-----|----|
|       | 35   | 0.9 | 0.5 | 0.4 | --  | --  | --  | -- |
| Total | 11.1 | 2.5 | 2.4 | 2.2 | 2.3 | 1.0 | 0.7 |    |

- a/ The construction of the San Pedro Sula-Puerto Cortés section has already been considered in the plan for the El Salvador-Honduras Inter-Oceanic Highway.
- b/ This highway is now being improved and reconstructed on contract by the J.A.Jones Construction Co., which began work on it in 1952.

(e) Eastern Highway of Honduras-Northern Highway of

Nicaragua. At present the terminal points of this route in Honduras are Tegucigalpa and El Paraíso (129 kms.), and in Nicaragua, Yalaguina and Dipilto (30 kms), the latter being a branch of the Inter-American Highway. The projected Hondurean section, intended to connect with the Nicaraguan border, would have a total length of 8 to 10 kms., and in Nicaragua, about 12, and the total cost would only be about \$500,000. But it will also be necessary to make considerable improvements on the existing roads in both countries. In order to effect these improvements within a maximum period

/of three years,

of three years, it would be necessary to convert the routes in both countries into a highway of category 1-B. Since the El Espino-Sébaco section of the Inter-American Highway in Nicaragua is going to be improved and paved, it will also be possible to communicate Tegucigalpa and Managua by means of the proposed new route and its continuation (from Yalagüina on) along the Inter-American Highway.

According to the proposed recommendations, it is estimated that Honduras would spend in a three-year period around \$4.3 million (for a total of 139 Kms.: improvement of the constructed part and construction of the new section), and that Nicaragua would spend \$0.7 million (42 Kms.). (See Table 106.)

In Part I of this Report <sup>1/</sup> the importance which the Eastern Highway as well as its communication with that in Nicaragua may have for these two countries has been stressed. A considerable part of the development of the rich areas which these roads are to traverse will be due to the increase in international traffic and the expansion of local markets.

It should be added that, according to the proposed 3-year plan, the annual expenditure of Honduras would be \$1.43 million, and that of Nicaragua would be \$0.23 million, and that this would be very advantageous for the economy of both countries in view of the fact that they would begin to reap benefits from the project immediately upon completion of the first stage, which would make possible international communication.

<sup>1/</sup> See Section III, Point 1 (c) of Chapter III, p. 203



RECOMMENDATION V

Communication should be established between Honduras and Nicaragua by means of a highway from Eastern Honduras (Tegucigalpa-El Paraíso) to Northern Nicaragua (Yalaguina-Dipilto), and both countries should undertake the progressive improvement of their respective sections over a period of 3 years.

TABLE 106

Central America: Plan for the Eastern Highway of Honduras and Northern Highway of Nicaragua

	Kms.	Total	Expenditures (in millions of dollars)		
			Year	Year	Year
			I	II	III
<u>Honduras</u>					
(A) Correction of alignment and improvement, including widening, drainage, replacement of some bridges and paving of the entire Tegucigalpa-El Zamorano section.	35	1.1	0.3	0.4	0.4
(B) New location, structures and reconstruction of some stretches, improvement and structures on the rest and paving of the entire El Zamorano-Danlí section.	75	2.7	1.0	0.9	0.8
(C) Improvement, some structures and paving of the Danlí-El Paraíso section.	19	0.2	0.1	0.1	--
(D) Surveying, location, construction and paving of the El Paraíso-Nicaraguan border section.	10	0.3	0.2	0.1	--
<u>Nicaragua</u>					

Nicaragua

(A) Location, structures and reconstruction of some stretches, improvement, structures and widening of the Yalagüina-Dipilto section.	30	0.4	0.2	0.2	---
(B) Surveying, location and total construction of the new Dipilto-Hondurean border section.	12	<u>0.3</u>	<u>0.2</u>	<u>0.1</u>	<u>---</u>
		0.7	0.4	0.3	---
<u>Summary</u>					
Honduras		4.3	1.6	1.5	1.2
Nicaragua		<u>0.7</u>	<u>0.4</u>	<u>0.3</u>	<u>---</u>
Total		5.0	2.0	1.8	1.2

(f) Other international routes.

The following deserve special consideration among the outlined plans:

(i) Third International Honduras-El Salvador Highway.

This route will consist of the proposed road in Honduras: Comayagua-La Paz-Marcala-Salvadorean border (estimated length: 90 kilometers), and that in El Salvador: Military Route Junction-San Francisco (Gotera)-Jocaitique-Hondurean border (estimated length: 55 kms.). From the military Route, which originates on the Inter-American Highway at San Miguel to San Francisco (Gotera), an all-weather road of 13 kilometers has been constructed, and the Ministry of Public Works plans to prolong it as far as Meanguera, a short distance from the Hondurean border. Honduras is at present constructing a road from Santa Rosa de Copán (on the

(Western Highway)

Western Highway) to Gracias and La Esperanza, departmental capitals of Lempira and Intibucá, and it is probable that this road will be prolonged as far as Marcalá. It would be of considerable benefit to the economy of the country if the departmental capitals of La Paz and Comayagua were also communicated by this important route. One of its terminal points will be on the Western Highway and the other on the Northern Highway, thus completing one of the basic circuits of the Honduran road system. To reinforce this importance through its conversion into a highway for international transport, it would be sufficient to construct a relatively short branch between Marcalá and the Salvadorean border (once a preliminary survey has established the possibility of its construction) and extend the projected Salvadorean branch from Meanguera to the border.

Assuming that the route proves to be difficult to locate and construct in Honduras and that it is built as a highway of category 1-B along its entire length, it can be estimated that the cost of construction would be \$4.7 million and that it could be completed in two years beginning with year III of the general plan proposed, in order to first give attention to the completion of the lengthwise Honduran highway, Santa Rosa de Copán-Gracias-La Esperanza-Marcalá. Of the total estimated cost, 65% would pertain to Honduras, and the rest to El Salvador. (See Table 107.)

#### RECOMMENDATION VI

A highway should be constructed  
between Honduras and El Salvador, from

Comayagua

to be assigned to Comayagua through La Paz, Marcala, and San Francisco (Gotera) ending at the Military Route, over a period of 2 years beginning in year III of the general plan and with specifications corresponding to category 1-B.

(ii) Third International Guatemala-El Salvador Route.

This will come after the Inter-American Highway and the Coastal Highway, and will consist of the San José Acatempa-Jalpatagua-Río de la Paz road (40 kilometers), under construction in Guatemala, and the Sonsonate-Ahuachapán-Las Chinamas-Guatemalan border road (59 kilometers), already constructed and passable the year round, in El Salvador.

Here it is a question of the connection of two roads which will be practically linked, within a short time, but to which more importance should be given, constructing them according to higher specifications.

The fact that the highway might connect two regions of considerable potential agricultural and livestock importance and that these areas may be directly communicated with the port of Acajutla, with Sonsonate, Santa Ana, and Ahuachapán, which are important centers of production and commerce in El Salvador, and with the Guatemalan and Salvadorean sections of the Inter-American Highway, characterizes it as a potentially very advantageous factor for the economies of the two countries.

It would be necessary to complete the construction of the Guatemalan highway and to improve progressively that of El Salvador until they are converted into a route of Category 1-B. It is estimated that the total cost of converting this route into an important international road would be about \$2 million.

RECOMMENDATION VII

That El Salvador and Guatemala jointly carry out the construction of the San José Acatempa-Río de la Paz-Sonsonate highway to convert it into an international route of category 1-B.

(iii) First International Guatemala-Honduras Highway (Zacapa-Chiquimula-Esquipulas-Nueva Ocotepeque).

There already exists a 50-kilometer all-weather road with relatively deficient features in the Guatemalan section between Zacapa and Quezaltepeque (National Route No. 20), and a 25-kilometer road between Quezaltepeque and Esquipulas (National Route No. 18). From Esquipulas to the Honduran border there is also a 10-kilometer road, with very poor features and open to traffic only in the dry season.

From Nueva Ocotepeque, an important point on the El Salvador-Honduras Inter-Oceanic Highway, there could be constructed a branch of some 15 kilometers to the Guatemalan border. And in Guatemala it will be necessary to improve the existing road with the object of transforming it into a route of higher category between its terminal points.

If this highway were prolonged to join the Guatemala-Puerto Barrios road (now under construction) it would be possible to establish international communication between the two countries, at the same time connecting two important trunk routes: the El Salvador-Honduras Inter-Oceanic Highway and the Atlantic Highway in Guatemala, and also directly stimulating the development of the Departments of Zacapa and Chiquimulas (Guatemala) and of Ocotepeque (Honduras), as well as

/indirectly stimulating

indirectly stimulating that of the neighboring zones of these two countries and of El Salvador.

The service of the proposed highway would also be extended with the object of establishing coordination with that of the branch of the international railway between Zacapa and Metapán, especially for those products whose transport would be bulky or inconvenient by highway.

It may be estimated that the total length of the road between the two trunk routes mentioned above would be about 115 kilometers and that the approximate cost of converting it into a route of Category 1-C, or its equivalent, would be about \$2.8 million. Of this sum approximately \$2.3 million would pertain to Guatemala, and the rest to Honduras. (See Table 107.)

It is suggested that this route be converted into the proposed international route during years IV and V of the plan, when the two important trunk routes to be connected by it are already completed or almost completed.

#### RECOMMENDATION VIII

That a connecting highway be established between the Atlantic Highway in Guatemala and the Western Highway in Honduras and an effort be made to utilize all, or almost all, the sections of national routes numbers 20 and 18 between Zacapa and Esquipulas, with construction of a new road between the latter point and Nueva Ocotepeque.

/Table 107

Table 107

Central America: Plan for other proposed international highways

	Kms.	Total	Expenditures (in millions of dollars)				
			Year	Year	Year	Year	Year
			I	II	III	IV	V
<u>(1) Third International Honduras-El Salvador Route</u>							
<u>Honduras</u>							
(A) Improvement and paving of the road from Comayagua to La Paz.	20	0.4	--	--	0.2	0.2	--
(B) Surveying, location, construction and paving of the La Paz-Marcala-Salvadorean border section.	70	<u>2.5</u> 2.9	--	--	<u>1.3</u> 1.5	<u>1.2</u> 1.4	--
<u>El Salvador</u>							
(A) Improvement and paving of the Military Route-San Francisco (Gotera) section, including structures.	13	0.3	--	--	0.2	0.1	--
(B) Surveying, location, construction and paving of the new San Francisco-Hondurean border section, including structures.	42	<u>1.5</u> 1.8	--	--	<u>1.0</u> 1.2	<u>0.5</u> 0.6	--
<u>Summary</u>							
Honduras		2.9	--	--	1.5	1.4	--
El Salvador		1.8	--	--	1.2	0.6	--
Total		4.7	--	--	2.7	2.0	--
<u>(2) Third International El Salvador-Guatemala Route</u>							
<u>Guatemala</u>							
Improvement, including location of some stretches, bridges and drainage structures and paving of the San José-Acatempa-Jalpatagua-Río de la Paz section.	40	<u>0.8</u> 0.8	<u>0.4</u> 0.4	<u>0.4</u> 0.4	--	--	--

/El Salvador

El Salvador

Improvement of the entire Sonsonate-Ahuacapan-Las Chinamas-Rio de la Paz Road:	59	<u>1.2</u>	<u>0.6</u>	<u>0.6</u>	--	--	--
		1.2	0.6	0.6	--	--	--
<u>Summary</u>							
Guatemala		0.8	0.4	0.4	--	--	--
El Salvador		<u>1.2</u>	<u>0.6</u>	<u>0.6</u>	--	--	--
Total		<u>2.0</u>	<u>1.0</u>	<u>1.0</u>	--	--	--

(3) First International Guatemala-Honduras Route

Guatemala

(A) Improvement of the road be- tween Zacapa and Esquipulas, including widening, relocat- ing of some stretches, struc- tures and paving	75	1.5	--	--	--	0.8	0.7
(B) Surveying, location, cons- truction, structures and paving of the Esquipulas- Hondurean border section.	10	0.3	--	--	--	0.2	0.1
(C) Surveying, locating, cons- truction, structures and paving of the Zacapa- Atlantic Highway Junction section.	15	<u>0.5</u>	--	--	--	<u>0.3</u>	<u>0.2</u>
		2.3	--	--	--	1.3	1.0

Honduras

Surveying, location, cons- truction, structures and paving of the Nueva Ocote- peque-Guatemalan border section.	15	<u>0.5</u>	--	--	--	<u>0.3</u>	<u>0.2</u>
		0.5	--	--	--	0.3	0.2
<u>Summary</u>							
Guatemala		2.3	--	--	--	1.3	1.0
Honduras		<u>0.5</u>	--	--	--	<u>0.3</u>	<u>0.2</u>
Total		<u>2.8</u>	--	--	--	<u>1.6</u>	<u>1.2</u>

3. Additional Recommendations for Improving the System of Highways  
for International Traffic

(a) Desirability of coordinating construction or improvement  
/activities



activities on highways for international traffic between two or more countries. As a result of international agreement, it may happen that upon deciding to construct a road along which traffic may be carried on between two or more countries, that the construction may not be coordinated in such a way that the expenditures made bring about the benefits foreseen for the finished project. As a consequence of this, countries which apply their funds most rapidly to road projects may suffer from the results of lack of synchronization. This situation is aggravated in the case of those countries having limited financial capacity, because the expenditures made remain unproductive during a more or less long period, until such time as it is possible to make connections with other sections of the international route, or until a greater utilization of it can be made for domestic traffic.

In order to avoid this, it is appropriate to set down in a precise manner the conditions under which the project is to be carried out, according to a definite plan of execution which includes both the date of initiating and terminating the different parts of the project.

#### RECOMMENDATION IX

There should be due coordination between the different countries with regard to construction or improvement activities of their respective sections of an international highway project, and in the case of international agreements being signed for the construction of a particular route the specifications should be established precisely, as well as the time limits for the execution of each part of the project.

/(b) Uniformity

(b) Uniformity of the basic characteristics of highways for international transport. With the aim of obtaining an effective co-ordination of international transport activities, it is advisable to adopt on the highways that serve this purpose a relative uniformity in certain fundamental characteristics, so as not to give rise to traffic difficulties or deterioration of the road itself. The basic features which it is necessary to bring into conformity within certain limits are the following: (1) width of the wearing surface and of the shoulders; (2) width of bridges; (3) maximum grade; (4) maximum distance between changes in grade; (5) maximum radius of curves; (6) minimum resistance of the sub-structure; (7) minimum resistance of the super-structure; (8) minimum weight resistance of bridges.

The uniformity that it is wished to bring about in the features mentioned should be interpreted within a highly flexible framework. It is not indispensable that the specifications for the geometric design of a highway in one country be identical with those corresponding to the route (or routes) where the traffic will continue in the neighboring country. It is only required that the characteristics of the highway in the latter country be sufficiently adequate so that the international traffic can be carried on normally and under relatively similar conditions between the two countries. The objective is that there be no great difference in costs of operation between one country and another, and that in neither country the road structure become deteriorated for not being adapted to the same type of traffic.

The total cost of operation in automotive transport

includes

REFERENCE TO

includes not only the expenses relating to the vehicles themselves but other direct costs such as operating personnel and such indirect costs as the transportation companies or individuals may have. Consequently, the time consumed in transport constitutes a weighty factor in operating costs, and it would be both disadvantageous and unsuitable if, with the object of reducing these costs, a country should make large expenditures, assigning first-class specifications to an international highway, only to find that the same had not been done in the neighboring countries with which this traffic is connected. In such a situation, the latter country would benefit from the expenditures of the former, subtracting from it --with no compensation whatever-- a considerable part of the advantage it would have under similar operating conditions.

In such a case, the damage to the country at a disadvantage comes from the greater fuel and tire consumption, wear and tear, and operating time of their vehicles over the inferior routes of the neighboring countries, and from the deterioration of its good highway caused by the vehicles of the other countries. One might add the harm done by the fact that it may be impossible to use the same type and capacity vehicle on the roads of one country as in other countries or by the limitations imposed upon the traffic by the deficient resistance of the road structure or of the bridges. It is heavy commercial traffic which suffers most from the effects of such a disparity, while light commercial and tourist traffic is much less affected.

Nevertheless, it should be borne in mind that the foregoing does not hold true in the case of those secondary routes which

/-although

-although connected with an important international highway of another country- have as yet a small volume of traffic and few possibilities of increasing it in the near future, such that a greater expenditure in their improvement would not be warranted.

#### RECOMMENDATION X

In those cases in which there is no pronounced difference of traffic between the countries, it is desirable that in so far as it is economically warranted, a relative uniformity of the basic features of the highways should be achieved.

(c) The need for each of the countries in which international traffic is effected to maintain in a good state of upkeep the highways and structures serving this traffic. It is not enough to obtain a relative uniformity in fundamental highway features on the different sections of an international highway. It is necessary that these roads and structures be maintained at all times in the best possible condition in order that traffic may be carried on within a normal pattern and at low cost. Furthermore, it is not enough that some countries keep up their section in good condition if the others do not. With respect to this, an analysis similar to that made in the foregoing section (b) is applicable, as regards to the effects, good and bad, for the countries concerned of disparity in the physical features of an international highway.

Therefore, it is advisable that all countries served by an international route maintain in the best possible condition their

/respective

respective sections in order that traffic may be carried on in all of them under similar conditions.

#### RECOMMENDATION XI

Each of the countries communicated by an international highway should try to maintain its respective section in the best possible condition by sufficient and timely appropriation of the necessary funds, and in accordance with the importance of the route.

#### II. Other Regional Problems and Recommendations for their solution

There are various problems meriting special consideration which can be classified as regional in nature. Their presence may be proved to exist in each one of the countries of Central America, and their solution in some cases demands a large investment of capital and time, as well as a careful selection of personnel. These problems, concerning which a general recommendation is being made, are the following:

##### 1. Limited Technical and Trained Personnel

None of the official organizations charged with the responsibility and work of planning, building and carrying out improvement and maintenance of roads and highways in Central America has at its disposal a sufficient number of engineers or specialized staff in each one of those tasks. Nor are there at hand the indispensable personnel trained as operators and mechanics, or work superintendents and foremen, nor are there the required number of personnel specialized in the building of  
/highway

highway structures: master masons, masons, carpenters, blacksmiths, etc.

If any one of the countries under study had to carry out plans for highway construction of relatively considerable magnitude, it would find it impossible to complete the project under normal conditions of cost and construction time, and it would be forced to bring in a large part of the trained and technical personnel required from foreign countries, or to turn over the project to foreign contractors. The result in either case would be a considerable increase in the cost of the project.

This problem is accentuated by the fact that an appreciable part of the qualified technical personnel at present available has not as yet acquired sufficient experience and technical specialization.

Each of the different phases of a highway project requires a careful selection of personnel and of the procedures to be applied, since the organizations responsible for the execution of the project are faced with numerous and important problems whose solution depends mainly on carrying out the proposed objectives. It is evident that an inadequate or only partially satisfactory solution to a problem on an important highway project will reflect directly in a more or less considerable increase in the cost, or in the partial or total abandonment of one or more of the proposed objectives.

The importance of this problem is of such a nature, that it might be said that the success in the planning and execution of a system of transportation depends above all on the quality and

/experience

experience of the specialized technical personnel so necessary for carrying it out. In the Central American countries the problem takes on even greater importance because of their at present low economic capacity and because of the high cost of constructing and maintaining roads.

It is a difficult task to determine precisely to what extent a highway project should be planned and executed in such a way as to obtain the greatest possible economic and social benefit with the least possible capital investment commensurate with low cost maintenance. The factors involved in this problem are numerous and make it highly complex. Therefore, each one of them should be analyzed and duly evaluated. A project must take into account not only construction costs, but also those which its maintenance and operation will imply. These last will be greater insofar as the general characteristics of the road and plan of the route are of inferior quality, and insofar as the capacity for traffic is limited. Therefore, in many cases it is best not to reduce too much the initial money outlay necessary for construction, but rather, to try to reduce to the minimum the operating costs of the vehicles, the annual amortization charges and interest on capital, and the maintenance costs. From the intelligent economical coordination of all these factors should arise the decision of the technicians that will bring about the solution of these problems.

The methods used in the construction and maintenance of roads and highways are still deficient in the majority of Latin American countries.

countries. This is evident if one considers the productivity reached in some of the more highly-developed countries, as a result-above all of the high degree of mechanization to which they have adapted their economic activities.

Although in the Latin American countries it would be impossible to justify economically a capital-labor relationship or a degree of mechanization as high as in other economies which have a relatively greater abundance of capital, nevertheless, considering the high present cost of highways in Central America, it would seem advisable to arrive at a greater degree of mechanization. It is necessary to bear in mind that in the last few years there have been introduced -above all in the United States- special motorized equipment for the grading and paving of highways which has been found to be much more efficient. This equipment is capable of carrying out with extraordinary speed and economy operations of excavation, distribution, and levelling of great masses of earth and other materials, as well as the preparation, mixing, transport, and distribution of concrete and asphalt aggregates and other materials necessary for paving.

In spite of the constant improvements made in Central America in the construction and maintenance activities during the last 15 years, especially in the years immediately following the Second World War, it is necessary to introduce still further innovations in the systems used, and to improve the organization of this work, such as introducing mechanization gradually in those sectors where road building is still carried on with primitive methods.

/The acquisition



The acquisition of modern construction and maintenance equipment requires high capital investment, which is justified only when it is possible to obtain low construction costs with a considerable saving in time with the new equipment. In order to realize these basic objectives it is necessary for the personnel in charge of equipment to be both efficient and highly responsible for its operation and maintenance. It is not enough to know how to operate the machinery; it is essential to operate it with the greatest degree of efficiency, which implies obtaining the highest yield at the least possible cost. In acquiring such a high degree of efficiency two factors play an important part: (a) the technical ability applied to operation; and (b) the effective attention given to maintenance of the equipment.<sup>1/</sup>

From the foregoing there stands out the immediate necessity for the Central American countries to (1) increase the amount

<sup>1/</sup> Take, for example, the everyday case of an ordinary gasoline mechanical excavator (90 degrees rotation) with a capacity of 2 cubic yards (1.529 cu.m.) to which has been assigned an average work order of 222 to 245 cu.m. per hour in loose earth (from 111 to 126 cu.m. in hard soil), and whose consumption of fuel should not exceed 43.5 liters of gasoline and 0.65 of oil per hour; but which, upon operating, only moves 100 cu.m. per hour in loose earth (and 50 in hard ground), using 58 liters of gasoline and 0.86 liters of oil. It is obvious that as a result of inefficient work turned out alone the cost of excavating per cubic meter has been doubled (and more than doubled with the greater overhead and unforeseen costs); to this must be further added the 33% greater expense for fuel and lubricants, and the already high depreciation cost (for lack of adequate maintenance); and lastly, the time lost and upsets in schedules on the originally proposed plan. Thus, the lack of an efficient and responsible operator has made the use of this costly excavator under the indicated conditions unsuitable and uneconomical.

/of specialized

of specialized technical personnel<sup>1/</sup> through the establishment of efficient schools of training for specialization in both theory and practice; (2) bring about an increase in the quantity and quality of personnel in the fields of mechanics, electricity, and equipment operation; and building, masonry, carpentry, blacksmithing, etc. (specialized in the building of highway structures), and contractors, supervisors, etc. through the establishment of workshop-schools and others for skilled training.

2. Scanty Technological Investigation of Soils and Materials Used in Highway Construction

The scientific study of the properties of soils constitutes an essential part of the engineering studies made previous to the design of the cross section and to the location of a route. Through this type of study it has been possible to create a new technique of soil stabilization, which has been successful in reducing considerably the cost of constructing certain types of roads. This has also permitted the construction of road bases which can withstand effectively and permanently the heavy loads transmitted through the wearing surfaces of high-quality roads.

1/ This personnel includes: (a) engineers in the following special fields: planning, studies and projects, road construction, planning and building of bridges, pavement construction, drainage, etc., maintenance of roads and bridges, operation and maintenance of equipment, analysis and study of soils, testing of construction materials, structural engineering and methods of technical and administrative organization; (b) surveyors, accountants, superintendents, administrative chiefs, etc.

/The fact that

The fact that such results have been obtained acquires special significance for those cases in which it is necessary to construct many secondary and feeder roads, where it is not advisable to spend (because of limited traffic) large initial sums either for construction or maintenance in order to have an all-weather road. Moreover, these new methods make it possible to reduce considerably the thickness of the wearing surface of high-cost first-class highways.

In the special case of the Central American countries, where it is necessary to build costly primary road networks as well as numerous secondary and farm to market roads, special attention should be given to the methods of soil stabilization with the object of (1) reducing the construction, improvement and maintenance costs of their highways; (2) making them permanent routes passable at all times; and (3) making it possible that they can be economically and technically converted into highways of superior category.

Notwithstanding the apparent complexity of the problem, the necessary operations involved in a more or less permanent stabilization of the soil constituents of a road have reached a high level of mechanization which facilitates the process and reduces considerably both the costs and time involved.

Another aspect which requires careful attention is determining the properties of construction materials. On the fitness of their selection depends not only the cost of construction but also the quality of the road. It is indispensable that tests and experiments which are now universally accepted, be carried out in order to get satisfactory results in the building of highways and highway structures.

/Lastly, the results

Lastly the results obtained in these investigations as well as in the study of the geological, hydrographic, and climatic conditions of the region, will determine the methods of construction and maintenance of roads which best and most economically can be adapted to this area.

3. Scanty Compilation of Statistical Data in Relation to Road and Highway Activities.

These data refer to (1) inventory and classification of roads in each of the countries of Central America; (2) total and unit costs of construction and maintenance; (3) average and peak traffic density on the most important highways; (4) technical personnel and personnel trained for highway service; (5) labor utilized on road activities; (6) wages and salaries; (7) relative efficiency of mechanized and manual labor; (8) inventory of units of mechanical equipment in service; (9) annual amounts spent on construction, improvement and maintenance of roads; and (10) the annual progress of these activities.

The importance and need for this statistical information needs no further comment. It only remains to emphasize the importance of keeping a permanent registry of traffic density along the most important highways of a country. The statistical information on traffic at present available is insufficient and includes only recent years. This should be continued in a methodical way, and efforts made to improve it gradually.

A primary function of official organizations concerned with roads and of the Traffic Departments should be to keep up

/constantly

constantly a statistical record of traffic along the principal roads of the country. The demand for highway services can be determined only through a study as close as possible of the intensity, volume and kind of traffic carried on. Effective control (in the field) should be exercised by any of the above-mentioned organizations over periods of time sufficiently long so as to permit results giving average (and maximum) traffic densities as near as possible to the actual situation.

RECOMMENDATION XIII

1. That the governments take the necessary steps for

(a) the establishment of technical training schools and workshop-schools for theoretical and practical specialization and the training of road personnel, including both professional and non-professional; or, short of this, the creation of departments charged with the teaching of these subjects in present schools;

(b) the carrying out of research on soils and highway construction materials, and the installation of a regional laboratory for the study and analysis of the first and the testing of the second;

2. That the governments study the possibility of joint action for establishing common standards for the registration of road activities in their respective countries, and for the compilation of statistical data related to such activities.

/Appendix on Costs

APPENDIX ON COSTS AND SPECIFICATIONS

To draw up a basic general plan for international and Domestic highways in the Central American countries the Mission has found it necessary to establish certain categories with their respective specifications and, as a consequence, to adopt certain assumptions regarding costs.

The scale of categories established is shown below. Rather than to fix definite standards of construction, its purpose has been merely to illustrate the different characteristics that highways should have according to their importance, their ability to develop traffic, and the possibility of their future connection with other means of transportation.

Three general categories of highways are considered, divided in turn into three subcategories. It is believed that these categories will meet the immediate needs in a general way. Undoubtedly there exist highways in a category higher than I-A, but it has been assumed that the high cost and specifications of the Inter-American Highway limit at present the choice, while at the same time they will satisfy efficiently the traffic demands over a more or less extended period.

Scale of road categories which could be adapted to  
the proposed highway plan

I First Category

1. Paved Highways

/I-A Penetration

I-A Penetration or mixed asphaltic macadam

Maximum grade = 6%  
Minimum width of pavement = 6 m.  
Minimum ditch to ditch width = 10 m.  
Minimum radius of horizontal curves = 50 m.  
Minimum design speed = 60 km./hr.

I-B Waterbound macadam plus surface treatment with bituminous products

Maximum grade = 8 %  
Minimum width of pavement = 5 m.  
Minimum ditch to ditch width = 9 m.  
Minimum radius of horizontal curves = 50 m.  
Minimum design speed = 40 km./hr.

II Second Category

2. Unpaved highways with the addition of some impermeable and dust preventive material

2-A First-class waterbound macadam

Maximum grade = 8 %  
Minimum width of wearing surface = 5 m.  
Minimum ditch to ditch width = 8 m.  
Minimum radius of curves = 35 m.  
Minimum design speed = 40 km./hr.

2-B Second-class waterbound macadam

Maximum grade = 8 %  
Minimum width of wearing surface = 5 m.  
Minimum ditch to ditch width = 7.40 m.  
Minimum radius of curves = 30 m.  
Minimum design speed = 35 km./hr.

2-C Stabilized soil bound with clay and integrated with a sufficient proportion of gravel and sand

Maximum grade = 10 %  
Minimum width of wearing surface = 4.80 m.  
Minimum ditch to ditch width = 7 m.  
Minimum radius of curves = 30 m.  
Minimum design speed = 25 km./hr.

III Third Category

3. Compacted rock base and surfaced roads.

3-A Third-class waterbound macadam

Maximum grade = 10%

Minimum width of wearing surface = 4.80 m.

Minimum ditch to ditch width = 7 m.

Minimum radius of curves = 30 m.

Minimum design speed = 25 km./hr.

3-B Gravel or crushed rock mixed and consolidated with clay and sand  
(without soil stabilization)

Maximum grade = 10 %

Minimum width of wearing surface = 4.60 m.

Minimum ditch to ditch width = 6.60 m.

Minimum radius of curves = 25 m.

Minimum design speed = 20 km./hr.

3-C Gravel or crushed rock placed and consolidated over the natural  
terrain (with or without the addition of sand and clay, as  
required)

Maximum grade = 12 %

Minimum width of wearing surface = 4.40 m.

Minimum ditch to ditch width = 6 m.

Minimum radius of curves = 25 m.

Minimum design speed = 15 km./hr.

Although costs have only been estimated, the figures attempt to reflect the local average costs in the different Central American regions. Hence, in each case the estimated cost should be interpreted with caution as a rough approximation which should take into account the extent and specifications of the proposed road. In some cases specific recommendations refer only to improvement of an existing road and not to its paving, in others only pavement is required; and in still other cases the reconstruction of the highway is in fact necessary. All these alternatives have been considered in the data given in the detailed plan for each highway.



Chapter II

ROAD TRANSPORT

In order to facilitate the development of regional trade and commerce, and promote the economic integration of the Region, it is essential that persons and goods should be able to move speedily and economically across national frontiers. If this goal is to be achieved it will be necessary firstly to plan and construct an adequate regional highway network, secondly to remove the existing barriers with respect to international traffic, and thirdly to improve the standards and increase the number of international road services.

The result of the present system has already been noted in the Part I of this report, which clearly shows that the existing international services are limited, irregular and inadequate. For instance, as regards passenger services, only in the case of El Salvador and Guatemala are these fairly frequent and efficient. But the total number of buses engaged in this traffic is less than a score, and only one of the services approaches in any way the standards desirable for international passenger traffic. Rates vary between 1.5 and 2.5 cents, per passenger kilometer, and whilst these fares are not excessive, nevertheless, the irregularity of the services, the lack of comfort, the poor condition of vehicles, as well as the time taken for the journey -- the average speed being about 30 kilometers per hour -- discourage travelers from using the road either for touristic or business purposes, with the

/result

result that at present a large percentage of potential road traffic is diverted to air travel in spite of the additional cost.

Much the same position exists as regards the movement of goods traffic. There are a few sporadic truck services, but the total traffic is not impressive. In El Salvador --which has by far the largest volume of international road traffic-- 10,000 tons were imported by road in 1951 and 6,000 exported. Rates for international traffic vary between 9 and 16 cents per ton-kilometer, and cannot be considered unreasonable taking all factors into consideration.

The impression created by these comparative figures is that either there is very limited traffic between the Central American countries or that alternatively other means of transport than road are employed. The former is definitely wrong, since an investigation of export and import trade indicates that regional traffic has increased, and in the future could expand. Similarly a review of existing transport facilities indicates that road transport is the obvious medium for this regional trade, where there are connecting roads, since apart from the railway line between Guatemala and El Salvador, there are no through railway systems in the region, nor are there any reasonable coastal shipping services, with the result that only air and road transport are the possible alternatives. Air transport is not normally an economic proposition for the carriage of heavy cargo and low value goods, which made up the major part of the regional traffic movement; however, the existing unsatisfactory road services have made it necessary for the present to utilize air transport for a considerable amount and type of traffic normally carried by road.

/Since

Since therefore there would appear to be a reasonable potential traffic demand, and as road transport seems to be the most satisfactory medium, the obvious question arises as to why there is at present so little actual road movement. The answer is threefold. Firstly it is due to the complete lack of an adequate regional highway system, secondly to the various administrative barriers which restrict movement, and thirdly to the vicious transport circle which arises from the services being sporadic, unsatisfactory, and unreliable, so that merchants are not inclined to utilize truck transport for their goods, nor do tourists or other travelers favor transport by bus for similar reasons, which in its turn limits the available traffic thus affecting the efficiency of the services and giving rise to reluctance on the part of users to employ them.

The problem of a regional highway network and recommendations as regards ways and means for its planning and construction have already been discussed in the previous chapter<sup>1/</sup>. There remains therefore the problem of how to remove existing administrative obstacles and break the present vicious circle which restricts the development and growth of international road services.

These obstacles and difficulties may broadly speaking be classified as follows:

I. Complicated customs and other frontier formalities for:  
(1) persons, (2) vehicles, and (3) goods.

II. Lack of security of tenure for services, and inadequate operating capital.

<sup>1/</sup> See Part II. Chapter I, p. 382

/III. Excessive

III. Excessive operational costs of services.

IV. Conflicting national traffic regulations.

V. Other obstacles: (1) traffic police checks;  
(2) lack of accident prevention methods; and (3) lack of garage and  
other service facilities.

I. Customs and Frontier Formalities

1. For persons

Typical of the procedure facing a Central American national wishing to travel to a neighboring country is that of a Salvadorean desirous of visiting Guatemala, which is as follows:

Before leaving El Salvador, a traveler must obtain an exit visa; to obtain the exit visa he has to obtain an exit permit and to obtain the exit permit it is necessary to have three certificates of solvency: (a) Revenue Department (covering income tax, highway tax and pavement tax); (b) Communications (covering telephone account); (c) Municipality (covering water, light and garbage collection). After having gone through this lengthy and complicated procedure to obtain the exit permit, he must then proceed to the Immigration Department with birth certificate, photographs, finger prints, etc. After this he must proceed to the Foreign Relations Department which requires more photographs and then, if fortunate, he can get the exit visa. Even then the visa is only valid for 15 days and the whole complex and protracted procedure must be renewed should another journey be envisaged.

Faced with these difficulties, it is natural that the businessman restricts his journeys to the minimum even to the detriment of trade. The would-be tourist may be put off altogether and decide not to travel. Goods traffic by road is delayed due to the fact that the driver has to wait so long for his necessary permits. Thus the whole transport system is disorganized and discredited by these protracted administrative regulations.<sup>1/</sup>

<sup>1/</sup> See Inland Transport in El Salvador, United Nations, Doc. ST/TAA/J. El Salvador/R.11. New York, 1952, p. 84.

/Similar

Similar procedural regulations exist for travel between most of the Central American countries. This is not exceptional to the region, since obstacles to international movement have been experienced in most parts of the world, and accordingly world wide action has been taken to improve the existing situation, typical of which was the convening by the United Nations of a meeting of experts to prepare for a World Conference on Passport and Frontier Formalities at Geneva in 1947.

Some of the more important recommendations contained in the report of this Conference are particularly relevant to the present position, being

as follows:

I. Documents

A. Passports

(i) The general abolition of the requirement that a passport be carried for purposes of foreign travel is not feasible at present; but bilateral or multilateral agreements to waive such a requirement should be encouraged on the basis of reciprocity.

B. Visas

(ii) The abolition of visas which has already taken place between several countries by a series of bilateral agreements is recognized as an appreciable advance and the Meeting recommends that negotiations for further agreements should be undertaken with the general abolition of visas as its ultimate objective.

(iv) Visas should as far as possible be made valid for any number of journeys within the period in which they can be used. It is desired that they should be valid twelve months or more from the date of issue.

1/ Extract from "Recommendations" contained in the Report of the Meeting of Experts to prepare a World Conference on Passports and Frontier Formalities. United Nations, Doc. E/CN.2/124. Annex 1.

/(vii) The objective

(vii) The objective should be the universal abolition of visa fees. Pending complete abolition of visa fees, they should be made as low as possible.

(xii) The formalities to be undergone when applying for a visa should be simplified and in particular the number of documents required in support of an application for a visa should be kept to the irreducible minimum.

## II. Frontier Formalities

(a) Frontier control should be carried out as expeditiously as possible. Governments should consider what arrangements they might make, where necessary by bilateral agreement, in order that control of passports, luggage, currency, and, where applicable, preliminary sanitary control, be combined and carried out simultaneously or at least in immediate succession, during the course of the journey; for example, at sea, on board the ship; by rail, in the train, either on route or when halted at a frontier station; by road, in adjacent premises. If control en route be impracticable, these formalities should be confined if possible to a single frontier post where authorities of both countries would carry out their duties.

### C. Customs inspection of baggage

(iii) (a) While examination of baggage normally takes place at points of entry or exit, encouragement should be given to alternative arrangements for the examination, at the passenger's option, of registered baggage at inland customs stations either, as regards export control, before dispatch to the frontier en route for abroad, or, as regards import control, after crossing the frontier on arrival from abroad.

(b) Encouragement should also be given to bilateral agreements for joint customs stations at frontiers for advance examination, at the traveler's option, of registered baggage in the country of dispatch by the customs of the country of destination prior to the dispatch of the baggage across the common frontier.

On April 15, 1953 the United Nations Economic and Social Council referred to the matter again in connection with resolution 5 of the Transport and Communications Commission dealing with customs formalities for temporary importation of private vehicles and for tourists, and requested

and requested the Secretary General to call in 1954, preferably at Geneva, a governmental conference with a view to concluding two world conventions on the subject. One is to deal with temporary importation of private road motor vehicles carrying persons and the equipment of such vehicles. The other is to deal with tourism, that is, the personal effects of tourists travelling by any means of transport.<sup>1/</sup>

It would appear that numerous efforts have been made by non-governmental regional associations to draw the attention of the Central American Governments to these and other Recommendations and to request their implementation. Thus at its 1951 Session, the Convención Centro Americana de Cámaras de Comercio e Industria approved the following recommendation:

To recommend to the Governments of the six republics of Central America and Panama that through appropriate measures they establish a single Central American tourist card valid for no less than one year, to permit free movement of persons within Central American territory, without being subject to passport and consular visa requirements;

This card should be extended only to Central Americans and Panamanian nationals and to residents of each of these countries.

And at the V Pan American Highway Conference, Lima, Perú, in 1951, the following Recommendation was made (XV):

To recommend to the American republics that they seek to establish at their frontiers, buildings housing simultaneously all authorities connected with international migratory movements, and seek also to eliminate all requirements and formalities that are not absolutely necessary.

These and other efforts, however, would appear to have been successful to a very limited extent, as the present situation shows, which

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<sup>1/</sup> See Report of the Transport and Communication Commission to the Economic and Social Council on its Sixth Session. Doc. E/CN.2/142. New York, February 1953.

/is as follows:

is as follows: (1) some Governments have accepted the Central American Travel Card for nationals of their respective country;<sup>1/</sup> (2) other Governments have accepted official identity cards used by airlines; (3) some Governments have unilaterally granted visa exemption for tourists for less than 3 months; e. g., Costa Rica, Guatemala, Honduras, Panama, El Salvador, for nationals of United States; (4) little has been accomplished as regards facilitating frontier formalities.

The Mission therefore considers that the simplification of travel and frontier formalities for citizens of the Central American countries should be intensified.

#### RECOMMENDATION XIII

(a) The Central American Governments should jointly consider the possibility of abolishing for travel in the region, the requirements of a passport for citizens of their respective states, and substituting as alternative a Central American travel card or some other similar document;

(b) The Central American Governments should jointly consider ways and means of facilitating frontier formalities by uniform agreement as regards the hours of operating of frontier posts, and if possible confining these formalities to a single frontier post where authorities of both countries could carry out their duties;

(c) Traffic facilities should be the same whichever means of travel is utilized.

It would also appear beneficial to tourism if some of these advantages could be extended to visitors from outside Central

<sup>1/</sup> A list of bilateral agreements now in force which according to official information received up to 1 September 1952 by the Secretary-General have been concluded in the post-war period with the purpose of reciprocally abolishing the passport requirements, is as follows: Costa Rica-El Salvador (Central American Travel Card can be used instead of passport); Costa Rica-Guatemala (Central American travel card can be used instead of passport). (Doc. E/CN.2/124, October 1952.)



America, and the Mission therefore endorses the recommendations of the Central American Regional Tourist Congress that "tourist's passports should be visaed without prior consultation."<sup>1/</sup>

2. For vehicles

At the present time, formalities for the temporary importation of vehicles are not unduly restrictive, but they are liable to criticism on the following grounds: (a) the procedure varies from country to country; (b) the same formalities are required for vehicles registered in Central America, as for from all other countries; (c) identical formalities are required for passenger cars, buses and trucks; (d) requirements are almost the same for regular commercial vehicles services as for occasional frontier crossings.

A similar problem existed until lately in Europe and it was in order to overcome these difficulties and facilitate international road traffic between the Western European countries, that under the aegis of the United Nations Economic Commission for Europe various conventions and agreements have been approved, among which are the following: (a) customs conventions to facilitate tourism, commercial vehicles crossing frontiers, and, goods transported in such vehicles; (b) agreements on the freedom of the road to facilitate certain international commercial services; and (c) international scheme for insurance of motorists.

Consideration is now being given to world wide adoption of a Tourist Convention and it is interesting to note the reply of the

<sup>1/</sup> It is understood, as regards El Salvador, that "special identity cards to be issued by airline companies can be used by visitors from other Central American countries instead of passports." (Doc. E/CN.2/124).

/Government

Government of Guatemala to the request of the Secretary General of the United Nations for the views of Governments concerning the desirability of concluding on a world wide basis, conventions, which reads as follows:

The Government of Guatemala has no modification to propose to the Draft International Customs Convention on Touring or to the proposals of the international organizations, since the exemptions granted in Guatemala are in general broader than those proposed, and since with regard to vehicles, the documents and controls proposed would appear to offer more effective safeguards from the fiscal standpoint.<sup>1/</sup>

Presumably if the Economic and Social Council agrees to the Recommendation of the Transport and Communications Commission, a Conference of Government representatives will be held in 1954, and the Central American Governments will no doubt take part in the discussions and ultimate agreements. However, the Mission feels that if real economic integration is desired, it should be possible to conclude agreements which would provide for greater facilities for regional movement than could possibly be granted on a world wide scale.

Whilst obviously the simplest way would be to grant free passage for all vehicles within the Central American States without any documentation, it is unlikely that customs officials would accept such an innovation which might favour illegal sales and purchases of vehicles. Accordingly, the simplest method of overcoming this difficulty and at the same time satisfying customs requirements would be by the introduction of standardized temporary importation papers, and for this purpose consideration might be given to the standard Triptych form<sup>2/</sup> proposed to the Draft

<sup>1/</sup> United Nations, Transport and Communications Commission, Doc. E/CN.2/135.  
<sup>2/</sup> See Appendix 1 to this Chapter, p. 465.

Customs Convention, or a more simplified document, if desired, might be drawn up. Recommendation to this effect was made at the 1951 Convention of the Central American Chambers of Commerce and Industry, which reads as follows: "Study of a Convention to regularize vehicle traffic between countries by means of a simplified Carnet Des Passages en Douane".

As regards goods vehicles and motor buses, in most cases these vehicles are operating on regular services and therefore the objective should be to expedite their passage as quickly as possible, preferably without the use of such a customs document. Nevertheless, to indicate clearly that the services are duly authorized and that the vehicles are regularly used for international transport it would seem desirable that all trucks and buses crossing frontiers should bear some form of identification, for example, a special Central American registration plaque. The plaque would be placed in a clearly visible position at the front and in the rear of all commercial vehicles, and might be issued for a specific sum (say \$ 10) by the national authorities responsible for licensing after due proof of permission to operate between other countries had been received.

#### RECOMENDATION XIV

(a) Governments should consider joint action as regards simplification of customs formalities for passenger cars operated in the region and owned by residents of the region, by means of a uniform customs card, backed by an appropriate financial guarantee;

(b) Governments should also consider joint action as regards simplified customs formalities for commercial vehicles owned and operated in the region, by the introduction of some form of regional identification, preferably in the form of a Central American plaque.

### 3. Goods traffic

Lengthy and costly delays are often experienced by truck operators at frontiers whilst customs officials inspect and check the merchandise carried, which is often a long and arduous process adding to the cost of operation and reducing the efficiency of the services.

A similar position until recently existed between the Western European countries, but in 1949 an agreement was concluded for the Provisional application of a draft "convention in order to facilitate international transport of goods by reducing customs requirements at frontiers"<sup>1/</sup>. The objectives are clearly laid down in Article 3, which states:

Except in the case of suspicion of abuse, and subject to compliance with the conditions and requirements laid down in the following articles, goods transported by road in sealed vehicles or containers shall not be subjected to Customs examination at offices en route and payment or deposit of import and export duties and import or export taxes shall not be required at such offices.

This objective was achieved by the introduction of a special Carnet "T.I.R.", and the acceptance of "regulations concerning the construction and equipment of vehicles and containers intended for the international transport of goods by road".

As a result, drivers were enabled to pass through customs authorities without undue delay and proceed directly to an internal customs house. The Mission considers that some such simplified procedure on the above would considerably facilitate international road traffic, particularly on the Inter-American Highway.

<sup>1/</sup> Draft International Customs Conventions on Touring, on Commercial Road Vehicles and on the International Transport of Goods by Road. Geneva, June 16, 1949.

RECOMENDATION XV

Governments should jointly consider the methods necessary to reduce customs requirements at frontiers for goods transported in trucks, and to this end consideration should be given to the possibility of reaching an agreement for the use of sealed vehicles, or other such steps, which would permit merchandise carried in road vehicles to proceed rapidly through frontier customs inspections.

II. Lack of Security of Tenure

To organize and operate an efficient international road service is a costly undertaking requiring not only a large permanent capital investment but also considerable working capital. This is particularly so in the case of international passenger services. Since the equipment for this type of traffic should be far superior to that used on urban and inter-urban services, particularly as regards seating, comfort, luggage facilities, lighting, ventilation, and other amenities, a suitable bus costs an operator as much as \$14,000. When it is considered that a small fleet of these buses will be required, including reserves in the case of breakdowns, and that in addition there must be adequate garage and servicing facilities in two or more countries, that the drivers must be of outstanding ability --able to deal with the various administrative and other formalities which may be met en route-- , and that the services must run regularly whether there are passengers or not, some idea will be gathered of the considerable financial investment required. A review of any of the larger bus operating concession in any part of the world will confirm these remarks. Exactly the same position

/applies

applies for goods traffic to a slightly lesser extent.

Thus it is logical that adequate safeguards and security of tenure will be required by any transport undertaking before investing in such an enterprise. In other words inter-governmental agreement will be required from the countries concerned as regards the total number of permits to be issued on a specific route and the duration of the concessions to be granted, before investment of the necessary capital.

In return for agreement as regards the maximum number of operators which will be permitted on the route, as well as a reasonably long term operating permit, carriers should be able and agree to provide a high standard as regards equipment and service.<sup>1/</sup>

In each case, transport permits for international services would be granted by the competent authorities of the states concerned in the transport operation, each for the part of the journey in its own territory. This approval, while not constituting an obligation on the Governments of other countries to grant a similar permit, might nevertheless be favorably received.

Consideration might also be given to the formation of either: (a) jointly financed and operated companies by nationals of the two countries concerned in any particular through service. In this case

<sup>1/</sup> As regards technical conditions applicable to international passenger transport services, the French Government submitted recently some suggested standard rules to the ECE Working Party on the Development and Improvement of Transport of Passengers and Goods by Road. These rules are reproduced in Appendix II of this Chapter, as a guide to Governments. United Nations Doc. Trans./WP 14/25. 27 October, 1952.

joint Government approval might be given for a private organization to operate the service or it might be undertaken under combined Government and private enterprise or by the Governments themselves; however, in the latter two cases, it is suggested that the organization and operation of the company should be of a semi-autonomous type. (b) An international Central American company with capital subscribed from either private or Government sources, or a combination of both, which would operate throughout the whole region; again, in the latter case organization and operation should be of a semi-autonomous type.

#### RECOMMENDATION XVI

(a) Governments should consider joint action in order to introduce a uniform procedure for the granting of international transport licenses and the conditions attached thereto, with particular reference to the necessity for adequate security of tenure and duration of service.

(b) Subject to agreement as regards (a) above, operators should provide modern equipment and vehicles of a standard suitable to international services, and should also publish rates and timetables for such services; third party insurance should be compulsory, as well as measures to prevent accidents, particularly as regards speed;

(c) Governments should give consideration to the possibility of setting up either joint companies of nationals interested in any specific inter-country route, or alternatively consider the possibility of establishing a Central American road transport company to operate passenger and goods services throughout the region;

(d) In considering proposals for the improvement and increase of international services, Governments should consult representatives both of the carriers concerned, and of the agricultural and industrial interests involved;

(e) Governments should, as an interim measure, consult with existing carriers in order to see what steps could be taken immediately on the lines suggested above to improve international services bilaterally;

(f) Governments should study the granting of a standard permit for international traffic.

/III. Excossive

### III. Excessive Cost of Operation

Attention has been drawn to the high cost of vehicle operation in Central America. This is partly due to the mountainous topography of Central America which naturally effects road design and construction so that even the best of highways has sharp curves and frequent steep inclines. Little, however, can be done to improve conditions from reconstruction and maintenance as suggested in the foregoing chapter. On the other hand, it is possible for Governments to assist in reducing both costs of equipment and operation, by reducing the heavy duties and taxes on vehicles, fuel, tires etc., as well as abolishing unnecessary local taxes, which not only result in high rates and fares, but also often encourage the utilization of inadequate and unsatisfactory types of vehicles. This subject is dealt with in considerable detail in Part III as applicable to domestic road transport; it is, however, even more important as regards international road transport.

#### RECOMMENDATION XVII

Governments should study appropriate methods of reducing operating costs, particularly with a view to:

- (a) Lowering the price of gasoline and diesel fuel by a reduction of customs and other duties, such as will benefit the public;
- (b) Encouraging and facilitating the importation of modern types of buses and trucks suitable for international services, by reducing import and other duties on such vehicles; and,
- (c) Considering the reduction or elimination of all local and provincial taxes which may affect adversely the operation of international services.

### /IV. Conflicting



IV. Conflicting National Traffic Regulations

The Mission feels that to expedite through road transport services, particularly on the Inter-American Highway, steps should be taken to reach agreement on a road traffic regulations, particularly as regards the weights and dimensions of vehicles, since the present divergencies -- arising from the fact that each country has its own separate specifications -- are one of the main obstacles restricting international movement. Considerable attention has already been given to this problem both on a regional and world-wide basis. For instance, as regards the former there is the Inter-American Convention of 1943, and as regards the latter, the 1949 Geneva Road and Motor Convention. Also recently at the V Pan American Highway Congress it was resolved:

1. To recommend to the authorities of all countries that they study the possibility of adopting insofar as possible uniform or at least appreciably similar laws regulating highway motor traffic. 2. To suggest to the Pan American Union in Washington to invite the traffic directors of member countries of the Organization of American States with a view to preparing the basis for drafting a convention on traffic to be submitted to the American republics, indicating appropriate limitations in weights of vehicles, etc., and taking into account existing conventions on the subject.

And at the IV Session of the Economic Commission for Latin America attention was also drawn to the problem of reaching an agreement on international highway traffic regulation (on the Inter-American Highway).<sup>1/</sup>

<sup>1/</sup> Resolución 24 (IV), approved June 15, 1951.

The Geneva Convention lays down certain general broad principles for uniform regulation and control of road and motor traffic, which should be acceptable as the minimum basis for any national codes. It also goes a step further by means of annexes to the Convention providing for more specific and detailed technical regulations. One of the annexes concerns the technical condition of equipment of motor vehicles and trailers in international traffic.

Finally, the problem of road signs and signals has also been the subject of careful study on a world wide basis. Thus the 1949 Convention has a protocol on uniform signs and signals, but this was not accepted on a world-wide basis, as agreement could not be reached at the Conference, due to the fact that there were two basic systems advocated, the so called "European" and the "American", and therefore the United Nations set up a group of experts to study the problem of devising a uniform world wide system. The group of experts has now concluded its work, which presumably will be brought to the attention of all Governments in the near future.<sup>1/</sup> In this respect attention is drawn to the Resolution of the 1952 Conference of the Central American Chambers of Commerce, which states:

That an agreement be signed between the six republics to standardize the signals on highways and on roads within urban limits, particularly the position of traffic control agents.

A resolution of the 1952 Pan American Highway Conference is also of interest, which states:

<sup>1/</sup> On the results of this work, see Final Report submitted by the group of Experts on Road Signs and Signals to the Sixth Session of the Transport and Communication Commission. Doc. E/CN.2/119, July 1952.

3. To recommend to the American republics that when the Convention on uniform road signs and signals is open to signature, it be subscribed and implemented at the earliest opportunity... To reaffirm the recommendation made at the V Panamerican Highway Congress to the effect that those American countries which have not yet done so should proceed to sign and ratify at the earliest opportunity the Convention on Highway Traffic drafted at Geneva in 1949.

Finally, the attention of Governments is drawn to the work at present being undertaken by the United Nations on the preparation of suggested uniform regulations for licensing of motor vehicle drivers in international traffic.<sup>1/</sup>

As the main purpose of these conventions and agreements is to facilitate international road transport, the Mission feels that their acceptance by the Central American Governments would be of great assistance in facilitating traffic movement in the region and particularly on the Inter-American Highway, as well as indirectly assisting in simplifying the design and construction of locally fabricated bodies for trucks and busses.

RECOMMENDATION XVIII

(a) That the Geneva Road and Motor Convention be promptly accepted and ratified by all Central American countries, and that they consider in due course the Revised Protocol on a uniform system of road signs and signals drafted by a group of experts.

(b) That Governments jointly give careful consideration to the Annex to the Convention respecting weights and dimensions of vehicles, with a view to either accepting it as applicable to the roads of the Region, or to specific international roads such as the Inter-American Highway; or, alternatively Governments, consider a special agreement on modifying the dimensions to maxima suitable to the roads and bridges of the region;

<sup>1/</sup> See "Conditions to be fulfilled by drivers of motor vehicles in international traffic". United Nations, Economic and Social Council, Resolution 468 (XV)-E, 13 April, 1953.

/(c) That Governments

(c) That Governments give careful consideration to the proposals to be submitted for their consideration as regards agreement on minimum uniform regulations for licensing motor vehicle drivers in international traffic.

#### V. Other obstacles

Among other obstacles which to a lesser extent restrict or hinder the development of international road traffic are the following:

##### 1. Excessive national traffic police checks

Most of the Central American countries have introduced for one reason or another a series of traffic police checks at various points on the main highways. While from a national point of view these may or may not be useful, they are definitely a hindrance to international traffic, as repeated stops increase the time taken and operating costs. It would appear that if vehicles operate with the international plaque mentioned in Recommendation XIV, then as their identity is clear, they might be allowed to pass through such checks unhindered.

#### RECOMMENDATION XIX

Governments should take joint action to permit international road services to be exempt from compulsory stops at various national traffic police check points, in so far as national traffic control agencies met with. Few steps have been taken so far in the prevention of accident. As it is anticipated that considerable traffic will

eventually

eventually develop on roads of international importance, it is essential in the interests of road users that all possible action should be taken to promote road safety, particularly on roads such as the Inter-American Highway. The Mission therefore endorses the resolution in this respect made at the recent Pan American Highway Congress in 1952:

1. To recommend to the American Republics that they make every effort to carry out an intense educational traffic campaign among drivers and pedestrians.
2. To request the Governments to investigate the causes of accidents and study the means to prevent them.
3. To request the United Nations Organization and reaffirm to the Organization of American States that they proceed to carry out periodic meetings of experts on traffic and traffic education.
4. To request the international federation of automobile clubs that they transmit to their affiliated institutions its wish for intensifying to the utmost any action that may tend to solve the problem mentioned above.

Attention is also drawn to the work done and recommendations made in this field by the Standing International Commission on Highway First Aid.<sup>1/</sup> This Commission has drawn up a general scheme for the Organization of Highway First Aid which has been accepted by some twenty countries. The scheme includes location, standard equipment, training of staff, and indication of first-aid posts on highways. It is considered that the adoption of such a scheme on the regional highway network would be of considerable benefit to international traffic.<sup>2/</sup>

<sup>1/</sup> The League of Red Cross Societies has now taken over the functions of the SICHA.

<sup>2/</sup> See similar recommendation for the European Highway Network, E/ECE/Trans. 227. September 18, 1950.

RECOMMENDATION XX

- (a) Governments should take joint action for the convening of periodic meetings of experts of the region on road traffic and road safety;
- (b) Standardized first-aid posts properly staffed, in accordance with the Recommendations of the Standing International Commission on Highway First-Aid and of the League of Red Cross Societies, should be provided at frequent intervals on the Inter-American Highway and other regional roads.

3. Lack of garage and other service facilities

At the present time there are very few garages or service stations on the main stretches of the Inter-American Highway and other regional roads, which results in considerable delay and inconvenience when breakdowns occur.

It would be of great assistance to International traffic if arrangements could be made for service stations to be provided at regular intervals through the entire length of the highway, and also on other through roads. <sup>1/</sup> While this is not a matter for Governmental action, nevertheless it is felt that encouragement might be given by the authorities to private companies to establish such stations.

RECOMMENDATION XXI

In order to facilitate international traffic, adequate garage and workshop accommodation should be provided at suitable intervals on the roads of the regional highway network, particularly in the undeveloped zones. These installations should be located in such a manner so as to be easily accessible to motorists and yet not restrict the traffic flow.

<sup>1/</sup> See the recommendation for Europe. Ibid.

APPENDIX I

Triptych

I. Importation Voucher

TRIPTYCH No.....

For the temporary importation into.....  
of the vehicle described below.....

VALID until.....  
Guaranteed by.....  
Delivered by.....  
Holder.....  
Principal residence..... (block letters)  
or Business Address.....

For a MOTOR VEHICLE driven by internal combustion,  
electricity, steam; TRAILER..... (Delete words not  
Type (car, bus, lorry, van, tractor, motorcycle with applicable)  
or without sidecar, cycle with auxiliary engine)

Registered in.....Under No.....

CHASSIS Make.....  
No.....

ENGINE Make.....  
No.....  
Number of cylinders.....  
Horse power.....

COACHWORK Type or shape.....  
Make.....  
Colour.....  
Upholstery.....  
Number of seats or carrying capacity.....

Year of manufacture.....  
Spare tyres.....  
Other particulars.....

Net weight of vehicle..... (in words and  
Value of vehicle..... figures)

/This vehicle

This vehicle is imported subject to the holder's obligation to re-export it by the date specified above and to comply with the Customs laws and regulations relating to the temporary admission of motor vehicles in the countries visited, under the guarantee of.....(the guaranteeing association) in virtue of an undertaking which the latter association has given to..... (the Customs authority)....., the.....19.....

Signature of the Secretary of the guaranteeing association.....

Signature of Holder.....

The vehicle described above was imported at the Customs Office of..... on.....1953.....where this voucher has been entered in the Special Register under the No.....

Signature of the Holder.....

Customs Officer's signature and Customs Stamp.....

Do not omit to make a similar entry in the corresponding section of Vouchers Nos. 2 and 3.

THIS VOUCHER TO BE DETACHED AND RETAINED BY THE CUSTOMS OFFICE OF IMPORTATION.  
Very similar (Duplicate copies for Exportation Voucher and holders copy will be required).



APPENDIX II

PASSENGER TRANSPORT

Technical Conditions Applicable to Vehicles

A. Technical conditions applicable to all motor-coaches

The interior lighting should enable all passengers with normal sight to read without effort.

The windows must be so arranged as to give all passengers a satisfactory view of the scenery, while at the same time allowing each of them sufficient space for approximately 100 cubic decimetres of clothing or hand-luggage.

Blinds must be fitted so as to give passengers effective protection from the sun.

All sliding windows must be completely air-tight when closed.

Ventilators must be provided to prevent the over-heating of the atmosphere inside the vehicle, and renew the air efficiently.

The minimum dimensions of the space allotted to each seat shall be as follows:

- depth of seat.....0m.40  
(from the inside lower end of the seat-back  
to the front of the seat)
- width of seat.....0m.48
- clearance in front of the seat, measured  
on a level with the seat.....0m.75

Motor coaches operating regular services must display on their sides in letters at least 0m.10 high their points of departure and arrival and at least one intermediate locality.

Space completely protected from the weather must be reserved for luggage, up to a maximum of 40 kg. per passenger.

B. Conditions applicable only to luxury motor-coaches

The engines of luxury motor-coaches must be powerful enough to climb gradients of 1 in 10, when fully loaded, at a minimum speed of 30 km. per hour.

/These

These motor-coaches must have a transparent strip along each side of the roof so as to give a clear view of mountains or monuments.

The minimum dimensions for seats stipulated in Section A of this Annex shall be increased to Om.45, Om.52 and Om.78 respectively. The angle of the seat must be adjustable.

The height of the passageways must not be less than lm.90. These motor-coaches must have toilet and lavatory accommodation.

They must not have folding seats.

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Source: Economic Commission for Europe, Inland Transport Committee,  
Trans/WP14/25, October 1952.

### Chapter III

#### MARITIME AND PORT PROBLEMS

##### I. Introduction

The Central American region has great natural advantages for maritime transport. Although tides, currents, winds, and other factors have not been studied with sufficient detail to establish a definite approach in regard to the utilization of the area's coasts; it may be said that, whatever the final evaluation of the natural resources which are adaptable to maritime navigation, the necessary conditions are present for the development of a heavier maritime traffic than is carried out today.

All these countries --with the exception of El Salvador, which has only a Pacific coastline-- have coasts on both oceans. (See Table 108.) Moreover, because of the shape of the land in the Central American countries, which is in general long and narrow, there are very few production centers or markets situated more than 150 kilometers from the Atlantic or the Pacific. Through the necessary means of access, maritime traffic along the Central American coasts could serve --within an economical radius of operation-- a major portion of the total area of the Isthmus and, undoubtedly, the greater part of the production zones.

As has been pointed out in Part I of this report, there are good natural ports on the Atlantic and also on the Pacific, except

/Table 108

Table 108

Central America: Length of Coastlines  
 (in kilometers)

Countries	Pacific	Atlantic
Guatemala	244	166
Honduras	153	880
El Salvador	296	--
Costa Rica	1,016	212
Nicaragua	420	720
Panama	1,400	790
Total	3,529	2,768

Sources: Costa Rica: Instituto Geográfico Nacional, Series Estadísticas, 1951, Dirección de Estadística, San José, Costa Rica; El Salvador: T.F. Jiménez, Nueva Geografía de El Salvador, San Salvador, 1947; Guatemala: Síntesis Geográfico-Estadística de Guatemala, Dirección General de Estadística, Guatemala, 1948; Honduras: Carlos A. Piñel, Geografía de Honduras Tegucigalpa, 1951; Nicaragua: Dirección General de Estadística; Panamá: A. Rubio, Atlas Geográfico Elemental de Panamá, Panamá, 1947.

in Guatemala, whose west coast ports are at open roadsteads. All the Pacific ports, except La Libertad and Amapala, are accessible by rail and in some cases --San José, Acajutla, Puntarenas and La Unión-- by road also. All the principal ports on the Atlantic are connected with their respective hinterlands by rail, road, or river.

Finally, Central America, because of its strategic position between North and South America, because it is /relatively

relatively close to the Caribbean islands and because it is the necessary passageway for the greater part of the ships plying between Europe and Australia, is a natural zone for maritime commerce.

Considering these advantages, it might be expected that Central America would have today an intensive and generalized maritime traffic among its component countries as well as with the rest of the world. Nevertheless, maritime communication with the rest of the world is infrequent, except with the United States, and even here there is almost no shipping competition. Inter-Central American maritime movement is small, with inadequate services and a very small current volume of commodity traffic.

The diversification of import and export markets is limited by this insufficiency of services, which deprives Central America of the natural advantages which its location and geographical shape offer it in the way of exit for its products and entrance for its imports. Moreover, import commodities are often excessively costly as a result of the freight rates, port charges, and other transport costs. The economic disadvantage which this situation represents for countries like those in Central America -- which are in the process of accelerating their economic development and need to import raw materials, machinery, equipment and, generally speaking, most of the capital goods whose increment constitutes in itself their principal means of development-- is highly significant and, although this is not the appropriate place to analyze it, must be taken into account as a limiting factor in the growth and industrialization of the region.

/II. Maritime

## II. Maritime Services and Traffic

### 1. Inter-Central American Navigation

Only on the Pacific coast of Central America is there regular and frequent service, provided chiefly by the Grace Line, the Independence Line and a fruit company. In general the ships of these companies touch the international ports ranging from Champerico, Guatemala, to Balboa, Panama Canal Zone. Service is also provided by the Nicaraguan Merchant Marine and by other lines, although it is not so frequent as that of the larger companies.

On the Atlantic coast there is very little maritime service. On the north coast there is service only between ports situated in the Gulf of Honduras, and from one end to the other, that is, from Cristóbal to Puerto Barrios, but all the Atlantic coast between these two end points is practically devoid of service.<sup>1/</sup>

According to departure data obtained from 8 principal Central American ports, a total of 199 ships passed through Pacific ports coming from other Central American ports in 1951, and 174 passed through Atlantic ports. (See Table 109.)

There is also a fairly important local coastal movement in Costa Rica and in Nicaragua. Although no figures are available on the regularity and frequency of service in Costa Rica, it is known that there is an intensive movement in the ports of Puntarenas and Puerto Limón, as will be seen shortly. In Nicaragua, local coastal movement shows that a total of 111 foreign bottoms with 96,671 net tons

<sup>1/</sup> Service between Puerto Limón and Cristóbal was discontinued in 1952.

/put in

put in at Nicaraguan ports in 1951, and 546 national ships with 15,855 net tons. (See Table 110.)

Table 109

Central America: Maritime Service between selected Ports, 1951

(Number of ship departures to ports of immediate destination)

From the Atlantic coast to:	Puerto Barrios	Puerto Cortés	Tela	La Ceiba	Puerto Limón	Others	Total
Puerto Barrios	--	8	8	10	8	1	35
Puerto Cortés	7	--	--	--	1	3	35
Tela	51	35	--	--	2	--	88
La Ceiba	35	2	--	1	--	2	40
Totals	93	45	8	11	11	6	174

From the Pacific coast to:	Champerico	San José	Acajutla	La Libertad	Cutuco	Amapala	Puntarenas	Total
Champerico	1	11	--	1	--	--	--	12
San José	11	--	3	15	2	2	1	34
La Libertad	1	33	33	--	17	22	5	111
Amapala	--	--	23	8	--	--	4	35
Totals	12	44	59	24	19	24	10	192

Source: Transport Mission, from data supplied by companies operating the ports.

Although there is frequent and regular service on the Pacific coast and partial service on the Atlantic coast, the volume of coastal traffic is extremely low and only attains significant proportions in Costa Rica's local traffic, carried out principally through

/Table 110

Table 110

Nicaragua: Maritime Movement Between Nicaraguan Ports, 1951

Ports	<u>Nicaraguan Ships</u>		<u>Foreign Ships</u>		<u>T o t a l</u>	
	No. of arrivals	Net tonnage	No. of arrivals	Net tonnage	No. of arrivals	Net tonnage
Puerto Morazán	12	593	--	--	12	593
Corinto	11	821	42	54,409	53	55,230
Puerto Somoza	1	237	20	3,236	21	3,473
San Juan del Sur	63	2,080	18	36,636	81	38,716
San Juan del Norte	52	902	4	18	56	920
El Bluff	251	7,643	23	1,015	274	8,658
Puerto Cabezas	133	2,930	3	568	136	3,498
Cabo Gracias a Dios	23	649	1	789	24	1,438
Total	546	15,855	111	96,671	657	112,526

Source: Memoria de la Recaudación de Aduanas por 1951, Managua, 1952.

Puntarenas and Puerto Limón (an estimated total of 62,000 tons in 1951).

Otherwise, present day traffic between Central American countries is limited to that handled by the fruit company in the Gulf of Honduras, between Puerto Barrios, Puerto Cortés, Tela and La Ceiba, which amounted to 2,100 tons of products in 1951; to Honduran pine exports (7,000 tons), chiefly to Costa Rica and Guatemala; to the small cotton exports from El Salvador to Panama (900 tons); to Panamanian cement exports to El Salvador (18,225 tons), Honduras (3,672), Costa Rica (1,020) and Nicaragua (340), and to traffic on the Gulf of Fonseca, principally from Puerto Morazán, which exported 17,000 tons of goods to

/Honduras,



Honduras, El Salvador and Panamá. In other words, regional maritime traffic in 1951 amounted to some 50,000 tons, although this figure includes a large quantity of Panamanian cement which El Salvador will probably cease to import when the new plant in Acajutla is in full production.

Time and again this scarcity of traffic has been attributed to the close similarity of the productive structure of the Central American countries, which limits the possibilities of commerce among them. Nevertheless, a consideration of the multiple causes which may have brought about this unfavorable situation seems to indicate that, although this structural similarity is a factor which limits the potential economic radius of Central American trade, there are today a number of possibilities for economical and advantageous traffic in textiles, livestock and dairy products, vegetable oils and fats, wood and derivatives, etc. of such volume that --whatever the limitation imposed on trade by the structural factor-- Central American traffic could achieve an intensity and a volume far greater than it now has.

In this connection, a remarkable illustration is the fact that Costa Rica --undoubtedly subject to the same or similar limitations as the areas near it-- has a local shipping traffic of 70,000 tons. It is difficult to understand why this traffic could not be carried on with equal intensity from country to country. It must be supposed that other factors, chiefly high freight charges, excessive and lengthy clearance procedures for shipments, complicated and costly customs regulations and others, which the Mission had no opportunity to study, have prevented

/trade

trade between the Central American countries from rising above its present low level.

It is also observed that, in spite of this light volume of maritime commerce, coastal service is the principal channel for moving products between the Central American countries, about 30% to 35% of the total trade between these countries being by coastal shipping. This fact alone seems to indicate, on the one hand, the lack of other adequate means of transport for intra-regional trade and, on the other hand, the existence of special advantages for maritime transport as a means of regional commerce. In effect, if it is kept in mind that most of the production centers and markets are relatively close to one or the other of the two coasts and that in mountainous countries such as these, overland transportation is difficult and costly (and there are at present no adequate rail or road channels for regional traffic), the possibility of establishing sufficiently frequent, regular and economical maritime services for the transport of the kind of goods involved presents itself as a question of major importance for the economic development of Central America. Moreover, the conclusion cannot be avoided that, as long as there are no adequate means of regional transport, the high cost of moving products will severely restrict the geographical radius which can be served by any given production center, limit the size of production units and in short reduce the possibilities of regional specialization in Central America.

Finally, the high rates imposed on maritime traffic in Central America have kept the volume of trade at its present low figure /and have

and have deprived the coastal region of what could be (in view of the short distance from production centers to ports) an economical and efficient means of transport.

The ordinary rate now charged by the shipping companies between Central American ports fluctuates in the vicinity of \$25 per ton, for all shipping points and for all points of destination. Considering this element of cost, in addition to the charges for loading and discharging, it would seem that commodities such as corn, lumber, livestock and other products which could represent an intensive commerce between the Central American countries, but whose unit value is low, cannot, in general, be transported by sea at this high cost. There is a need for small, more economical vessels, adapted to this special kind of traffic and able to operate at rates substantially lower than those now in effect, and for lower port charges.

## 2. Overseas navigation

To the general possibilities of inter-Central American maritime traffic discussed above, there should be added other considerations with regard to Central America's maritime traffic with the rest of the world. Of special interest is the possibility of bolstering inter-Central American traffic by combining it with the overseas services which can supplement it by transshipments, connections, etc.

Central America now has frequent and regular maritime communication only with the United States, while services to other areas of a potentially greater traffic --the Caribbean, Europe and

/South

South America-- are in every case irregular or deficient.

The following analysis of the frequency of maritime services is based on the number of ships departing in 1951 from 8 of the principal Central American ports, bound for countries outside the region. It is assumed that these figures also reflect --within reasonable limits of estimation-- the inbound traffic, which is very similar to outbound traffic in regard to number of ships and the frequency of service.

It should be borne in mind that the figures reported do not include the maritime movement of Costa Rican, Nicaraguan, and Panamanian ports, where most of the traffic with Europe, South America, and the Caribbean are handled, and that as a result the statistics given below (see Table III) exaggerate to a certain extent the disproportion observed between services connecting with the United States and those connecting with the other regions. These statistics are included in the report only as an approximate index of international maritime service.

(a) United States and Canada. In 1951, 89% of all ships leaving 8 Central American ports --Puerto Barrios, Puerto Cortés, La Ceiba, and Tela, on the Atlantic, and Champerico, La Libertad, Amapala, and San José on the Pacific-- were bound for the United States and Canada. (See Table III.) The bulk of this service is provided by the fruit companies --chiefly the United Fruit Company-- which because of

<sup>1/</sup> Of the 722 recorded departures bound for the United States and Canada, 533; or 74%, pertained to the fruit companies.

Table 111

Central America: Frequency of Maritime Service between Central American Ports and other Ports, 1951

(Number of ship departures to immediate points of destination, 1951)

	United States and Canada	Mexi- co	Cuba	Jamai- ca	Cura- çao	Euro- pe	South America	Others	Total
<u>From Atlantic Coast:</u>									
Puerto Barrios	262	1	6	1	3	3	--	1	277
Puerto Cortés	149	--	--	2	1	--	--	1	153
La Ceiba	81	--	10	--	1	--	--	3	95
Tela	102	--	5	1	--	3	--	--	111
Sub-Total	594	1	21	4	5	6	--	5	636
<u>From Pacific Coast:</u>									
Champerico	33	16	--	--	--	--	--	--	49
La Libertad	7	4	--	--	--	--	1	--	12
Amapala	23	--	--	--	--	12	--	--	35
San José	65	4	--	--	1	7	6	--	83
Sub-Total	128	24	--	--	1	19	7	--	179
Total	722	25	21	4	6	25	7	5	815

Source: Transport Mission, from data supplied by the companies administering the ports.

the specialized and perishable nature of their cargo, receive preferential treatment in transit, and exert a different kind of influence on Central American economy than would be the case if they were ordinary

/shipping

shipping companies. Thus the two companies, United Fruit Company, operating on both oceans, and Standard Fruit, operating only on the Atlantic, go directly from Central American ports to the United States and Canada, without calling at Mexican or non-Central Caribbean ports.

The Grace Line, with 13 ships, operates between Vancouver and Panama, with stopovers in United States, Mexican and Central American ports. This is the most important line from the point of view of general public maritime service (in contrast to banana shipping). In 1951 this company transported from Puntarenas 6,828 tons of exports, or 4.7% of total exports, and it carried 23% of its imports. Its services are sufficiently regular and frequent and, together with those of United Fruit, those of the Independence Line on the Pacific --with a total of 5 ships-- and others of less importance, are adequate for the traffic between Central American Pacific ports and North America and Canada.

On the Atlantic, there are occasionally ships belonging to other companies, bound for or proceeding from North America. However, their number is so few that it may be stated that they are usable only when their arrivals coincide with some cargo bound for their final destination or a port along their route.

(b) Caribbean Zone. There is no regular service with this zone, whose only maritime communication with Central America is established through some ships which occasionally touch Central American ports on their way to or from the Caribbean. In 1951, of 722 ships  
/departing

departing from four principal Atlantic ports and four on the Pacific, 21 were bound for Cuba, 6 for Curacao and 4 for Jamaica. No ships departed for Haiti or for Santo Domingo. (See Table 111.)

Although the limited nature of these figures should be kept in mind, because they do not include the maritime movement of Puerto Limón and of Nicaraguan ports, the inclusion of these figures would not substantially modify the general picture. In 1951, a total of 236 ships left Puerto Limón whose exact destination is unknown.

However, through indirect information, it is known that of this total, 96 ships belonged to the United Fruit Company and were bound for the United States, 21 were the property of the Royal Netherlands Steamship Company, probably bound for Europe and Curacao, and the rest --120 departures-- were probably ships bound for the United States and in some cases for other Central American ports.

Nicaragua recorded a total of 322 ships leaving Corinto, El Bluff, and San Juan del Sur, whose destination is also unknown. As is the case with the ports about which there is exact information, it may be assumed that the great majority of these ships were bound for North America and only a very small number for the Caribbean zone.

Although it must be admitted that this scarcity of maritime services is due in part to basic structural causes which limit the volume of trade between Central American and the other Caribbean countries (because the other Caribbean countries are fundamentally agricultural and very similar to Central America in regard to the nature of their production), it should not be forgotten that Cuba --economically the strongest

the strongest of all these countries-- has an agricultural structure which is highly specialized in one or two products and would be able to absorb a substantial tonnage of Central American agricultural and livestock products. Neither should the possibilities of traffic with Jamaica, Haiti, Santo Domingo and Curaçao be underestimated. Considered in its totality, this traffic could achieve a reasonable volume.

(c) Mexico. Maritime communication with Mexico is limited to the Pacific coast services of the lines operating between Central America, the United States and Canada, which at times touch the Mexican ports of Salina Cruz, Acapulco, and Manzanillo. In 1951, 25 ships departed from the 8 Central American ports under consideration bound for Mexico.

On the Atlantic there is no regular maritime communication with Mexico. About the middle of 1951 the service of Royal Netherlands line was discontinued. This service consisted of three ships of 160 net tons plying between Tampico, Veracruz, Progreso, and Central American ports, via Cristóbal.<sup>1/</sup>

(d) Europe and South America. Central American maritime communication with Europe and South America is infrequent. According to the information available, only 25 ships bound for European ports and 7 for South America departed from the above-mentioned 8 Central American ports.

<sup>1/</sup> With respect to maritime traffic between Central American and Mexico, see also Economic Commission for Latin America, Factores del transporte mexicano que afectan el comercio entre México y Centroamérica y las Antillas, Doc. E/CN.12/313, March 1953.



European service is chiefly carried out by the Italian Line, with 5 ships which operate out of Mediterranean ports to Vancouver with regularly scheduled stops in Cristóbal, Puntarenas, La Libertad and San José every 40 days and, on a smaller scale, by ships of the French Line and the Johnson Line, proceeding from France and Sweden. Although the service is infrequent, these lines transport a considerable volume of import cargo. For example, the European lines discharged 24,000 tons in Puntarenas in 1951, or 25% of this port's total imports.

In regard to South America, there are no frequent and regular services, but there are adequate means of transshipment at Cristóbal and of direct service between Nicaragua and the western ports of South America.

Summary. From the above it may be seen that there is regular and frequent service only between the United States and Central America, and that service is irregular and infrequent with the rest of the potential traffic areas of Central America.

The scarcity of service is due to a combination of factors which for some years has limited Central American trade with Europe and South America. However, there is here clearly a vicious circle, since the lack of adequate service is, in itself, a very powerful limiting factor, which may also be aggravated by the existence of a rate structure unfavorable to trade with Europe and South America.

The seasonal nature of the traffic may also have contributed to the irregularity of service, and it has been repeatedly given as an explanation and a justification for this irregularity. Although

/in general

in general terms this conclusion is justified, it would have to be qualified by various elements which limit the seasonal nature of the exports of the different Central American countries. Thus, in El Salvador, where coffee represents 77% of total export volume, the country's exports show a marked seasonal fluctuation, with very intensive traffic during the first months of the year and very weak traffic throughout the rest of the year. In Costa Rica, on the contrary, banana exports, which take place throughout the year help provide a steady rate of total exports, so that in no month do exports vary more than 30% from the monthly average. (See Table 112.) The situation in Honduras is very similar to that in Costa Rica, whereas Guatemala and Nicaragua, because of the volume of their coffee exports, experience also --although to a lesser degree-- the same seasonal variation which is characteristic of Salvadorean exports.

Import traffic, on the other hand, is rather regular and shows only the same seasonal influences --in the first and last months of the year-- that everywhere affect not only foreign trade but economic activity in general. The maximum difference between any one month and the monthly import average is 37% of the monthly average in the case of El Salvador and 36% in the case of Costa Rica (see Table 112). Although this demand for imports, which is more regular and active throughout the year, offsets the highly seasonal nature of exports in the coffee countries, this compensation is only partial, and it must be concluded that seasonal variation is an important factor affecting the regularity and costs of maritime services.

/Table 112

Table 112  
 El Salvador and Costa Rica: Maritime Exports and Imports, by Months  
 (in thousands of tons)

Months	E x p o r t s		I m p o r t s	
	El Salvador	Costa Rica	El Salvador	Costa Rica
	(La Libertad, Acajutla and La Unión)	(Puntarenas, Limón, Golfito and Quepos)	(La Libertad, Acajutla and La Unión)	(Puntarenas, Limón, Golfito and Quepos)
	1950	1949	1950	1949
January	17.9	23.9	12.6	17.1
February	17.7	17.3	14.8	30.9
March	7.6	27.7	13.5	19.3
April	7.0	21.9	9.6	16.0
May	3.3	31.2	20.1	24.2
June	8.9	24.0	14.3	19.8
July	7.2	18.8	13.6	14.8
August	2.8	23.0	16.6	17.6
September	2.6	24.3	14.8	13.4
October	1.3	18.9	13.8	14.7
November	0.8	30.4	25.1	24.1
December	5.4	30.9	13.1	11.9
	82.6	293.3	181.8	223.9

Source: El Salvador: Dirección General de Estadística, Boletín Estadístico, May and June 1952; Costa Rica: Anuario de la Dirección General de Estadística, 1949.

Besides the above factors, there appear to be others which prevent a heavier international maritime traffic. A case in point is that referred to by the delegate from El Salvador in March 1951 before the Special Committee of Experts from the American Republics for the Study of Freight and Insurance Rates, of the Inter-American Economic and Social Council:

/"...representatives

"...representatives of European companies have stated that even when there have been on the piers of Antwerp, Le Havre, and Hamburg numerous cargoes for Salvadorean ports, the companies which control the Salvadorean ports and the members of the Conference in whose interest they act, have resolved to so limit the quota of cargo which (these European shipping companies) could transport that they were prevented from frequenting Salvadorean ports."<sup>1/</sup>

### 3. Transshipment and Direct Shipping Services through Regional Ports

From the point of view of maritime communication, Central America occupies a favorable geographical position which permits it to take advantage of the available capacity in ships coming from Europe which are bound for North American and South American Pacific ports or for Australian and Asian ports. A large number of the ships engaged in this service have to pass through the Panama Canal,<sup>2/</sup> situated at relatively short distances from the Central American countries and from which there is frequent service to Central American Pacific ports and irregular service to those of the Atlantic coast.

<sup>1/</sup> Inter-American Economic and Social Council, ESSE, Doc. 13/53.

<sup>2/</sup> In 1951, 30 million tons of freight were moved through the Panama Canal, of which 11.1 million tons passed from the Atlantic to the Pacific and 18.9 million tons from the Pacific to the Atlantic. The total net tonnage of the ships was 27.2 million, or a theoretical cargo capacity of about 68 million tons. 80% of the tonnage of ships going through the Canal pertained to ships which follow 8 principal routes: (a) east coast-west coast of the United States; (b) east coast of the United States-west coast of South America; (c) east coast of the United States-Asia; (d) Europe-west coast of the United States and Canada; (e) Europe-Australasia; (f) Europe-west coast of South America; (g) east coast of the United States-west coast of Central America; and (h) east coast of the United States and Canada-Australasia. (Annual Report of the Government of the Panama Canal for the fiscal year 1951, pp. 8 and 12).

/Although

Although up to the present time this favorable circumstance has not been fully taken advantage of, transshipment traffic constitutes an important part of the total Central American maritime movement. In 1951 a total of 283,000 tons coming from or bound for Central American ports were transhipped in Panama. (See Table 113.)

Table 113

Central America: Cargo Transhipped at the Panama Canal, 1951

(short tons)

	Atlantic Coast	Pacific Coast
To Central America	26,945	174,868
From Central America	8,306	78,145
	<u>35,251</u>	<u>253,013</u>

Source: Panama Canal Company.

As may be seen, only the Pacific coast traffic is of significant proportions at the present time, while the Atlantic coast traffic only amounts to a little more than one-tenth of the former. However, it must be noted that on the Atlantic there is no shipping service making the run from Panama touching the different ports of this coast, and that transshipments are largely limited for this reason to traffic between Cristóbal and the northern end of the Atlantic coast.

/With better

With better connecting services there could be an increase and an acceleration in transshipments at Cristóbal to the Atlantic ports of Panama, Costa Rica, and Nicaragua, which are not adequately connected at the present time. In its turn, this greater transshipment traffic would be an important element in the establishment of an efficient inter-Central American coastal service.

One of the factors which at present limits the volume of transshipments at Cristóbal is the excessive delay which cargoes undergo before being reloaded. The Mission found that there are many complaints on the part of Central American importers about this delay. The delay seems to be due in large part to the fact that, at seasons when crops are being shipped, the shipping companies prefer to weigh anchor from Cristóbal directly to their ports of destination, without discharging small cargoes consigned to Central American ports. Thus they avoid the expenses, difficulties, and delays which this service represents to them at times when they can take on large cargoes at other ports. The policy of the shipping companies may or may not be justified, but what is indisputable is the restrictive effect which this policy has on that segment of Central American trade which could be carried out with Europe and South America by means of transshipments at Cristóbal.

Moreover, traffic with Europe, South America and the Caribbean presents a series of possibilities which would be useful to examine in more detail. As has been pointed out, Central American maritime communication with these zones is very scanty. The demand

/for

for maritime services which each one of these countries exerts by itself is also small, and the shipping companies have not established adequate services between these areas and Central America.

Nevertheless, even though this individual demand appears to be insufficient to justify more frequent maritime traffic between Central America and Europe, South America, and the Caribbean, there is a possibility that the joint demand of two or more countries would justify economically a service between these zones and regional Central American ports which, through coastal services with neighboring countries, could act as ports of concentration and distribution of goods for all of Central America.

Should inter-Central American coastal service be developed with the aid of transshipments both in Cristóbal and in regional ports of concentration and distribution, it is clear that it could only be carried out on the condition that the through rates be maintained which are applied to shipments between foreign points and final points of destination in Central America, since the rate between Cristóbal and any Central American port, for example, is higher than that charged for direct shipments (without transshipment) to the same final point of destination.

#### 4. Conclusion

It may be seen that there is a series of traffic possibilities whose magnitude and practicability have not yet been studied, and the examination of which would be of the greatest interest to the Central American countries. Although the Mission has not had at its

/disposal

disposal sufficiently detailed information to form a definite judgment about this important problem, it believes that, in principle, the potential traffic which could be moved by the three ways indicated --inter-Central American coastal traffic, transshipment traffic in Panama and traffic through regional ports-- even if it would not justify in itself the establishment of additional coastal services, could in its totality serve as a basis for the operation of regular coastal services between the Central American countries, especially on the Pacific coast.

#### RECOMMENDATION XXII

(a) That the governments cooperate with each other for the purpose of improving existing inter-Central American maritime services with a view to fulfilling the present needs of inter-Central American coastal and inter-coastal traffic at reasonable and economical rates, bearing in mind that to develop that service it may be necessary to base it also on transshipment traffic to and from Panama and other Central American ports;

(b) That the Central American governments undertake a detailed study of present and potential traffic (1) between Central American ports, (2) between these ports and overseas ports via transshipment in Panama, and (3) between those ports and overseas ports in direct service, in order to determine whether or not there are economical bases for the establishment of a Central American merchant fleet for the more efficient transport of the above-mentioned types of traffic, taking into consideration the possibility of modifying and improving port procedures in the different countries of the Isthmus.

(c) That in carrying out such a study the governments consider the possibility of setting up a joint committee for the six countries, composed of persons qualified in maritime and port activities.

/III. Regional



### III. Regional Ports

Because in Central America the distances of transport runs are relatively small, and because the principal production centers and markets are communicated with only a limited number of ports, some of these ports serve more than one country. Outstanding are the cases of Puerto Barrios, in Guatemala, through which a part of El Salvador's foreign commerce is channeled, and Cutuco, in El Salvador, which handles a part of Honduran traffic. On a small scale, San Juan del Sur, in Nicaragua, is already a port useful to the northwestern part of Costa Rica.<sup>1/</sup> In addition to these cases, it may be foreseen that as new means of domestic and international communication are developed, other possibilities will arise for plurinational utilization of national ports. Among the new projects and possibilities for regional ports, mention should be made of the following: the projected port of Santo Tomás in Guatemala; the project for converting Acajutla into a first-class port in El Salvador; and in the future, Puerto Cortés in Honduras.

#### 1. Puerto Barrios<sup>2/</sup>

Barrios is the most important port in Central

<sup>1/</sup> The Panamanian ports and those of the Canal Zone are considered more as transshipment ports. See Sections II and IV of this Chapter, pp. 48 and 502 respectively.

<sup>2/</sup> The observations on this and other ports in this section refer chiefly to regional implications and not to the particular conditions of each port, this latter aspect will be treated in Part III of the Report.

America, with the exception of Cristóbal in the Canal Zone.

Of the 471,299 tons of traffic which it handled in 1951, 64,777, or 14%, was traffic bound for or coming from El Salvador, mostly import cargo. The use made of Puerto Barrios by El Salvador, is explained by the fact that it is the only Atlantic port with which El Salvador has overland communication. This communication is established exclusively through the IRCA, which has a branch line running from Zacapa, Guatemala, to San Salvador and Cutuco.

The function which Puerto Barrios may fulfil as a regional port is subject to various factors, some favorable and others unfavorable. On the other hand, when the Atlantic Highway in Guatemala is completed, El Salvador will have another means of access to this port, which will be connected with all the Salvadorean production centers and markets by means of the Inter-American Highway and the internal road system of El Salvador; this would facilitate a greater volume of Salvadorean freight traffic through Puerto Barrios. Furthermore, upon the construction of an international highway connecting western and northern Honduras with the Atlantic Highway of Guatemala, there would be yet another means of access for freight traffic to Puerto Barrios, and this port would be able to serve three countries.

However, certain factors have to be borne in mind which could be unfavorable to Puerto Barrios. Among these is the project of the Guatemalan government for construction of a national port at Santo Tomás, a short distance from Puerto Barrios. This project is

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considered briefly in a later part of this report, but it is sufficient to point out here that from the point of view of El Salvador and Honduras its usefulness would depend upon inland means of access and by the cost of using them in comparison with the cost of utilizing those which lead or will lead to Puerto Barrios, and, by the nature of the port, of the maritime services at its disposal, of its port operations and their cost.

Likewise, it must be considered that the regional character of Puerto Barrios will also partly depend on the role assigned to Puerto Cortés, Honduras, as a port not only for Honduras but also for El Salvador. This is subject to the completion of the road between Nueva Ocotepeque and Potrerillos and its extension to Puerto Cortés (since at present the only access to this port is by rail from Potrerillos). Upon completion of these projects, it is probable that Puerto Barrios would lose a part of its import traffic for El Salvador, since the freight rates by road between Puerto Cortés and San Salvador could be less than between Puerto Barrios and San Salvador for some commodities.

Finally, the advantage of Puerto Barrios for El Salvador might be lessened if Acajutla is developed into a large port, since this could represent a more economical route.<sup>1/</sup>

## 2. Santo Tomás

According to recent information, the Guatemalan government has decided to build a new port --the estimated total cost

<sup>1/</sup> See point 4 of this section, p. 496

/of which

of which is not known<sup>1/</sup> on the Bay of Amatique, at the place called Santo Tomás, a few kilometers from Puerto Barrios. Some members of the Mission had occasion to visit this point. In coming to this decision, the Guatemalan government has been influenced by the desire to equip the country with a nationally-owned port administered by the government. This port, once the Atlantic Highway is completed, would eliminate the dependence of Guatemalan transport on the United Fruit and associated companies, which monopolize the port services, thereby extending their influence to rail and maritime transport.

However, no matter how important may be the considerations which have influenced the government of Guatemala in its decision to build the new port, it should be kept in mind that an undertaking of such magnitude would be a heavy drain on the national budget. To the cost of constructing the port and of its road of access there would be added other important outlays: port equipment and auxiliary installations --warehouses, custom house and port authority building, repair shops etc.-- housing for employees and workers, and the complete urbanization of the area.

Also worthy of consideration is the fact that more than half of the export traffic which IRCA sends through Puerto Barrios could not be channeled through the new port, because it is banana traffic. Moreover, the transport of certain import products such as liquid fuels and others which make up a large volume of traffic is less expensive by rail than by highway.

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<sup>1/</sup> A contract for \$ 5 million was awarded in mid-1953 for the construction of the port.

/Considering

Considering, on the one hand, the logical desire of the country to possess its own port and, on the other hand, the expense which such a project would involve, it would seem to be more convenient to try to find a solution which would take into account the country's just aspiration and at the same time save it this high expenditure and the costly duplication of port installations, while there are so many other public investment needs in Guatemala, not only for ports but for other aspects of transport, above all roads. Apart from such considerations relevant to the most productive use of Guatemala's resources for domestic capital formation, there are the regional factors discussed above. These should be taken account of in any estimate of the foreseeable future traffic of a new port near Puerto Barrios, especially the negative effect upon Puerto Barrios or Santo Tomás which would result from the completion of the projects intended to divert part of the Salvadorean traffic now handled by Puerto Barrios toward Puerto Cortés and Acajutla.

### 3. Puerto Cortés

This is the main port in Honduras and its only overland access is the railway from Potrerillos, 95 kms. away, where all freight bound for or coming from the interior of the country by highway must be transhipped, as well as the freight to or from the areas served by the Atlantic coast railroads. Puerto Cortés may eventually acquire a plurinational character --and thus rival Puerto Barrios-- upon completion of the Hondurean part of the highway which is to connect San Salvador with Potrerillos, especially if this road is prolonged from Potrerillos to the port.

/Whether

Whether or not Puerto Cortés becomes a competitor of Puerto Barrios, the communication of Puerto Cortés with the Ocotepeque-Copán-Santa Bárbara region will be important, since it will increase the economic activity of this area of Honduras and of the northern part of El Salvador. A greater commerce with the Salvadorean region of Santa Ana will also be facilitated. Moreover, there may ensue specific advantages to El Salvador in regard to freight charges on import commodities. The distance between Puerto Cortés and San Salvador by road would be approximately the same as the railroad run from San Salvador to Puerto Barrios, so that the charges on some imported products could be reduced, and transit time cut down. Among other examples, motor vehicles imported by El Salvador could arrive at their destination under their own power instead of having to employ the costly rail transport which is now necessary.

#### 4. Acajutla

This would be another port of great regional importance if the project recommended in 1952 by a United Nations expert, member of the Technical Assistance Mission which visited El Salvador, is carried out.<sup>1/</sup> At present it is at an open roadstead, similar to the ports on the Pacific coast of Guatemala. In 1951 its total movement was only 54,616 tons. Acajutla is operated by the Salvador Railway Company, and although there is communication by highway, the roads do not have access to the pier, so that all import traffic has to be transhipped to

<sup>1/</sup> Ricardo Ortiz, The Harbour System of El Salvador, United Nations, Technical Mission to El Salvador, 1952. ST/TAA/J/El Salvador/R.3.

the rail line. Even the custom house is at Sonsonate, 20 kms. from the port. Rail freights include port charges, under the system of through rates explained in Part I of this report.<sup>1/</sup>

On the basis of the recommendations made by the United Nations expert, the Salvadorean government has been studying the possibility of constructing a new port in Acajutla, a short distance from the present pier, with protecting breakwaters to make it a real international port. The preliminary estimate of the cost of this project is 18 million dollars. The importance of the plan is enormous, since it would not only provide El Salvador with a national port, but, due to the small area of the country and the short inland distances, would also completely revolutionize the routing of import and export traffic. A new port at Acajutla with road access to the piers would tend to channel through this point the bulk of El Salvador's foreign commerce, consequently reducing the volume of traffic handled by the other ports as well as that handled by the two railroads. These repercussions upon traffic flows would undoubtedly create grave problems for the railroads -- particularly from a sharp reduction of the volume of freight they would handle -- and would also present a problem to the Salvadorean government in regard to the attitude it would have to adopt. This is a subject which the present Mission is not able to examine. On the other hand, to judge by the preliminary study made by the United Nations expert, undeniable advantages would accrue to the country in the way of improved and more economical transport, and

<sup>1/</sup> See Chapter II, Section II, point 3 (a) of Part I, p.110.

/the present

the present system of through rates comprising rail freight and port charges together, the disadvantages of which have been pointed out, would have to be radically modified.

This Mission wishes to call attention to the problem of exactly where it would be more convenient to invest the funds available to El Salvador for improving its transport system, and above all to the fact that the projected port at Acajutla should be considered not as a matter of purely national interest, but as a problem having regional repercussions.

From a purely national point of view, the sum of 18 million dollars which the new port would cost is undoubtedly very large for a country like El Salvador and should be compared with the cost of other transport improvements to which reference is made in other parts of this report in order to arrive at a conclusion about the urgency and order of priority of the different projects.

On the other hand, from the regional point of view the Mission feels that the port of Acajutla should be studied in relation to existing plans for other nearby ports of plurinational interest and their means of access. Reference was made above to the situation of Puerto Barrios and to the position in which it may find itself in regard to the possible competition of Puerto Cortés. Attention has also been called to the Guatemalan government's project of constructing a port next to Puerto Barrios at Santo Tomás. If the possibility exists that Puerto Barrios may be able to give El Salvador more efficient and inexpensive service, or that Puerto Cortés may be utilized

/under



under reasonable conditions once highway communication is established, it is undeniable that these elements must be considered in studying the advisability of undertaking the new port of Acajutla. Likewise, attention should be given to the possibilities of improving the port of Cutuco and of changing the system under which it now operates.

Finally, it should be pointed out that the port of Acajutla is of interest not only to El Salvador but also to Guatemala (unless there is a considerable improvement in port conditions and port services at San José), whose southeastern region will be easily communicated by road with Acajutla, and to Honduras, the western part of which is only a relatively short distance from this port.

##### 5. Cutuco

This is at present the best Salvadorean port. Nevertheless, it is subject to the through rates system described above, is operated by the IRCA and, although there is a road which reaches as far as La Unión (2 kilometers from the port), freight trucks are not permitted to enter the port area.

Cutuco occupies a privileged strategic position in Central America. Due to its position on the Gulf of Fonseca, its hinterland includes not only the eastern part of El Salvador but also the southern part of Honduras; the highway from La Unión runs through southern Honduras, with a connection to Tegucigalpa, and continues on to the Nicaraguan border.

It would be logical to suppose that Cutuco, because of the saving involved, might also constitute a port of regional importance,

/serving

serving not only El Salvador but Honduras and perhaps certain parts of Nicaragua. In spite of this, Honduras has a project for carrying out costly works on a port situated a short distance away, on the Tigre Islands: the port of Amapala, whose physical features are very inferior, where operating costs are very high, and where almost any substantial improvement would mean a very considerable expense.

Communication by road between Tegucigalpa and San Lorenzo --which is the terminal point of the road giving access to the port through transshipment in lighters to Amapala-- represents a distance of 70 kilometers, which is shorter than the Tegucigalpa-La Unión run, but this difference is more than offset by the double transshipment at Amapala and San Lorenzo.

From an economic point of view, it would be much more advantageous for Honduran international traffic to utilize the port of Cutuco instead of Amapala, and for the proposed expenditures on Amapala to be postponed. However, this is subject to a modification of the port system at Cutuco, allowing free access by trucks to the port area, a reduction of port charges and improvement of the physical conditions of the port; or to the conclusion of some arrangement which would permit Honduras to have its own pier and a free customs house.

#### 6. San Juan del Sur

Although it is not yet an important port, it should be pointed out that it is of interest not only to Nicaragua but to the

/northwestern

northwestern part of Costa Rica, from which some exports have already been sent out. When the unbuilt stretch of the Pan-American Highway between the Nicaraguan border and the interior of Costa Rica is completed, the volume of traffic for San Juan del Sur from Costa Rica will undoubtedly be greater. All this is also subject to whether Costa Rica rehabilitates Puerto Soley, which would provide the country with a national export outlet in that area.

#### 7. General Conclusion

The overall study of the different ports mentioned above with a view to their utilization by more than one country indicates that the projected investments in each of the ports --especially in Acajutla, Santo Tomás, Cutuco and Amapala-- should be examined not individually but taking into consideration the regional repercussions as well as the benefits to be derived, at least in the first stages, from the improvement of services of nearby ports, as long as the possible advantages of developing new ports are not more positive.

#### RECOMMENDATION XXIII

That port development in Central America be considered not only from the national point of view but also from the regional point of view, an examination being made of the advantages and disadvantages to different countries of expenditures for new national installations before deriving the maximum benefit from those existing at other ports, even when these other ports are located in neighboring countries; and likewise, that the governments carry out studies and negotiations for the purpose of developing the ports of pluri-national interest with a view to establishing conditions permitting the joint utilization of their services in those cases in which this would be advantageous.

IV. The Free Zone of Colón

1. Description and General Observations

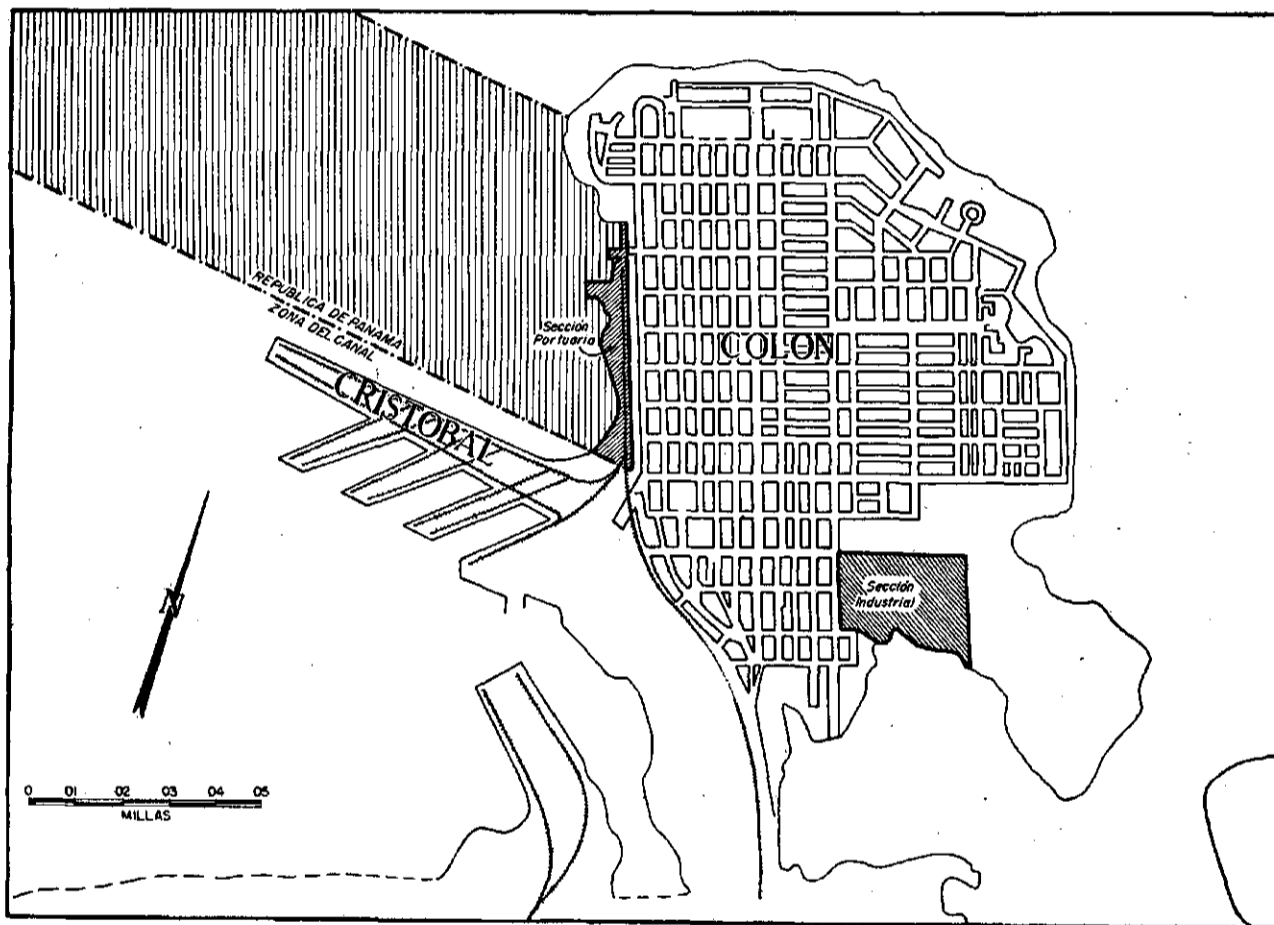
The Free Zone of Colón is a free trade zone established by the government of the Republic of Panama in 1948 in the southeastern part of the city of Colón.<sup>1/</sup>

According to Article 40 of the Decree creating it, in the Free Zone it is permitted to "introduce, store, exhibit, pack, unpack, manufacture, bottle, mount, assemble, refine, purify, mix, process, and in general operate on and manipulate all kinds of merchandise, products, raw materials, containers, and other commodities, with the single exception of articles which it is prohibited to import by the laws of the Republic". Merchandise is exempt from the payment of all duties, assessments, taxes and consular fees.

Products may be sold and exported free of all duties: (a) to the dependencies of the United States government in the Canal Zone, such as the Panama Canal Company, the Armed Forces stationed there or in the territory under the jurisdiction of the Republic of Panama, (b) to ships going through the Canal, and (c) to any foreign country. When products leave the Free Zone to be sold or consumed in Panama they are subject to the same import duties as if they came from any foreign country.

Availing themselves of the advantages offered by the Panamanian government and the federal tax credits granted by the United

<sup>1/</sup> See the attached diagram.



Panama: The City of Colon and the Port of Cristobal. The shaded areas show the port and industrial areas of the Free Zone of Colon.



States government under the terms of the Western Hemisphere Trade Corporations Act, some packing and distributing firms have established themselves in the Free Zone. Among them are United States companies engaging in bottled beverages, drugs and medicines, razor blades, tires, cigarettes, and other commercial and industrial enterprises.

The Free Zone of Colón has no port facilities, and all movement is effected through the port of Cristóbal, outside the jurisdiction of the Republic of Panama. However, the creation of a port zone is planned to the north of the piers of Cristóbal in waters under Panamanian jurisdiction, for the traffic of the Free Zone and for transshipments.

The Free Zone is in its initial stages, and its function so far has been limited exclusively to that of a center for the packing and bottling of chemical and pharmaceutical products and other of small volume and high value for their later re-exportation by sea or air, chiefly by air. As yet no industrial activities, properly speaking, are carried out here. However, the government of Panama is confident that --once the piers and modern warehouses planned for the Free Zone are installed and efficiently equipped with mechanical means of loading and discharging-- a considerable intensification of activity will take place, and the Zone will play an important role as a large redistribution center for all kinds of commodities, taking advantage of the position of the Canal as a crossroads of many important maritime routes and of a maritime traffic of more than 5,000 ships annually and 30

/million

million tons of cargo.

This large movement of ships and the possibility of utilizing the available tonnage for the efficient and economic transport of a number of products which may be in demand in Central America, once they are processed or manufactured in the Free Zone, is an important part of the entire system of the region. However, the Free Zone has not so far been able to fulfil the functions for which it was intended, partly because it is still in its initial stage and secondly because--except for the establishment of an adequate legal administration--none of the other requirements necessary for its proper functioning has yet been satisfied.

## 2. The Free Zone and Inter-Central American Maritime Traffic

The Free Zone can fulfil two types of functions which must be clearly distinguished: (a) as a transshipment and storage center for products bound for Central America, and (b) as a place for the processing and manufacture of products for Central America.<sup>1/</sup>

A prior requirement for both of these functions is the construction of an adequate port --such as that which is projected-- as an integral part of the Free Zone and in which it would be possible to load, discharge, and handle products with at low enough rates so as not to raise their cost in relation to the cost of articles imported directly from their points of origin.

The construction of this port would permit the use of

1/ In this report the relation of the Free Zone with South America and other countries is not dealt with.

/the projected



the projected storage facilities for merchandise in transit as well as for the building up of stocks of those products in frequent and constant demand, which could be sent to Central American ports more rapidly than if they were imported directly from their countries of origin. The dispatch of large shipments for storage in the Free Zone should in itself mean more economical transport than that available under the present system of individual and small shipments, which frequently involve very high costs.

The other principal function of the Free Zone --to which the Panamanian government attributes most importance-- is that of a center for the packing, bottling, and manufacturing of products for their distribution from the Free Zone to Central American ports. In this way it is expected to achieve, in addition to the above-described economy of transport, other savings due to the absence of taxes permitting the products to be distributed to countries on the Isthmus under more favorable conditions than if these countries imported them directly from the different countries of origin. The importance of these possibilities for the Free Zone of Colón is obvious. If these plans are brought to fruition through the means recommended below, or through other means which may be considered practical, the result will be an increase in national income and the creation of new sources of employment.<sup>1/</sup>

<sup>1/</sup> In the same way, it may be possible for Central American products to be concentrated in the Free Zone for packing or processing and later sale to foreign countries.

Apart from the domestic requirements necessary for increasing industrial production (labor, electric power, etc.), the development of the Zone itself poses other specific requirements in regard to transshipment rates, without which it will not be able to fulfil the functions under discussion.

In effect, the system of maritime shipping rates now in effect is unfavorable to the storage and transshipment of commodities in the Free Zone, since the rate charged for a ton of merchandise from Colón to Central American ports is \$1.4 and is higher than that which is charged between North American and European ports for direct shipment to the same points of destination. (In regard to three products which are at present of interest to the Free Zone, see Table 114.) As a result, mere storage in the Free Zone represents at the present time, on account of shipping rates, an increase in the cost of transport which in most cases amounts to 50% of the freight rate which would be paid for the same commodity between the point of origin and the points of destination.

It is clear that while this rate system prevails, storage of merchandise at Colón for later transport will not mean any economic advantage for the Central American countries, and, consequently, this traffic cannot be channelled through the Free Zone.

It should be noted that in the case of the transshipments now effected on the piers of Cristóbal of merchandise not entering the Free Zone, through rates are applied which eliminate this additional freight cost.<sup>1/</sup>

<sup>1/</sup> See point 3, Section II of the present chapter, p. 486

For its part, the administration of the Free Zone successfully negotiated the establishment, for United Fruit Company ships included in the Atlantic and Gulf Conference of the United States and Pacific ports of Central America, through-rates for merchandise unloaded at Cristóbal and bound for the Free Zone and reshipped to Central American ports. This rate is equal to the direct freight rate, plus a surcharge of \$2.20 per ton for discharging and an equal charge for reloading.

It would be advantageous if this system could be extended to include all commodities transhipped and stored in the Free Zone, whatever the length of storage time and independently of the routes or services utilized.

In regard to articles which are bottled, packed, or processed in the Free Zone, it has so far been possible to develop only those activities which, because of the high unit value of their products --such as medical products-- are able to withstand the costs of air transport to consumer markets, since the maritime freight rate applicable to all merchandise originating at Cristóbal and bound for Isthmus ports is \$44 dollars per ton.

This circumstance severely limits the margin of development of the Free Zone and, as a result, it is of the greatest interest to the Free Zone to bring about the establishment of inter-Central American maritime services at rates which permit the re-exportation of articles packed or manufactured in the Zone at a cost which allows them to compete with articles imported directly.

Table 114

Central America: Comparative Shipping Rates from New York to Central American Ports and from Colón to the Same Points of Destination<sup>a/</sup>

(Dollars per short ton or 40 cubic feet)

	Toilet Soup	Synthetic Detergent Powders	Vegetable Lard Substitutes
From New York to Corinto	40.00	42.00	33.00
From New York to Colón:			
Value not more than \$200 per ton	15.50	22.00	20.50
Value between \$ 200 and \$300	17.50	22.00	20.50
From Colón to Corinto	44.00	44.00	44.00
From New York to La Libertad	40.00	42.00	33.00
From New York to Colón:			
Value not more than \$200 per ton	15.50	22.00	20.50
Value between \$200 and \$300	17.50	22.00	20.50
From Colón to La Libertad	44.00	44.00	44.00
From New York to Puerto Cortés	18.00	18.00	26.00
From New York to Colón:			
Value not more than \$200 per ton	15.50	22.00	20.50
Value between \$200 and \$300	17.50	22.00	20.50
From Colón to Puerto Cortés	44.00	44.00	44.00
From New York to Puerto Barrios	18.00	18.00	26.00
From New York to Colón:			
Value not more than \$200 per ton	15.50	22.00	20.50
Value between \$200 and \$300	17.50	22.00	20.50
From Colón to Puerto Barrios	44.00	44.00	44.00

Source: Rates of the respective conferences and data supplied to the Free Zone by the operating shipping companies.

a/ From New York or New Orleans.

/RECOMMENDATION XXIV

RECOMMENDATION XXIV

Since it is of common interest to all the Central American countries to broaden the functions and activities of the Free Zone in such a way that they may all derive benefit from these functions and activities, it is advisable:

(a) to establish at the earliest opportunity as a general system through-rates for products which are stored and reshipped in the Free Zone, bound for Central American countries or other countries;

(b) to pursue the projects for the development of the port of Colón and the installation of the facilities necessary for offering the services required for a greater activity in the Zone; and

(c) to establish as soon as possible, in accordance with Recommendation XXII, Central American maritime services with the purpose of taking advantage of the traffic possibilities derived from the development of the Zone.

V. Legislation

It is clear that any improvement in Central American maritime transport, and in particular the establishment of regular coastal services, would require an examination of the legislation now in effect concerning navigation, ports, maritime insurance, damages, customs clearances, etc. The Mission has not had the opportunity to carry out such a study, but calls attention to the necessity of undertaking it.

RECOMMENDATION XXV

For the purpose of facilitating inter-Central American maritime movement and services, it is advisable to undertake a study of maritime and port legislation in all its aspects and of the legislation which affects maritime commerce on the Isthmus, with the object of recommending changes and improvements which will serve to standardize laws and regulations and achieve those objectives. Special attention should be given to navigation treaties designed with a view to permitting local coastal vessels to engage also in international coastal services.

Chapter IV

AIR TRANSPORT

Ten carriers participate in international operations to and from the Isthmus, or in service between two or more of the six Republics. Three are major international airlines providing passenger, express, and mail service to all, or most, of the six countries. <sup>1/</sup> Three others provide exclusively international connections, generally on a specialized basis; to a limited number of countries. <sup>2/</sup> Four primarily domestic companies also operate some inter-Central American and international routes. <sup>3/</sup>

Regional Services

As indicated in Part I, some of these regional services have been in operation too short a time to evaluate their full potentialities; while the frequency of schedules, capacity of equipment and

- <sup>1/</sup> Prior to 1953 only one carrier, Pan American World Airways, served the five Central American countries and Panama. In February, 1953, TACA International Airlines extended its DC-4 operations from Nicaragua to Panama and became the second carrier to fly to all six countries. The Cia. Real Holandesa de Aviación (KLM) began operations in the area in the summer of 1951 and now connects Costa Rica, Nicaragua, and El Salvador with Panama and thence to Europe, via the Dutch West Indies.
- <sup>2/</sup> Aerovias Sud Americana (ASA) flies only cargo between Florida and Guatemala and El Salvador; Transportes Aéreos Nacionales (TAN) provides cargo and passenger service for El Salvador, Honduras and Nicaragua with Havana and Miami; and Resort Airlines operates all-expense passenger air-tours to Guatemala.
- <sup>3/</sup> Líneas Aéreas Costarricenses (LACSA) operates in pool with Líneas Aéreas de Nicaragua (LA NICA) between San José and Managua; it also flies between San José and Panama, and from Panama via Costa Rica and Havana to Miami. TACA de Honduras operates an international spur from San Pedro Sula to Belize, British Honduras; and Aviateca conducts primarily cargo charter operations between Guatemala and New Orleans, as well as on occasion to El Salvador.

/nature

nature of operations vary so widely as to render comparison between them of little value. Until relatively recently the six Isthmus Republics, in effect, have been largely dependent for their regional and international air transport requirements on one carrier, Pan American World Airways; and this carrier remains by far the largest operator in the area.

The problem of whether operations are sufficient and adequate on a regional basis, might well be considered more fully by the governments, with participation, among others, of the Directors of Civil Aviation of Central America, who have been meeting from time to time or by specialists convened for this purpose.

#### Studies by a Regional Advisory Body

A full and detailed study of the current level of inter-regional fares and tariffs and their relation to existing contracts<sup>1/</sup> and of the possibility of encouraging additional services and/or carriers on a regional basis, should also be undertaken. The various technical problems, including the coordination of air navigation facilities and services for regional carriers, should also be considered.

<sup>1/</sup> At the first Conference of the Chambers of Commerce of Central America, in San Salvador, September, 1951, it was pointed out that passenger tariffs between the countries of Central America and Panama were higher, on a passenger-mile basis, than in other areas, and it was resolved "to recommend to the Chambers of Commerce and Industry of Central America and Panama that they take steps in their respective countries looking toward a revision of existing contracts with air navigation companies for the purpose of obtaining more just and equitable inter-regional tariffs; and that any new contracts take into consideration the favorable effect of such a requirement on the regional economy."

Pooling of Operations

Two additional related matters which might well be taken under consideration from a regional point of view are: (a) a suitable replacement for the present obsolescent types of aircraft which at present are employed almost universally throughout the Isthmus; and (b) the possibility of amalgamation or pooling of one or more of the present small-scale independent operations.

Obviously, the choice of a uniform type of modern aircraft to replace the present regional fleet when it becomes no longer economically desirable to continue operating the older planes, not only will reduce the unit cost of the new equipment to each carrier, but will make easier the pooling of schedules, and the consolidation of maintenance and other operating aspects, as may be agreed upon.

Replacement of Obsolescent Aircraft

The question of when and how to replace obsolescent aircraft and the type of aircraft to be chosen as the replacement should be very thoroughly studied. In deciding on the new transport aircraft to be employed in Central America certain special characteristics should be sought: (a) ability to operate in and out of small fields, that is, an aircraft with short take-off and landing performance; (b) rugged construction to operate on indifferent landing strips; (c) loading arrangements designed to facilitate the handling of all types of cargo with a minimum of time and effort; (d) high rate of climb at high altitudes for operation in mountainous country; (e) the payload of the aircraft would be about 6,000 to 12,000 lbs.; and (f) the design should be as simple as possible for ease of maintenance.

/Because



Because of the short distances between points in Central America, high speed is not so important. It may be said, inter alia, that the aircraft that is required for the region would also be valuable in many other underdeveloped countries, and it is possible that an aircraft especially designed for this service would prove a profitable engineering investment.

#### Domestic Trans-border Extensions

Clearly, one way of stimulating the economic growth of the region will be to increase the volume of intra-regional and international air traffic movement. There are a number of ways in which the governments, at little or no expense, can assist in bringing this about, with resulting direct financial gain to the entire area. One way would be the encouragement of trans-border extensions of domestic services wherever a community of interest exists across a frontier. Costa Rica and Panama have set an excellent example, LACSA's local domestic schedules continuing into Panama to provide air transport between areas on both sides of the frontier. A similar extension of Expreso Aéreo Costarricense's services along the Caribbean coast appears desirable, from Colorado north across the border to Greytown and Bluefields, so that Nicaraguan workers in the northeastern corner of Costa Rica may have an efficient means of getting to and from their homes.

The efforts of Aviateca to provide suitable cargo services between Puerto Barrios, Guatemala and El Salvador should be encouraged and extended. Consideration might also be given to effecting a junction at Tapachula, Mexico, with the local services of Compañía Mexicana de

/Aviación

Aviación. In Honduras, as soon as improved airports are available at Puerto Cortés and San Pedro Sula, domestic operations to those points and others in the western part might profitably be extended into El Salvador. These and other trans-border additions to current domestic operations should be carefully studied, and Government encouragement given those which are found most desirable and necessary.

#### Expanded Air Parcel Post

The Central American Governments might also give consideration to a greatly expanded use of existing air transport schedules for the inter-regional movement of all forms of mail matter. The recent establishment of air parcel-post service between Guatemala and Costa Rica and Nicaragua is a commendable step in this direction. At the present time, the frequent protracted delays encountered in the movement of mail by surface means, amounting on occasion to weeks and months, as for example between El Salvador and Nicaragua, across the Golfo de Fonseca, are a serious obstacle to the development of a healthy regional economy.

#### Forwarding of all Intra-regional Mail by Air

A general agreement to forward all mail by air, without surcharge, between the Central American Republics, would be very advantageous. The Directors General of the Post offices should be empowered to employ whatever air schedules may be available, by whatever established carrier, which will result in expediting the movement of mail matter, inbound or outbound. Such mail contracts should be non-

/discriminatory

discriminatory and be based on rates as established by international postal conferences.

#### Simplified Tourist Formalities

Simplified entrance and exit requirements for tourists is very necessary. Many prospective travelers are deterred from visiting Central America because of current difficulties in this respect. Moreover, requirements for intra-regional travel, even for residents of the Isthmus, are very onerous.

A simple means to encourage tourist travel is to authorize established air carriers to handle the issuance of tourists cards directly, subject of course to suitable safeguards. Certain airlines have already limited arrangements of this character, and these should be expanded and extended to other carriers. It is also desirable to liberalize visa requirements for transit passengers who may wish to stay over <sup>1/</sup>24 hours.

#### Facilitation for International Air Transport

One of the most important steps which the Governments can take to increase the flow of air passenger and commodity traffic is to implement fully Annex No. 9 of the International Civil Aviation Agreement. This is the Annex which sets forth the standards and recommended practices adopted by the leading aeronautical countries of the world for the facilitation of international air transport. No documents should be required, for example, other than those provided for in Chapter 2 of Annex No. 9 for the entry and departure of aircraft on

<sup>1/</sup> Regarding general measures to facilitate the movement of persons, see Recommendation XIII, p. 450

inter-regional or international flights. Where evidence of origin or value of cargo is wanted, a single document, namely the International Cargo Invoice, should be employed, and copies of this document should be accepted in lieu of separate forms, such as consular invoices, certificates of origin, certificates of value, export declarations and the like. Failure to adhere to accepted international practice in these matters contributes to delayed schedules, increased operating expenses, and higher fares and tariffs, with resulting poorer service to residents of the region.

#### Regional Navigational and Rescue Procedures

Much can be done, on a regional basis, to standardize and improve air traffic control procedures for inter-regional and international operations. The same is true for flight information and arrival reports, which in turn are closely linked to effective regional search and rescue services. All countries should be sure that their airmen maintain proficiency in modern, standardized search and rescue methods, and that the aircraft of other countries have immediate entry for search and rescue purposes. In rescue missions, success or failure may hinge on a matter of minutes.

#### Standardization of Weather Data

Meteorological services require a special degree of regional coordination, if they are to function adequately. Standardization of observations and transmittal of data is, of course, important. Barometers should be calibrated against a standard and checked at

/intervals

intervals subsequently. WMO (World Meteorological Organization) standards for reducing barometric readings to sea level should be followed. Unfortunately at present, some data being regularly transmitted are so unreliable as to be of little value.

#### Need for off-shore Weather Stations

Lack of weather reports from areas to the east and west of the Isthmus makes forecasting extremely difficult at certain times. International agreement to establish minimum meteorological units on the Cocos (Costa Rica), Malpelo (Colombia) and Galápagos (Ecuador) islands in the Pacific; and at San Andrés island (Colombia), in the Caribbean would greatly strengthen forecasting methods. Possibly use could also be made of units in the shipping fleet operating off-shore from the Isthmus, particularly on the Pacific side. The placing of the most important regional stations on a 24-hour basis would also be valuable.

#### Adequate Planning for Future Growth

From a regional point of view, it is important to keep in mind that the movement of passengers, goods, and mail on Isthmus routes, in spite of its phenomenal growth in the last few years, is still only in its infancy. Planning for the future should be done accordingly. Development programs which take full advantage of this vital, growing channel for the flow of commerce will contribute importantly to the

/expansion

expansion and integration of the regional economy.<sup>1/</sup>

Importance of a positive Government Attitude

In summary, it may be said that while it would be difficult to find an area where surface transportation offers less real competition, the negative attitude on occasion of some Central American Governments has not been conducive to the development of the most effective and economical regional air transport services. Governments have often failed to give responsible air carriers reasonable long-term contracts; they have not infrequently burdened carriers with unreasonable demands for special discounts and privileges; contracts have not been uniform to carriers, operations have been handicapped by unnecessary restrictions and burdensome taxes. Adequate air navigation and meteorological facilities have not been provided, nor have airports been suitably maintained or improved.

RECOMMENDATION XXVI

The Governments should take appropriate measures to:

(a) stimulate extension of domestic air services across borders wherever there is a common interest on

<sup>1/</sup> The average annual rate of growth of air transportation in the United States during the past decade is nearly 25 per cent per year. Recently the United States Civil Aeronautics Administration has estimated that airline passenger traffic in 1960 will be about two-thirds again as large as in 1952, or approximately 40 million airline passengers. Downward trends in international rates are indicated by Pan American World Airway's latest cut of 45 per cent in trans-Atlantic cargo charges. In California, Western Air Lines expects 70 per cent of its passenger business to be air coach within three years.

/the part

on the part of the other countries;

(b) make fullest use possible of existing air transport services for inter-regional postal traffic of all kinds, without surcharge;

(c) carry out, with participation of the Directors of Civil Aeronautics in Central America and Panama, studies on the advisability of regional operations, on the level of intra-regional fares and tariffs and on the new type of aircraft to be used when it ceases to be economically advantageous to operate the older types of craft now generally used in the area;

(d) simplify tourist travel formalities by air;

(e) implement in all its aspects Annex 9 of the International Civil Aviation Agreement on standards and practices recommended by the leading aeronautical countries of the world;

(f) standardize and improve procedures for air traffic, arrival and departure flight information, and rescues;

(g) coordinate weather data and services;

(h) carry out an international agreement to establish minimum weather units in conveniently located points east and west of the Central America Isthmus;

(i) prepare adequate plans for future development;

(j) adopt a constructive and cooperative attitude to the development of air transport.

PART THREE

TRANSPORTATION PROBLEMS COMMON TO CENTRAL  
AMERICAN COUNTRIES AND RECOMMENDATIONS  
FOR THEIR SOLUTION

Chapter I

RAILWAY TRANSPORT

I. Railroads in Central America

In Central America, neither national nor private railroads offering public passenger and freight service, cross the borders of the countries in which they are located. The only exception to this is the International Railways of Central America (IRCA), which has a line connecting its Salvadorean Division with its Guatemala Division. This line enables El Salvador to use the Guatemalan port of Puerto Barrios on the Atlantic for a part of its export and import traffic.

In this chapter, railroads will be considered from a general point of view; they will be classified and studied according to their ownership and control since the majority of railroad companies in Central America, although legally independent and with distinct names and administrations, are subsidiaries of or connected in one way or another with the banana interests, forming a large system of inter-related companies. Thus, we shall consider first the problems of a general nature which concern practically all of Central America,

/going on



going on later to a consideration of domestic problems.

All the railroads in Central America are narrow gauge (35, 36, and 42 inches, or 0.888, 0.914, and 1.067 meters), except the Panama Railroad which is broad gauge: 5 feet, or 1.52 meters. The total length of railway lines at the end of 1951 was 5,179 kilometers. Total traffic in that year was 16 million passengers and 4 million tons of freight. Of the total length of 5,179 kilometers, 2,899, or 56%, was built by the banana companies and is used exclusively for their plantations. (See Table 115.) The remaining 2,280 kilometers, or 44%, also offering public service, are classified in the following way:

1,464 kilometers (64%)	belongs to banana companies or to railroad companies connected with them;
101 kilometers (4%)	are national, but are administered by a banana company; <u>1/</u>
144 kilometers (6%)	belongs to a private British company; <u>2/</u>
82 kilometers (4%)	belongs to the United States government; <u>3/</u>
489 kilometers (22%)	are national and are administered by Central American governments. <u>4/</u>
<hr/> 2,280 kilometers (100%)	

1/ Ferrocarril Nacional de Honduras.

2/ The Salvador Railway Co., Ltd.

3/ Panama Railroad.

4/ Verapaz Railroad (Guatemala), total length 47 kilometers; Ferrocarril al Pacifico (Nicaragua), 190 kilometers; Ferrocarril Eléctrico al Pacifico (Costa Rica) 132 kilometers, and Ferrocarril Nacional de Chiriquí (Panama), 120 kilometers.

Another very special aspect of transport in Central America is the fact that, in contrast to the situation in the rest of the world, the ports for international traffic are with few exceptions owned or administered by railroad companies. (See Table 115.) Thus, the predominant control of overland transport by these companies is extended also to port and navigation services, since a large number of the ships serving Central American ports --especially on the Atlantic coast-- belong to the banana interests.

The general nature of passenger and freight traffic in Central America does not seem to be very favorable to railway transport, and future prospects do not justify the expansion of this system in the field of public traffic. On the contrary, certain railroads or certain lines which offered efficient service in former years, or even a short time ago, are today in an unsatisfactory condition. In certain cases it would be more practical, especially from the financial point of view, to replace them with other more adequate means of transport.

In the first place, it must be kept in mind that the majority of the private Central American railroads --although some of them were originally built as common carriers-- have as their chief purpose the transport of bananas from plantations to ports.<sup>1/</sup> However, public transport, when it is effected by railroads connected with banana interests, represents for the banana companies an extremely

<sup>1/</sup> Except the Salvador Railway Company, the IRCA, the Panama Railroad and the Northern Railway of Costa Rica.

Table 115

Central America: Railroads

	<u>L e n g t h</u>		Maritime ports operated by the R. R.
	Public ser- vice lines Kms.	Plantation lines Kms.	
<u>Guatemala:</u>			
1. IRCA (International Railways of Central America), Guate- mala Division <u>a/</u>	620		Puerto Barrios and San José <u>b/</u>
2. and 3. Cia. Agrícola and United Fruit <u>a/</u>		290	
4. Verapaz Railroad	47		
<u>El Salvador:</u>			
5. IRCA, El Salvador Division <u>a/</u>	458		Cutueo
6. The Salvador Railway Co., Ltd.	144		Acajutla
<u>Honduras:</u>			
7. F.C. Nacional de Honduras <u>a/</u>	101		
8. Tela Railroad Co. <u>c/</u>		626	Cortés y Tela
9. Standard Fruit Co. <u>c/</u>		540	La Ceiba
<u>Nicaragua:</u>			
10. F.C. del Pacífico de Nicaragua	190		Corinto, San Juan del Sur, and Puerto Morazán
<u>Costa Rica:</u>			
11. F.C. Eléctrico al Pacífico	132		Puntarenas
12. Northern Railway <u>a/</u>	186	337	Limón
13. Compañía Bananera de Costa Rica <u>a/</u>		631	Quepos y Golfito
<u>Panama:</u>			
14. Panama Railroad	82		Cristóbal and Balboa
15. F.C. Nacional de Chiriquí	120		Puerto Armuelles

/useful

useful and important supplementary business, since it helps to reduce to a high degree the fixed costs of banana transport, and also allows the banana companies to obtain a greater volume of freight for their ships.

Railway communication has been and continues to be the most practical and economical system for banana transport, because this involves the moving of large quantities in full trains with fixed schedules, avoiding the risk of spoilage in transit. Rail transport

(Table 115 continued)

	L e n g t h		
	Public ser- vice lines Kms.	Plantation lines Kms.	Maritime ports operated by the R. R.
<u>Panama:</u>			
16. Chiriquí Land Company R.R. <sup>a/</sup>		268	
17. United Fruit Co. R. R. <sup>a/</sup>		207	Almirante
Total	2,280	<u>2,899</u>	
Grand Total		<u>5,179</u>	

Source: Transport Mission, from data supplied by the railroad companies.

- <sup>a/</sup> Railroads belonging to, affiliated with or administered by banana companies or their subsidiaries.
- <sup>b/</sup> The port of San José is the property of the IRCA, but is operated by the Agencia Marítima Nacional, S. A. (Grace Line). The port of Champerico is served by the IRCA and operated by the Cia. de Agencias de Champerico, S. A. (Grace Line).
- <sup>c/</sup> Minor public traffic.

/fulfils these

fulfills these requirements better than any other means of transport. But in the transport of other export products, of general import freight and of local passenger and commodity traffic, general conditions and characteristics in Central America are not so suitable for rail transport as in the case of bananas.

It is generally recognized that the two principal factors favoring rail transport are long hauls and dense traffic. These factors --except in the case of the IRCA, which has a reasonably important traffic over relatively long distances-- do not play a part in Central American railway traffic.

When railroads were initiated in Central America, at the end of the last century and the early part of the present one, railways were the best means of inland transport. But with the building of roads and the advent of motor transport --the advantage of which for short hauls of general commodities is indisputable-- rail transport is efficient, economical and profitable only in countries like the United States, Canada, some parts of Brazil and other countries, where full advantage can be taken of its adaptability for mass transportation at low cost over long distances. And even in countries in which these ideal conditions prevail, to obtain a low operating cost the railroads must have adequate equipment and installations and above all an economical system of traction.

In Central America, as in many countries of Latin America, common carrier railroads (private as well as government-owned) have not kept pace --except in rare instances-- with the technical

/progress

progress of the railroad industry. Some companies still have in service a large part of their original locomotives and rolling stock, more than 50 years old. To this there is added the generally deficient condition of the track, which is also a factor in reducing the speed and the hauling capacity of the trains, already limited by the difficult layout in mountainous terrain.

So long as bus and truck competition did not become a significant factor, the railroads, in order to deal with the constant increase in operating costs, resorted to the simplest method for raising their revenue: an increase in rates. When highway competition became important and the railroads began to foresee that it would deprive them of part of their import and export traffic, they adopted the through rate systems, including port services and maritime transport, described in Part I of this Report.

But even with this measure and in spite of successive rate increases, the general condition of Central American railroads is not good from the financial view point of the railroad itself, with the exception of two which are government-owned, the Ferrocarril Nacional de Honduras and the Ferrocarril del Pacifico de Nicaragua, which are only slightly affected by highway competition and which charge very high rates. There is little hope that the situation will improve in the future.

Consequently, in view of present circumstances and future prospects, and considering the characteristics and requirements of passenger and freight traffic, it is believed that the efforts of the Central American governments should be directed preferably toward the

/development

development of other means of transport rather than railroads.

This does not imply that the governments should abandon or completely lose interest in the existing common carrier rail lines, replacing them by other systems of transport. On the contrary, the Central American railroads, private or government owned, represent investments of several hundreds of millions of dollars and, in the opinion of the Mission, are indispensable in most cases to the national economies and will continue to be so for a long time. Moreover, railroads are the branch of transportation which provides employment for the greatest number of people,<sup>1/</sup> and the sudden abandonment of any important railway line could have unfavorable social repercussions, since the means of transport which would replace it could provide direct and immediate employment to only a fraction of the displaced railway workers.

Consequently, it is advisable to rehabilitate the railroads which are suitable for offering good service at reasonable rates, and to avoid duplication of inland transport systems in any one zone when the existing system is in adequate condition or can be improved at a reasonable cost, unless reasons of high national interest should prevail over economic reasons.

## II. Private Railroads

The banana industry is extremely complex, and in order to

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<sup>1/</sup> The total number of railroad employees and workers (public service) in the six Central American countries is approximately 15,500.

make it as profitable as United Fruit and its associates have succeeded in doing. <sup>1/</sup> It is necessary not only to have a solid financial and commercial organization, but also to possess private means of transport as well as private port facilities and adequate shipping, so as to insure the smooth functioning according to strict schedule of all the multiple operations involved, from the cutting of the bunches of bananas to the final distribution to markets, with no risk of interference by outside interests.

This business, in which large sums have been invested, would be highly risky if the inland transport of the bananas were subject to delays and did not receive priority in port operations. Because of this factor, the contracts between the governments and the companies for the concession of land and the exploitation of the banana industry included the construction and operation of railway lines and ports, either for the exclusive use of the companies or to be operated also as public services.

Undoubtedly the countries granting these concessions were benefited perhaps more than by the banana industry by the general economic development which resulted from the use of these means of transport for the export of other national products, much more valuable than bananas. But it is also beyond question that the exploitation of public traffic has meant an important source of revenue for the companies, at

<sup>1/</sup> United Fruit had a net profit of 51 million dollars in 1951 and 38 million in 1952, after paying \$4.50 and \$4.00 dividends per share. (Annual Report of the United Fruit Company, 1952). In May 1953, the company's shares were quoted at \$53/54 on the New York Stock Exchange.



least until very recently, as long as the operating costs were kept at a relatively low level, and as long as stiff competition from road transport remained undeveloped. Even today, in spite of the considerable increase in operating costs --principally wages<sup>1/</sup> and in spite of road competition, the operation of public service continues to be of benefit to the companies, since the cost of banana transport is reduced in proportion to the total tonnage over which the fixed costs are distributed.<sup>2/</sup> Moreover, public service provides the companies with considerable revenues derived from port services and from maritime freight charges for the associated shipping companies.

The countries which have granted concessions for the exploitation of rail and port services do not exercise effective control over the operations, rates, and general conditions of the services. The contracts fix only the ceiling rates which may be charged in public, that is, a maximum price for first class passage and one for second class, and for freight a maximum charge per ton-kilometer or ton-mile, with no stipulation as to the type of freight. Naturally, it was thus necessary to fix very high ceiling rates for freight in order to offset the low rates on commodities whose volume is great in proportion to weight or which have other features tending to make their handling or transport costly or dangerous.

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<sup>1/</sup> Wages absorb 55 to 65% or more of the gross income of the railroads.

<sup>2/</sup> Costs that are practically independent of the volume of traffic: administration, taxes, rent, financial charges, etc.

/Thus,

Thus, within such broad limits, the railroads can freely fix their rates as best suits their interests. They quote moderate rates for runs where road competition is stiffer and through differential rates, encourage certain kinds of traffic along certain routes with the object of channeling this traffic toward ports which they operate and which are served by their associated shipping companies, as is the case of Puerto Barrios; and where road competition does not exist, or is less severe, they apply high rates, which are not always in reasonable proportion to the cost of the service.

It is the opinion of the Mission that public service given in concession should be better regulated and that rail and port rates should be re-examined, not with the preconceived intention of obtaining a general reduction in passenger and freight rates and other operations, but to establish a system of equitable charges, based largely on the actual cost of the service, and leaving to the concessionaire a reasonable margin of profit.

In the United States as well as in the great majority of countries, except in Central America, railroads operate under a system of government control. In most countries no tariff may be put into effect without prior government approval, based on the reports and recommendations of official organizations specializing in transportation. In concession contracts it is usual for the government to reserve the right to regulate the service and especially the treatment of the users. In the United States the rates of railroad companies operating

/from state

from state to state are subject to approval by the Interstate Commerce  
1/  
Commission.

RECOMMENDATION XXVII

Governments should try to renegotiate with the companies the present concession agreements for rail and port services or, alternatively, try to reach with the companies an agreement for the readjustment of present rates, taking as a basis, in their due proportions, the different factors which enter into costs.

It is well known that it is impossible to establish scientifically perfect transportation rates, since no way has yet been found to evaluate accurately the multiple elements which make up or affect in one way or another the cost of transport of different commodities, nor is there any well tested formula for determining the exact proportion of fixed costs which should be allocated to each type of traffic. It is, however, feasible to establish logical and reasonable rates, based on (1) distance; (2) density and other characteristics of traffic; (3) operating conditions, and (4) terminal costs.

1/ This Commission was originally set up in 1887 to regulate and control rail combined with water transport between the various States of the Union, with the purpose of insuring good public service, at equitable rates, and of avoiding discrimination in any form: against persons, localities or certain commodities. Even at that time unfair rate procedures were prohibited, and it was also obligatory to publish all tariffs, which were subject to the approval of the Commission. (See Transportation Act, 1887, Elkins Act, 1903 and 1920, Hepburn Act, 1906, Mann-Elkins Act, 1910, Transportation Act, 1940, as well as the Annual Reports of the Interstate Commerce Commission.)

/In regard

In regard to distance, an equitable rate can be one that does not vary per ton-kilometer for a comparatively short distance, then tapers off on a ton-kilometer basis as distance increases. This is the classical rate system, and that generally adopted, since it is the system which takes into consideration the fact that operating cost does not increase proportionally to distance.

It is also suggested that the present classification of freight be revised so that the cost of service and not the value of service be the determinant factor. To establish cost the following elements should be considered: (1) weight-volume ratio (that is, the degree of utilization of rolling stock), (2) cost of handling and inherent risk of transport, (3) volume, regularity and balanced directional flow of traffic and (4) extra cost due to special nature of merchandise, such as perishability (bananas) heavy merchandise (vehicles) or merchandise that requires special care such as livestock or certain agricultural products.

For the purpose of establishing different categories according to the size of shipments, it is suggested that the following be adopted: (1) small express shipments; (2) less than car load; (3) car load lots; and (4) regular shipments in complete trains.

In regard to special rates on certain runs and/or for certain commodities, they might be determined according to the following value of service factors: (1) national interest in the development of isolated or underdeveloped zones and encouragement of the production of certain agricultural or industrial products, possibly

/aided

aided by government subsidies; (2) competition from other carriers, to avoid a loss of traffic which could compromise the financial condition of the railroad or adversely affect the regularity of service, and (3) economic density of merchandise.

The Mission also believes that all rates, without exception, should be published, and that there should exist no agreement or arrangement calling for discounts, rebates or any other compensation, favor or special treatment for certain users, even though these users be in some way connected with the railroad company.

#### RECOMMENDATION XXVIII

All rates should be determined in accordance with usual standards in publicly regulated railroads, and should be published. It is desirable that the railroads be prevented from charging the banana companies a rate lower than actual cost of the service rendered on runs of banana trains and from seeking compensation for this loss through increased public rates. On any run, the direct operating costs of transport should be covered, leaving a margin to be applied to fixed costs<sup>1/</sup>

#### RECOMMENDATION XXIX

- (a) Rates should always cover the cost of the service;
- (b) In carrying this out, no exceptions should be made, as far as possible, in favor of any freight or over any particular run.

Practices which hinder commercial competition should be eliminated.

<sup>1/</sup> Direct or variable costs means the out-of-pocket costs incurred in operating the train: (1) wages of locomotive and train personnel; (2) fuel and lubricants; (3) other materials used in locomotives and trains; (4) repairs of locomotives and rolling stock, and (5) roundhouse expenses of locomotives and cars.

RECOMMENDATION XXX

All freight rate pools should be prohibited, that is, the combination of rail charges with port charges or others and/or with maritime freight rates. The different freight charges should be quoted separately.

Another provision necessary to the development of competition in the field of transportation is the elimination of certain obstacles which some railroad companies resort to in order to prevent trucks from entering port areas. In El Salvador, for example, trucks arriving at La Unión by the Inter-American Highway cannot continue on to the adjacent port of Cutuco in order to operate there, because the IRCA does not permit public traffic on the short stretch of road belonging to it, which gives access to the port zone.

RECOMMENDATION XXXI

Governments should take adequate measures to facilitate the access of trucks to ports served by road which are controlled by the railroads.

Another practice which should be eliminated is the preferential treatment given in ports to freight which is transported by rail. Freight carried by other means is generally postponed and is charged higher rates or extra rates for equal service. Coffee from Alta Verapaz and other products which arrive by water to Puerto Barrios are subject to a port charge greater than that paid for products transported by rail and, according to information given to the Mission, are often delayed.

It should be added that such practices are also current in various ports

/whose

whose services are controlled by government-owned railroads.

In all Central America there is not one single international traffic port operated by a railroad where trucks can load and unload cargo directly on the pier.

RECOMMENDATION XXXII

At ports operated by railroads the governments should make it obligatory that the same treatment accorded freight transported by rail be also given to freight using other means of transport.

The high cost of railroad operation in Central America is largely attributable to the inadequacy of locomotives, rolling stock and permanent installations. The railroad companies, with the exception of some lines used exclusively for the service of the banana companies --the Tela Railroad and the Compañía Bananera de Costa Rica Railroad-- have done little in the way of reducing operating costs through modernizing the system of traction and making general improvements in their installations.

Consequently, if when revising the present rates consideration is given to the high operating costs occasioned by the use of obsolete and uneconomical traction material and by the inadequacy of installations, the rates to be charged would be inevitably high and even impracticable and detrimental to the development of traffic. Moreover --and this is extremely important-- if the governments should approve, to be put into effect on runs where no competition exists, exorbitant rates due to the above described reasons, it would be equivalent to rewarding inefficiency and bad service at the cost of the national economy.

/RECOMMENDATION XXXIII

RECOMMENDATION XXXIII

Governments should encourage the rehabilitation and modernization of the railroads of the concessionaire companies, with a view to substantially reducing their operating cost.

The following are some of the means which could be adopted by the governments to facilitate the modernization of private railroads:

(1) use their influence with the railroad workers' unions to persuade them not to oppose the use of Diesel electric locomotives<sup>1/</sup> on the ground that this would cause dismissal of personnel. It is the belief of the Mission that the replacement of steam traction by Diesel traction would, by lowering the cost of operation, make feasible a reduction in rates as well as more rapid service, thus bringing about an increase in passenger and freight traffic, which is to say more trains and, consequently, a need for more personnel; (2) avoid --when it is not strictly necessary and economically justified-- the duplication of systems of inland transport in regions where there are private railroad lines capable of offering good service at reasonable rates; and (3) wherever possible, urge railroad companies that serve the same region or locality to make common use of their installations and equipment, with a view to reducing operating costs.<sup>2/</sup>

None of the Central American countries has a permanent governmental organization for the control of the public services of private railroad companies. In the United States this control is

<sup>1/</sup> See Part I, Chapter I, p. 31

<sup>2/</sup> Reference is made to the IECA and the Salvador Railway Company.



exercised by the Interstate Commerce Commission, referred to above.

In Europe matters relating to railroad transport --control of concessions, rates and services, etc., as well as coordination of railroads with other means of transport, are handled by offices of the appropriate ministries. In the South American countries these affairs are controlled by an office generally called "Dirección de Ferrocarriles", which is usually a dependency of the Ministries of Development or of Public Works.

The Mission believes that an office of this kind would satisfy a need felt in Central America and would facilitate relations between the governments and concessionaire companies and at the same time help to solve economic problems related to transportation.

#### RECOMMENDATION XXXIV

Creation of an office, subordinate to a general transport agency --as proposed in Recommendation CXXIII-- to serve as liaison between the government and the concessionaire railroad companies which provide public railway service and to deal with affairs relating to this branch of transportation. The principal duties of the proposed office would be the following:

- (a) to control compliance with the laws, decrees, regulations, agreements and contracts regulating the services offered by the railroad companies;
- (b) to stimulate the reform of these laws, decrees, regulations, etc., when it deems this advisable for the general interests of the country;
- (c) to make continuous study of the economics of railroad services and its influence on the national economy;
- (d) to compile transportation statistics from the information supplied by the companies and to investigate and analyze operating costs;
- (e) to study passenger and freight rates and recommend and justify their adoption or revision on a firm basis;

/(f) to investigate

- (f) to investigate the complaints of users;
- (g) to act as advisor to the government in inland transport affairs in general and especially in the coordination of different means of transport;
- and
- (h) to intervene or mediate as a representative or advisor of the government in conflicts between railroad companies and their employees and workers.

With the object of facilitating the creation of the proposed organization, it is suggested that the modus operandi of the following official organizations be studied: Interstate Commerce Commission, Washington, D. C., Direção das Estradas de Ferro, and Contadoria Central Ferroviária, Rio de Janeiro, Brazil.

### III. National Railroads

There are only five railroads in Central America which are publicly owned (see Table 115 above): (1) Verapaz Railroad, Guatemala - 47 kms.; (2) Ferrocarril Nacional de Honduras - 101 kms.; (3) Ferrocarril del Pacífico de Nicaragua - 380 kms.; (4) Ferrocarril Eléctrico al Pacífico, Costa Rica - 132 kms.; (5) Ferrocarril Nacional de Chiriquí, Panamá - 120 kms.

Except for the Ferrocarril Nacional Eléctrico al Pacífico, in Costa Rica, the national railroads are those charging the highest rates. (See Table 116.)

The IRCA in Guatemala charges (for less than car load lots of basic consumption commodities in local traffic) from 3 to 4 cents per metric ton-kilometer, and the rates on both of the railroads in El Salvador are somewhat lower. Attention should also be called to

/Table 116

Table 116.

Central America: Comparative Railroad Freight Rates on Essential Consumption Commodities for a Distance of 50 Kilometers in Lots less than Car Load Lots on Government owned Railroads

Railroads	Charge in dollars per metric ton	Per metric ton-kilometer in cents
Verapaz Railroad	6.16 <sup>a/</sup>	12
Ferrocarril Nacional de Honduras	5.00	10
Ferrocarril Nacional de Chiriquí	4.00 <sup>b/</sup>	8
Ferrocarril del Pacífico de Nicaragua	3.90	7.8
Ferrocarril Eléctrico al Pacífico	1.75 - 2.2	3.5 - 4.4

Source: Transport Mission, from data supplied by the railroads.

<sup>a/</sup> 47 kilometers.

<sup>b/</sup> In lots of more than 3 1/2 tons.

the important fact that the private railroad companies --such as IRCA-- pay better wages to their workers than do the national railroads. (See Table 117.)

1. Verapaz Railroad, Guatemala

This is the common carrier railroad with the shortest line and the least volume of traffic in all of Central America. Its line between Panzós --terminal point of navigation on the Polochic River-- and Pancajché, in the Department of Alta Verapaz, is only 47

/Table 117

Table 117

Central America: Current Wages In Some Railroads

Railroads	Hourly wages, in dollars, on the basis of 26 8-hour working days			
	Straight pay	Overtime (daytime)	Overtime (night and day)	Overtime (night)
<u>IRCA, Guatemala Division</u>				
Engineers, 1st class	0.83	1.25	1.43	1.67
Engineers, 2nd class	0.79	1.19	1.36	1.58
Engineers, mixed and local trains	0.73	1.09	1.25	1.46
Firemen	0.34	0.50	0.58	0.67
Conductors, passenger trains	0.73	1.09	1.25	1.46
Conductors, mixed trains	0.71	1.06	1.22	1.42
Brakemen, Puerto Barrios yard	0.33	0.49	0.56	0.66
Brakemen, trains	0.30	0.44	0.51	0.59
<u>Northern Railway, Costa Rica<sup>a/</sup></u>				
Engineers, 1st class	0.76			
Engineers, 2nd class	0.66			
Firemen	0.35			
Brakemen, 1st class	0.35			
Guards, freight	0.22			
<u>Ferrocarril Eléctrico al Pacífico, Costa Rica<sup>a/</sup></u>				
Engineers, 1st class	0.68		1.02	
Yard engineers	0.47		0.83	
Firemen, 1st class	0.34		0.51	
Conductors (guards)	0.34		0.51	
<u>Ferrocarril del Pacífico de Nicaragua<sup>b/</sup></u>				
Engineers, 1st class	0.55		0.82	
Engineers, 2nd class	0.48		0.72	
Engineers, 3rd class	0.41		0.62	
Firemen	0.31		0.46	
Passenger conductors	0.34		0.51	
Brakemen	0.17		0.25	

Source: Transport Mission, from data supplied by the companies.

Note: Data were not available from other railroads.

a/ At the rate of 5.67 colones per dollar.

b/ At the rate of 7.00 córdobas per dollar.

721 61871

/kilometers

kilometers long. The annual volume of traffic is very slight: 5,000 tons of freight and a few thousand passengers.

As pointed out in Part I of this Report,<sup>1/</sup> the permanent way, due to lack of maintenance work for several years, and the locomotives and rolling stock, are in poor condition. To rehabilitate this railway it would be necessary to renovate the line and acquire new locomotives and cars. This would represent an expenditure which may be estimated approximately as follows:

	<u>Dollars</u>
2 electric Diesel locomotives, switcher type, weighing 44 tons, 360/400 HP, costing about \$ 60,000 each	120,000
2 light passenger coaches with 40/48 seats, at \$ 12,000 each	24,000
3 box freight cars, with a capacity of 20/22 tons, at \$ 5,000 each	15,000
2 gondola cars, 25-ton, at \$ 4,000 each	8,000
2 30-ton platform cars, at \$ 4,000 each	8,000
General repairs of rolling stock now in service	5,000
Repairs and replacement of repair shop equipment	20,000
Improvement of permanent way	<u>200,000</u>
Total	400,000

With this equipment the railroad could operate two trains daily, and move more than 100 tons, with a utilization of only 50% of the available capacity, since the traffic is practically all in one direction. This average would represent an annual traffic of 36,000 tons,

<sup>1/</sup> See Section II, Chapter I, point 1 (c), p. 32

/that is,

that is, seven times more than the present volume of traffic. As it is not likely, from the economic point of view, that traffic in these proportions will develop in the near future, such an expenditure would not be justified. Nor would it be advisable to make a smaller investment, acquiring less material, because it would still be necessary to improve the line for safety reasons, and the small volume of traffic would mean a prohibitive operating cost.

Moreover, the small current traffic of the Verapaz Railroad could be handled under better conditions by the highway which runs "parallel" to the rail line between Pancajché and Panzós, a road which goes as far as El Estor, from which point freight could continue on by water to Livingston and Puerto Barrios, or by the Pancajché-Tactic-Salamá-El Rancho road (especially lead ore from the Cobán region) to go on to Puerto Barrios, via the IRCA.

#### RECOMMENDATION XXXV

Dismantle the line of the Verapaz Railroad. The rails and steel ties could be used in the construction of the pier of El Estor and in the structures for the roads which are recommended for this area. The railroad's warehouse in Pancajché, which is in good condition, could be used for the storage of coffee and cereals. The existing small staff could be reemployed in the reorganized inland waterway service which is suggested in Recommendation CXVI.

#### 2. Ferrocarril Nacional, Honduras

This railroad, only 101 kilometers long, is owned by the government, but is administered by the Tela Railroad Company, a banana

/company

<sup>1/</sup> company. From the technical and financial point of view, it may be said that it is well managed: the permanent installations and the rolling stock are kept in good condition; the repair shop is one of the best in Central America, and a large part of the locomotives and rolling stock is modern. Financial returns --due to high rates and the absence of competition-- have been very good in recent years.

It appears that the Tela Railroad Company does not derive direct profit from the good administrative service which it renders to the Ferrocarril Nacional. The salaries of the officials who work for both companies are paid proportionately by each company, and it is estimated that if the government had to manage it, the fixed cost would be greater than that which prevails under the joint administration.

The interest of the Tela Railroad in managing the Ferrocarril Nacional seems to be largely due to the fact that in this way it can maintain control over operations on the stretch of the Ferrocarril de Honduras which gives access to Puerto Cortés, eliminating the possible interference of third parties in the moving of banana trains coming from its plantations.

The administration of the Ferrocarril Nacional was taken over by the Tela Railroad Company under the terms of an antichresis contract drawn up some 30 years ago. This contract was replaced recently by another administrative agreement, approved by Legislative Decree on January 29, 1952. Under the terms of this agreement, the Tela

<sup>1/</sup> See Part I, Section II, Chapter III, point 1 (a), p. 174

Railroad Company is obligated to construct a 30-kilometer branch line from Potrerillos to El Guanacaste (jurisdictions of Santa Cruz de Yojoa and Potrerillos) for the transport of bananas from new plantations established in these areas by independent producers. This branch line, the cost of which is estimated at \$ 575,000, was recently inaugurated. It will be paid for by the freight charges for bananas coming from this branch line and transported by the Tela Railroad Company over the Ferrocarril de Honduras line at the rate of \$ 50 per carload. This is an excellent freight rate for the railroad, since it represents an average of 6 cents per ton-kilometer.<sup>1/</sup> This rate will be in effect until the total cancellation of the debt incurred for construction of the branch line.<sup>2/</sup>

Under these circumstances, it is concluded that the management of the Ferrocarril Nacional de Honduras by the banana company is beneficial to the country. This becomes even clearer if it is considered that, with the construction of the road from Potrerillos to Puerto Cortés -- recommended by the Mission as urgent for the economic development of the country --<sup>3/</sup> the Ferrocarril Nacional de Honduras will inevitably lose the greater part of its general import and export traffic and will be converted into a banana railroad, due to the development

<sup>1/</sup> This estimate is based on an average of 180 bunches per car and a weight of 39 kilos per bunch.

<sup>2/</sup> It is estimated that the Tela Railroad will invest \$ 3.4 million in the acquisition of land and the preparation of plantations, and will assume responsibility for irrigation projects and the combat of banana diseases on the properties of the independent producers.

<sup>3/</sup> See Recommendation IV, p. 416.



of the plantations served by the new branch line. It will continue to be an access to Puerto Cortés for trains coming from the Tela Railroad system.

#### RECOMMENDATION XXXVI

As long as the unbuilt stretch of the Northern Highway, from Potrerillos to Puerto Cortés is not open to public traffic, with direct access for trucks to the port zone, it seems advisable to:

- (a) Revise the rate structure of the Ferrocarril Nacional de Honduras for the purpose of making it more equitable;
- (b) Improve passenger service, and
- (c) Improve the yard in Potrerillos in order to facilitate transshipment operations from truck to freight car and vice versa.

### 3. Ferrocarril del Pacífico, Nicaragua

In Part I, Chapter IV, of this Report the present deficient conditions of this railroad have been described, both in regard to mobile equipment and to permanent way.<sup>1/</sup> Among common carrier railroads in Central America, it is among these which most badly need to be rehabilitated and modernized, but it is also the railroad which, in the opinion of the Mission, has the best prospects of developing its traffic and increasing its revenues, even after reducing its rates to a reasonable level. In Chapter IV reference was made<sup>2/</sup> to a possible basic program of repairs and modernization with the object of substantially reducing operating costs. This program should naturally be considered as a tentative outline giving an approximate idea of what

<sup>1/</sup> See Chapter IV, Section II, point 1, p. 228

<sup>2/</sup> See pp. 233-236

would be needed and is, therefore, subject to later revision and detailed study.

Although the total length of the system is 380 kilometers --excluding the San Juan del Sur-San Jorge line, which it is suggested should be dismantled because it is not profitable and because it is a completely isolated line, with a very slight traffic that could be moved under better conditions by the highway now under construction connecting these two places-- 190 kilometers consists of the trunk line Granada-Managua-Corinto, and the traffic is relatively dense, with favorable prospects for being increased. Freight traffic has already begun to rise substantially: from 202,000 tons in 1946/47 to 306,000 in 1950/51, or a 50% increase. Through a general reduction in freight rates, and if the vigorous development which the country has experienced in the last few years continues, it is probable that rail traffic will attain a volume of 400,000 tons within two or three years. Passenger movement, if the number of trains is increased and service is speeded up, can also increase, possibly in an even greater proportion than freight traffic.

Even if the stretch of road between Chinandega and Corinto is constructed, <sup>1/</sup> which will undoubtedly draw off some traffic from the railroad, the Mission believes that, if before the opening of this highway a broad program of repairs and improvements has been carried out, the railroad will be able to retain its import and export traffic, which is the most important, as well as a large part of the long

<sup>1/</sup> See below Chapter II, of this Part, Recommendation LXIV, p. 586.

distance local traffic of great volume. Naturally, the technical improvements --among which an advantageous replacement of steam engines by Diesel locomotives may be singled out<sup>1/</sup>-- would have to be accompanied by a reduction in freight rates and by the organization of new services.

#### RECOMMENDATION XXXVII

A technical commission to study the reconditioning and modernization of the Ferrocarril del Pacifico de Nicaragua, should be established to consider especially:

(a) the total replacement of steam traction by Diesel, for the purpose of obtaining the advantages which this would offer;

(b) the improvement of the line and the reinforcement of the structures to permit the use of Diesel locomotives with 13.3 tons of weight on the drivers (total weight 80 tons) and the speeding up of trains;

(c) the replacement of hand operated signals by a mechanic system on the trunk lines;

(d) the enlarging of the yard at Managua and the improvement of railroad installations at Corinto to facilitate port operations, and

(e) the use of small cranes mounted on pneumatic tires on the pier at Corinto to facilitate the transfer of cargo from pier to freight car and vice versa, in the manner already introduced in Puerto Limón, Costa Rica.

<sup>1/</sup> The saving in the cost of fuel could be as much as 75% of the cost of steam traction (In the State Railroads of Uruguay, which replaced steam traction by Diesel traction two years ago, the saving in fuel and lubricants is two-thirds, and it is estimated that the cost, including the financing, of the electric Diesel locomotives now in service --23 locomotives of 1600 HP-- can be met from the savings realized in five years.) In addition, a high percentage of availability would be obtained, as well as savings in maintenance, etc., Total Dieselization also has the following advantages: elimination of water service, the closing down of steam locomotive repair shops, savings on maintenance of the line due to the fact that Diesel traction is smoother and lighter, and the utilization for revenue-producing of rolling stock previously used for the transport of fuel oil.

RECOMMENDATION XXXVIII

A division or section of economic studies, should be established as a direct dependency of the administration of the railroad, to study:

- (a) rate structure, on the basis of Recommendation XXVII, taking into account the operational costs of the new system of traction;
- (b) the mechanization of accounting, control and statistics, and
- (c) the adoption of a bonus or premium as an incentive to work in the shops, similar to that adopted with favorable results by many railroads.

Other matters in the province of that department could be the analysis of operating costs and of traffic statistics, publicity for the railroad, the introduction of a service for carrying and distributing refrigerated fish and other products, <sup>1/</sup> and, in general, the study of systems for improving efficiency, diminishing costs and developing traffic.

RECOMMENDATION XXXIX

With regard to pick-up and delivery systems, it is advisable to:

- (a) set up a pick-up and delivery service for freight and express (door-to-door service) in the most important localities served by the railroad. This service could be carried out by the railroad's own trucks in Managua and other cities, or by arrangement with truckers where the traffic is slight;

<sup>1/</sup> Fish taken out of the refrigerating chamber is placed in a wooden container lined with glass fiber and hermetically sealed, with a capacity of 60 to 70 kilos. The fish, even in very hot weather, is preserved in perfect condition on trips of 10 to 12 hours. The containers can be manufactured in the railroad's own shops, to be sold or rented to customers. Cork may also be used as insulating material, but experience has shown that glass fiber is much better. These containers may also be used for the transport of cut-up pre-refrigerated fowl.

/(b) establish

(b) establish an office at a strategic point in cities where the station is distant from the business district for receiving express and small freight;

(c) utilize the pick-up and delivery service for the establishment of an import cargo delivery service (the importers could hand over to the railroad the bill of lading and other necessary documents, so that the railroad, for a small fee, could take charge of the merchandise at the port and deliver it directly to the business firm, and for the establishment of C.O.D. service;

(d) establish a transport and distribution service for pre-refrigerated fish in containers, without ice, a very practical and economical system --especially in the case of shipments which would not regularly occupy a refrigerator car-- and eliminate the use of common wooden boxes with ice;

(e) use, for the transport of live fowl, wooden and metal fabric cages, standard size and dismountable for better utilization of space on return trips, similar to the system in use in several Brazilian railroads.

#### 4. Ferrocarril Eléctrico al Pacífico, Costa Rica

This Costa Rican national railway gives relatively good passenger and freight service between the country's capital and the port of Puntarenas, also serving such important places as Alajuela and Esparita. The total length of the network is 132 kilometers, and it is electrified along its entire route. The present management is carrying out a well-conceived improvement plan on the permanent installations, and an important quantity of locomotives and freight cars have been acquired. Within a short time this railroad will be in a position to offer better and faster service, and its operating cost will be lower due to the use of more powerful traction material. Its financial situation is sound (the operating ratio in 1950 was 91%, and

/in 1951

in 1951 it was 85%) and prospects for the development of traffic are favorable, in spite of the competition of road transport.

Because of the excellent service which it performs for the country's economy, this Pacific railroad deserves broad support on the part of the government, to help it speed up its improvement plan. As practical measures designed to modernize the operating systems and to obtain higher revenues, the Mission proposes the creation of a Department of Economic Studies similar to that outlined in Recommendation XXXVIII. With regard to the port services provided by the railroad at Puntarenas, reference is made to Recommendation XXXI concerning direct access of trucks to the pier.

#### RECOMMENDATION XL

With the object of extending public service and increasing revenues, a pickup and delivery service should be organized as outlined in Recommendation XXXIX, plus the extension of this service, through a mutual traffic contract, to the system of the Northern Railway, to make it possible for the trucks effecting the pickup and delivery in San José to distribute the freight and parcel post arriving at the capital over both lines and to pick up freight and parcel post for the stations of both lines. In this way there would be established a complete door-to-door service, which would constitute a source of revenue and would give prestige to rail transport. In serving both of the railroads, the operating cost of the trucks would be lower. It is also suggested that containers be used for the transport of pre-refrigerated fish, and that a C.O.D. service be organized as well as a service for the delivery of imported merchandise.

#### 5. Ferrocarril Nacional de Chiriquí, Panama

The condition of this railroad has been discussed briefly

/in

in Chapter VI of Part I of this Report,<sup>1/</sup> The total length of the line is only 120 kilometers. Its freight cargo, which in 1946 reached 48,000 tons, has been diminishing at a rapid rate year after year. (In 1951 it did not amount to 20,000 tons, which represents a drop of 60%.) On the other hand, in the same period there has been a 27% increase in passenger traffic, but this has not meant a proportionate rise in revenues, which dropped 6% in the passenger field, which indicates a reduction in the average distance traveled.

The only important source of revenues which this railroad has is the payment it receives from the Chiriquí Land Company (a subsidiary of the United Fruit Company) for the concession to use the 21 kilometers of track which its banana trains traverse to carry export freight to Puerto Armuelles. These 21 kilometers are also used by the trains of the Ferrocarril Nacional de Chiriquí, but the line is maintained (and it is in perfect condition) by the Chiriquí Land Company.

Freight traffic in 1951 brought in a very slight gross income: \$90,500, and passenger traffic returned \$223,000, or 2.5 times more. (This is really unusual for a railroad.) But both passenger and freight traffic are destined to disappear immediately upon the opening to traffic of the stretch of the Inter-American Highway between Concepción and the Chiriquí Viejo river and the short branch road projected between Concepción and Divalá.

To rehabilitate and modernize this railroad so as to

<sup>1/</sup> See Part I, Chapter VI, Section II, point 1 (b), p. 350

leave it in a position to offer efficient service at a reduced operating cost which would allow it to lower its very high rates, it would be necessary to invest an estimated one million dollars in locomotives and rolling stock and in improvements of permanent installations.

#### RECOMMENDATION XLI

Since future traffic prospects of the Chiriqui National Railroad do not justify new investments, it is recommended:

(a) Not to invest capital, but to try to maintain in the best way possible the services which are indispensable while these cannot be effected by road.

(b) To accelerate construction of the unbuilt stretches of road in the region served by the railroad.

(c) To lease to the Chiriqui Land Company the rail line between Puerto Armuelles and Progreso, or a greater extension if the banana company should be interested.

(d) To carry out a plan of building road intended to replace the services of this railroad. The payments received from the Chiriqui Land Company for rent on its leased line could be used as a basis for the financing of these roads.

(e) To apply to the same project the returns from the sale of the materials and property of the railroad.

(f) To utilize the railroad station at David as a bus and truck depot, renting it to the interested firms.

(g) To leave in the hands of the government the port services at Armuelles and Pedregal, and

(h) To adapt these ports to truck services.

#### IV. Training of Personnel for Diesel Traction and Organization of the Proposed New Services

The Mission does not believe that problems will arise in the training of engineers and mechanics for Diesel locomotives.

/For example



For example, the locomotive manufacturers provided the State Railways of Uruguay with an instructor who arrived with the first three electric Diesel units, and in a short time he instructed a sufficient number of engineers -- selected from among the best steam locomotive engineers -- for the 26 locomotives acquired, which are now in service. At present the mechanics are being trained, since it was considered advisable to employ in Diesel traction a mechanic who would ride with the engineer and make necessary repairs during the run (rather than continue with firemen who are not needed).

Higher personnel who are to be employed in the organization of the Departments of Economic Studies should serve an apprenticeship on a railroad such as the Companhia Mogiana de Estrada de Ferro, a private Brazilian company, with headquarters in Sao Paulo, which has perhaps the best Department of Economic Studies in all of Latin America. As to the proposed door-to-door services, the apprenticeship here could be served with the Estrada de Ferro Sorocabana, property of the Sao Paulo State Government, whose "Rodoviario" Department, established some 15 years ago, is considered a model of organization and efficiency.

## Chapter II

### ROADS AND HIGHWAYS

#### I. Primary and Secondary Road System for Domestic Transportation

In the basic seven-year plan which the Mission proposes for the construction and improvement of highways in Central America, domestic roads represent an investment of about \$88 million, in two stages. The first, two-year stage, would cost \$26 million, and the second, five-year stage, \$62 million.<sup>1/</sup>

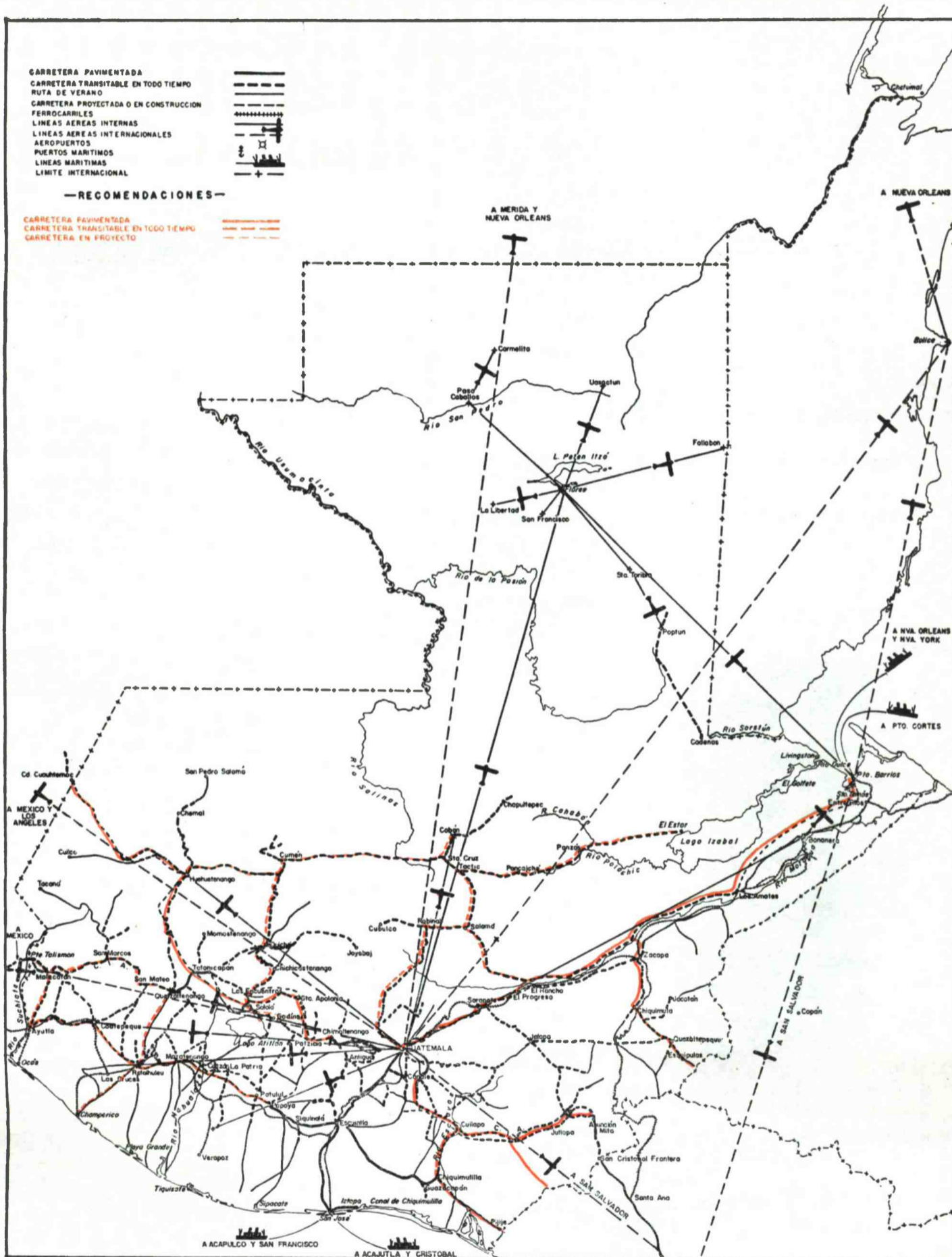
The domestic primary and secondary road plan explained below in further detail is designed to provide each of the Central American republics --taking account of existing highways-- with a basic system complementing the internationally-used trunk highways. It has also been formulated so as to require a reasonable and efficient amount of investment. Estimates have been made on the same basis of categories, specifications, and costs used to work out the international highway plan.<sup>2/</sup> In any event, on many occasions the data are only approximate. Maintenance expenditures have not been included.

Of the \$88 million to which the plan adds up, Guatemala's share would be approximately \$41 million; El Salvador's, whose road system is well advanced, would be \$6 million; Honduras' part \$7 million, since its main highways have already been considered under the road system for international use; Nicaragua's, \$12 million; Costa Rica's, \$10

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<sup>1/</sup> See Table 96, p. 385

<sup>2/</sup> See appendix to Chapter I of Part II of this report, p. 440



II. Guatemala: Means of Transportation and Recommendations of the ECLA/TAA Mission with regard to Highways.



million; and Panama's, \$12 million.

The proposed plan for each country is described below, together with an evaluation of the drawbacks of existing domestic roads and of their inadaptability to national transport needs.

1. Guatemala

Considering the surface and topographical configuration, the abundance of natural resources, and the population distribution, it would be most convenient, with a view toward the economic development of the country, to consider as the three main trunk routes of Guatemala's road and highway system the three longitudinal routes which are at present unfinished and inadequate for economical transportation, namely the Inter-American Highway, the Coastal Highway, and National Route No. 7 (Huehuetenango-El Estor).

The importance of the first two routes has been previously discussed, and the reasons for the importance of the third one will be discussed later. Therefore, the completion and improvement of these primary routes should be regarded as of the highest importance in a program of road and highway development, in view of the fact that they would, by themselves and through the system of transverse highways linking them, have a zone of economic influence comprising most of the country's area.

Furthermore, upon their completion, practically all departmental capitals would be directly or indirectly connected to each other, and with seaports and other means of transportation, as well as with regions which are now economically important. Lastly, it would be

/possible

possible in the future to branch off from them, penetration roads into the still extensive areas of Guatemala which remain as yet unexploited (such as those along the coasts, the Petén and other regions):

A. Trunk Highways

(a) Inter-American Highway. Though this highway is the most important route both for domestic and international transport in Guatemala, it is not yet able to satisfy adequately the needs of either one of these types of traffic. For this reason, the completion, improvement, and paving of the entire length of this route should be given first priority, as already proposed in this report.<sup>1/</sup> The advantages which would emerge from this recommendation in favor of its utilization to improve domestic transportation are an added reason for giving it first priority.

(b) Coastal Highway. The same may be said about this route, which is considered of great importance for the development of agricultural, livestock and forestry resources in areas already productive and in others of high potential value lying in the Departments of Quezaltenango, Retalhuleu, Suchitepéquez, Escuintla, Santa Rosa, and Jutiapa, all of which should develop rapidly with the first-class communication this route would afford. The recommendation for completion and pavement of this route has already been made in the section on proposed plans for the international system.<sup>2/</sup>

(c) Longitudinal Northern Highway (Huehuetenango-El Estor). This highway

<sup>1/</sup> See Recommendation I, p. 402

<sup>2/</sup> See Recommendation II, p. 409

/will join

will join the Inter-American Highway at Huehuetenango, and it largely coincides with National Routes 7W and 7E, in which, even though they are all-weather roads, transport operations are carried on with difficulty and at high cost, because of deficiencies in their specifications and general condition. Despite defective conditions, these routes are already helping substantially the development of certain mining, farming, and livestock areas of Huehuetenango, Quiché, and other departments which only because of the high yields obtained at the present time are able to bear such high freight costs. Through the improvement and completion of this highway and its connections with the Atlantic ports, the Inter-American Highway and the central highlands will make it possible for the agricultural, livestock, mineral, and forest production of the Departments of Huehuetenango, Quiché, Alta Verapaz, and Izabal to be moved in greater volume, at less cost, and without the present limitations. The cost of the project is estimated at \$1.3 million in the first stage and \$5.5 million in the second. (See Table 18.)

In the Department of Quiché --at Sacapulas-- this road connects with National Route No. 15, and through it with the capital of the department (Santa Cruz de Quiché), and the Inter-American Highway. In the Department of Alta Verapaz it is connected with National Route No. 5 (at Santa Cruz Verapaz), which in turn links Cobán with Salamá and Guatemala City. It ends at El Estor, on the shores of Lake Izabal, through which communication is established with the Atlantic port of Livingston.

Table 118

Guatemala: Primary and Secondary Road Plan

First Stage: <u>2 years</u>	Kms.	Expenditures in millions of dollars		
		Total	Year I	Year II
Longitudinal Northern Highway	51	1.3	1.3	—
Atlantic Highway	99	5.0	2.0	3.0
Quezaltenango-Retalhuleu Highway	50	1.3	0.7	0.6
National Highway No. 16 (Cuila- pa-Chiquimulilla)	45	0.7	—	0.7
Total	245	8.3	4.0	4.3

Second Stage: <u>5 years</u>	Kms.	Total	Year	Year	Year	Year	Year
			III	IV	V	VI	VII
Longitudinal Northern Highway	219	5.5	1.0	1.0	1.0	1.0	1.5
Atlantic Highway	219	11.3	2.5	2.5	2.5	2.5	1.3
National Route No. 5 (Guatemala City-Cobán)	210	6.3	1.5	1.5	1.2	1.0	1.1
National Route No. 15 (Sololá-Sa- capulas)	89	2.7	1.4	1.3	—	—	—
Quezaltenango-San Marcos-El Car- men road	119	3.6	—	—	1.0	1.1	1.5
Retalhuleu-Champerico road	50	1.3	—	—	—	—	1.3
National Route No. 17 (Salamá-El Rancho)	61	1.2	—	—	0.6	0.6	—
National Route No. 8 (Ayutla-Ma- lacatán)	30	0.9	—	—	—	—	0.9
Total	997	32.8	6.4	6.3	6.3	6.2	7.6

Through its connection with National Routes No. 5 and No. 17, which links Salamá with El Rancho (the point of intersection of the Atlantic Highway with the railroad to Puerto Barrios), this trunk route will provide an additional way of transportation to either of these

/two means.



two means. That is to say, the products transported from Huehuetenango to Santa Cruz Verapaz will be offered the alternative of either continuing to the Atlantic by way of El Estor and Lake Izabal, or by way of National Routes Nos. 5 and 17, and thence by the Guatemala City-Puerto Barrios railroad or highway, whichever may be more convenient.

RECOMMENDATION XLII

(a) That the Longitudinal Northern Highway (Huehuetenango-El Estor) be gradually improved until it becomes a first-class highway, offering easy low cost transportation, and stimulating the region's economic development;

(b) that only the first stage of development be carried out, so that a high expenditure will not be required, it thus being possible to establish regular traffic at lower cost, while the other important means of communication are concluded with practically all of which this highway is already connected;

(c) that this improvement be made keeping in mind the need to relocate and reconstruct some stretches of the highway to such specifications and features that would permit its eventual further improvement by using entirely or almost entirely the improved route;

(d) that during the first stage of this plan, improvement be made only of the section between Huehuetenango and Sacapulas, and that the remainder be left for the second stage.

B. Other important Proposed Routes

Aside from the three important trunk routes for which priority has been recommended, it is important to consider the following:

(d) Atlantic Highway. The government of Guatemala has given priority to the construction of this highway, which will connect the City of Guatemala with Puerto Barrios. By October 31, 1952, the sum of \$7.24 million /had already

had already been expended on this project, and about a sixth of the total project had been done. The total cost is estimated to be about 20 million dollars.<sup>1/</sup> Considering the cost of this highway in the light of other transportation needs of equal or greater importance, it is the Mission's opinion that it would be preferable to construct the Atlantic Highway in various stages. The present plans of the government, however, look forward to finishing the highway in as short a time as possible through an intensive application of mechanical and capital resources.

In a previous section of this report we have examined the special situation prevailing in railroad transportation between Puerto Barrios and Guatemala City, the nature of the rates charged and the intimate connection between rail and port services -- the repercussions of which are not limited to this route but, through the agency of rate control, they are extended to transport activities in other zones of Guatemala. On the other hand, it is certain that because of the nature of the traffic now moving on the railroad, due regard being given to the actual distance between terminal points, the railroad is the more suitable means of transportation for the majority of export products as well as for such imports as liquid fuels, wheat, wheat flour, heavy machinery, and other articles. The economic purpose of the highway is to effect a lowering of transportation costs, especially for many import items. This, of course, requires a study of the way in which the freight will be divided between the two means of transportation in the future, which in turn depends in part on the freight rates for highway

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<sup>1/</sup> See Part I, Chapter I, Section II, point 5 (d), p. 56

transport which will be charged.

Given the general conditions under which Guatemalan highway transport is carried out, the complete economic justification for the construction of the Atlantic Highway and the priority assigned to it will depend on the fulfillment of certain conditions, among which the following can be mentioned: (a) that there exist a potential volume of freight which will assure a traffic density commensurate with the investment in the highway, especially in the light of what a similar amount could do for transportation in other parts of the country; (b) that there be available sufficient number of vehicles of the kind necessary to move this volume of freight efficiently and at sufficiently low rates; (c) that in order to provide service at rates that might compete with future railroad rates, steps be taken to reduce motor transport operating costs, as, for instance, lowering the final prices of trucks and tires — which at the present time in Guatemala are burdened with excessive freight rates, port charges, import duties, and dealer's charges. Also, fuel costs, both for gasoline and Diesel oil, should be lowered, and it would be advisable to encourage the use of Diesel motor trucks because of their lower operating costs on long distance hauls;<sup>1/</sup> (d) that such vehicle maintenance and repair services be established as will insure first class transportation service; (e) that the necessary steps be taken to provide auxiliary means of facilitating transportation, such as changing port regulations in order to permit direct access to the docks;<sup>2/</sup>

<sup>1/</sup> See Recommendation LXXXI, p. 636  
<sup>2/</sup> See Recommendation XXXI, p. 534

and constructing the more necessary feeder roads.

Considering the great importance of this project now being carried out and its implications, the Mission believes it is highly advisable that those organizations of the Guatemalan government charged with the various aspects of the project make an exhaustive study of all the problems involved and set it in its proper place within the over-all framework of the national economy.

(e) National Route No. 5 (Guatemala City-Salamá-Cobán). This road now connects the capitals of the Departments of Guatemala, Baja Verapaz and Alta Verapaz, which produce fairly large quantities of coffee and corn, and smaller quantities of other farming, livestock, mining, and forest products. Through its present connections with the Longitudinal Northern Highway,<sup>1/</sup> with the Guatemala City-Puerto Barrios railroad, and its potential connection with the Atlantic Highway (these last two through National Route No.17), it is most probable that it will acquire future importance, derived from its possibilities to increase local traffic as well as that related to imports and exports. Therefore, it is advisable that at present its improvement be carried out only in an initial phase, within the plan proposed in this report, and in accordance with the probable increase in direct traffic which will occur between Guatemala City and Cobán.

It is estimated that probably an improvement of the section from Guatemala City to Cobán (210 kms.) could be carried out during the second stage of the plan, over a maximum period of 5 years and at an

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<sup>1/</sup> See Recommendation XLII, p. 559

approximate cost of 6.3 million dollars, and within specifications corresponding to category 2-B. During the first three years, the improvement of the Guatemala City-Salamá section (139 kms.) could be made, and during the next two years that from Salamá to Cobán (71 kms.). (See Table 118.)

RECOMMENDATION XLIII

National Route No. 5 should be improved over a five-year period in such a way as to carry out a first phase of its eventual conversion into a first-class highway.

(f) National Route No. 15 (Sololá-Santa Cruz Quiché-Sacapulas). The whole of this route, which connects the capitals of the Departments of Sololá and Quiché with the town of Sacapulas, should be converted in its initial phase into one of category 2-B more or less, in accordance with the plan proposed in this report. The expenditure required for carrying out its improvement in the second stage of the plan would be \$2.7 million, and the work could be done in two years. (See Table 118.)

It is not necessary to present many reasons in order to justify this recommendation. It is sufficient to say that, along with uniting these two departments, it would constitute another important connecting road between the Inter-American and the Longitudinal Northern Highways, by means of which it will be possible to develop to a considerable extent the production of coffee, corn, sugar-cane, beans, etc., as well as the livestock, forest and mineral resources of the Department of Quiché. On the other hand, because of the shortness of this route (89 kms.), and the moderate investment required, it would set up in a short /time,

time, through the Inter-American and Northern Highways, a local transportation circuit (Huehuetenango-San Cristóbal-Totonicapán-Sololá-Santa Cruz Quiché-Sacapulas-Huehuetenango) of importance on account of the potential of the region over which it would exert economic influence.

#### RECOMMENDATION XLIV

National Route No. 15 should be improved, in a preliminary phase, with characteristics such that in a period of two years it may permit regular traffic at lower cost, through moderate investment; and layout and cross section design should be established so that at a later stage it may be converted into a first-class road, utilizing all or most of the improved route.

(g) Quezaltenango-San Marcos-El Carmen Highway. This route corresponds to the extreme western section of National Route No. 1, and will connect the capitals of these departments with the Mexican-Guatemalan border at El Carmen, on the Suchiate River. With the construction of that part of the Inter-American Highway between Totonicapán and Guatemala City, the eastern section of National Route No. 1 from Quezaltenango on, will no longer have the importance it has at present, and it probably will become a secondary route; whereas the western section and its connection with the branch roads of the Coastal Highway will acquire much greater importance for carrying the increased traffic between the Departments of Quezaltenango and San Marcos, and the neighboring areas lying beyond the Mexican border. The present asphalt road, just finished or about to be finished, from Quezaltenango to Totonicapán will join the projected route with the Inter-American Highway and encourage an increase in its traffic.

The estimated cost to improve this route in a preliminary stage so as to convert it into a category 2-B road, would be \$3.6 million,

/and it would

and it would take about three years to complete. (See Table 118.)

RECOMMENDATION XLV

The present route between Quezaltenango, San Marcos and El Carmen should be improved as a first stage, after the completion of the western section of the Coastal Highway between Retalhuleu and Ayutla so as to make it a category 2-B road, with a view to eventually transforming it into a first-class highway.

(h) Quezaltenango-Retalhuleu-Champerico Highway. This route will be the southern prolongation of the asphalted Totonicapán-Quezaltenango road and will link the Inter-American, the Coastal and the Quezaltenango-San Marcos-El Carmen Highways, and at the same time communicate the capitals of the Departments of Totonicapán, Quezaltenango, and Retalhuleu with the rich southern region of this last department and with the port of Champerico. The estimated length of this route would be about 100 kilometers, and about 127 from Totonicapán.

The present road connecting Quezaltenango and Retalhuleu is inadequate. Nevertheless, there, traffic is already fairly dense and it tends to increase gradually as production of this area is being developed.

It is proposed, for the second stage of the basic plan, either to improve or to completely reconstruct (to category 2-C specifications) this route in two parts, in the first instance connecting Quezaltenango and Retalhuleu during the first two years of work and then connecting Retalhuleu with Champerico in the last year of the plan. The cost would be \$1.3 million. (See Table 118.)

/RECOMMENDATION XLVI

RECOMMENDATION XLVI

Improvement, total construction or reconstruction should begin on the Quezaltenango-Retalhuleu-Champerico highway, because of the present and potential importance of its zone of economic influence, applying specifications for a category 2-C road. The project should be carried out in two parts.

- (i) National Route No. 17 (Salamá-El Rancho). As has already been discussed while speaking of the Longitudinal Northern Highway and National Route No. 5, it is advisable that a connection be made between Salamá and the Guatemalan Railroad leading to Puerto Barrios, at El Rancho. At this same point a connection with the Atlantic Highway would also be made, when this route is constructed. Therefore the improvement of this road is suggested. It is estimated that the cost of the initial phase would be approximately \$1.2 million. (See Table 118.)

RECOMMENDATION XLVII

National Route No. 17 (Salamá-El Rancho) should be improved in an initial phase to make of it a road of 3-A category, approximately, while the other routes are being transformed into others of higher category, with the object of obtaining a regular traffic at less cost than at present; it should be given a layout favorable to later use, in whole or in part, for its final characteristics.

- (j) National Route No. 8 (Ayutla-Malacatán). This would be a road linking the Coastal Highway and the Quezaltenango-San Marcos-El Carmen Highway, which by this time (in accordance with previous recommendations) would already be connected with the Inter-American Highway. Its length is about 30 kilometers, and more or less follows along the present road,  
/which is



which is passable at all times, but inadequate. Considering the importance of making this connection and the relatively small expenditure which its improvement or reconstruction would require, it would be convenient to carry it out after the adjoining roads have been constructed, according to the proposed plan. For its preliminary conversion into a category 2-B road, about \$1 million would be required over a year's time. (See Table 118.)

#### RECOMMENDATION XLVIII

Improvement or reconstruction of National Route No. 8 should be undertaken after the roads with which it will be connected have been finished; this improvement or reconstruction should be made in such a way as to be utilized completely or in part for the permanent transformation the road will undergo at a future date.

(k) National Route No. 16 (Chilapa-Chiquimulilla). This is another important road for linking the Inter-American and Coastal Highways. It is suggested that it be improved during the first stage of the plan, in view of the fact that it crosses a rich coffee producing zone, especially that known as Pueblo Nuevo Viñas, and because the Coastal Highway between Popoyá and Chiquimulilla is already paved and the eastern section of the Inter-American Highway is passable the year round. Nevertheless, considering the topography of the country which this route crosses (a distance of 45 kms.), it is suggested that its improvement be carried out in stages, beginning with making it a 3-B category road during the first stage of the plan. In this way the initial investment will be moderate (about \$0.7 million).

#### /RECOMMENDATION XLIX

RECOMMENDATION XLIX

A first stage of improvement of National Route No. 16 should be given priority and an effort should be made to give it those features which will make it possible to improve it further in the future.

2. El Salvador

In the case of this country it is only necessary to improve and integrate the present road network, and to complement it with more secondary and feeder roads. Consequently, the main job facing El Salvador is to finish the Coastal Highway and to build and improve annually a number of supplementary roads which will have to be increased in accordance with the increase in production.

In the recommendations made for building highways integrating the international transportation system, El Salvador participates in the following: (a) Inter-American Highway, (b) Coastal Highway, (c) Inter-Oceanic Highway El Salvador-Honduras, (d) Third International Route El Salvador-Honduras, (e) Third International Route Guatemala-El Salvador. All of these will at the same time contribute in an important way to domestic transportation.

In addition to these highways, the following would be very useful in developing domestic traffic:

(a) Highways linking the two longitudinal trunk routes. These would be the three following: (1) Zacatecoluca-San Vicente; (2) Usulután-Tecapán; (3) San Miguel-Coastal Highway Junction. They would be of the greatest importance in establishing communication between the trunk high-

/ways and

ways and in developing production in a region rich in natural resources. The first of these roads connects two departmental capitals; the second is at the present time an all-weather route, but defective, which continues as an asphalt highway between Tecapán and the Inter-American Highway, passing through Santiago de María; the third is also an all-weather route, but requires improvement as well.

It is proposed that these three routes be improved where the roads already exist, and that the unconstructed sections be built. They should be paved throughout. The length of the three is about 60 kms. and the estimated cost for improvement, construction and paving would be more or less \$2.4 million, over a period of two years. (See Table 119.)

#### RECOMMENDATION L

Upon completion of the corresponding trunk routes, the following connecting roads should be built, over a two-year period, as first-class paved highways: Zacatecoluca-San Vicente, Usulután-Tecapán, and San Miguel-Coastal Highway junction.

(b) Santa Ana-Sonsonate Highway. This route, which has only 10 kms. of pavement and the rest built only with a surfaced base of more or less deficient characteristics, is an important highway already carrying a considerable amount of traffic (chiefly coffee). Since the region including the Departments of Santa Ana, Sonsonate, and Ahuachapán is very productive, it is advisable to relocate, reconstruct, and pave this highway, whose total length is 45 kms. The approximate cost would be \$1.4 million. (See Table 119.)

Table 119

El Salvador: Primary and Secondary Road Plan

<u>First Stage: 2 years</u>	<u>Kms.</u>	<u>Expenditures in millions of dollars</u>		
		<u>Total</u>	<u>Year I</u>	<u>Year II</u>
Santa Ana-Sonsonate Highway	45	1.4	1.4	—

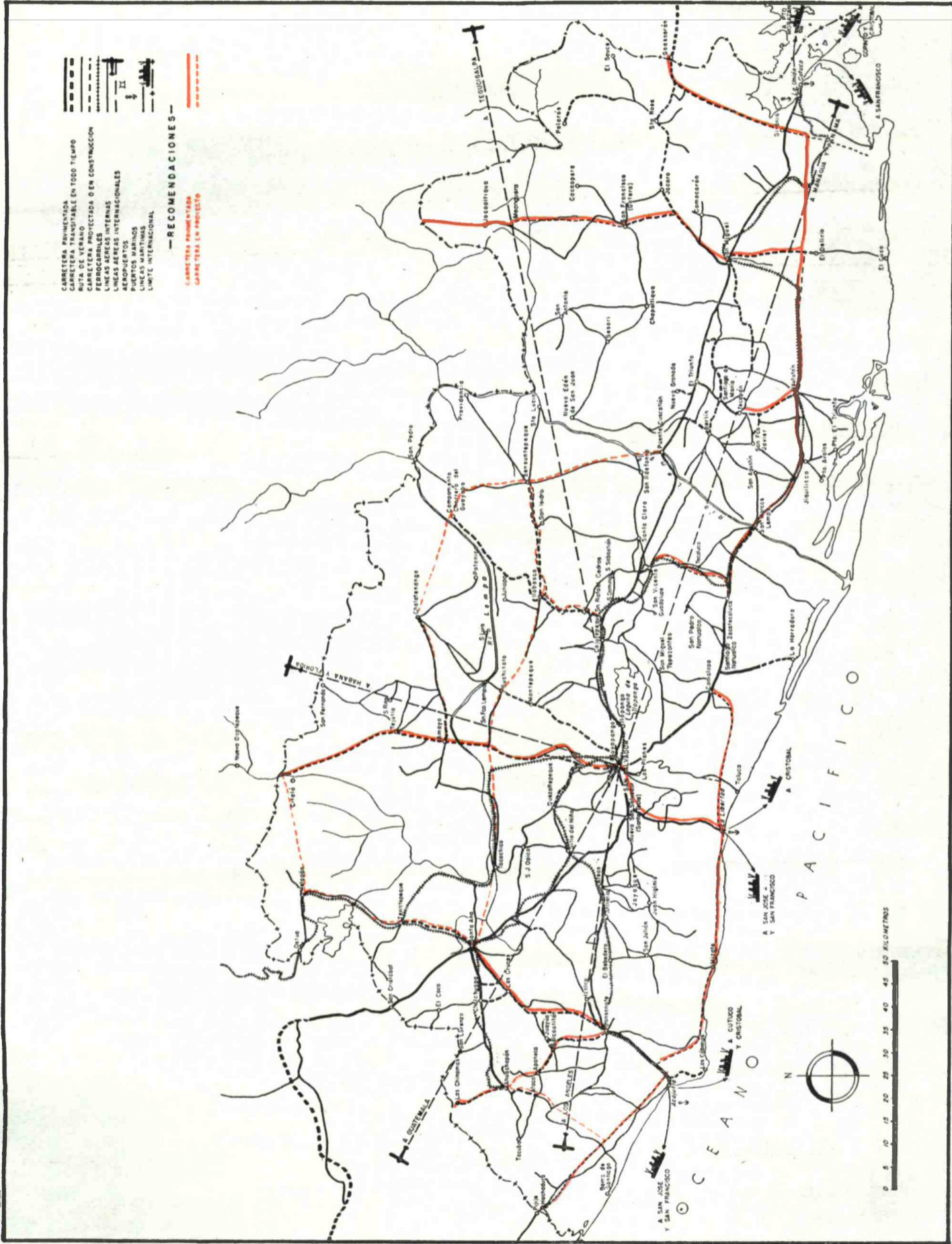
<u>Second Stage: 5 years</u>	<u>Kms.</u>	<u>Total</u>	<u>Year</u>				
			<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>
<u>Roads connecting with trunk roads:</u>							
(1) Zacatecoluca-San Vicente,							
(2) Usulután-Tecapán and							
(3) San Miguel-Junction I.A.H.	60	2.4	1.4	1.0	--	--	--
<u>Improvement of other routes:</u>							
(i) San Salvador-La Libertad Highway	36	1.8	0.5	0.5	0.4	0.2	0.2
(ii) San Miguel-Montecristo section of the Ruta Militar	17	0.4	—	—	0.4	—	—
<b>Total</b>	<b>113</b>	<b>4.6</b>	<b>1.9</b>	<b>1.5</b>	<b>0.8</b>	<b>0.2</b>	<b>0.2</b>

RECOMMENDATION LI

The Santa Ana-Sonsonate Highway should be relocated, improved, and paved as soon as possible, within a year at most, and without interrupting traffic. Characteristics of a first-class highway should be assigned to it.

- (c) Projects concerning other routes. The Mission considers it necessary to call the government's attention to the two following highways:
- i. San Salvador-La Libertad Highway. Taking into account the great importance that this highway already has for imports and

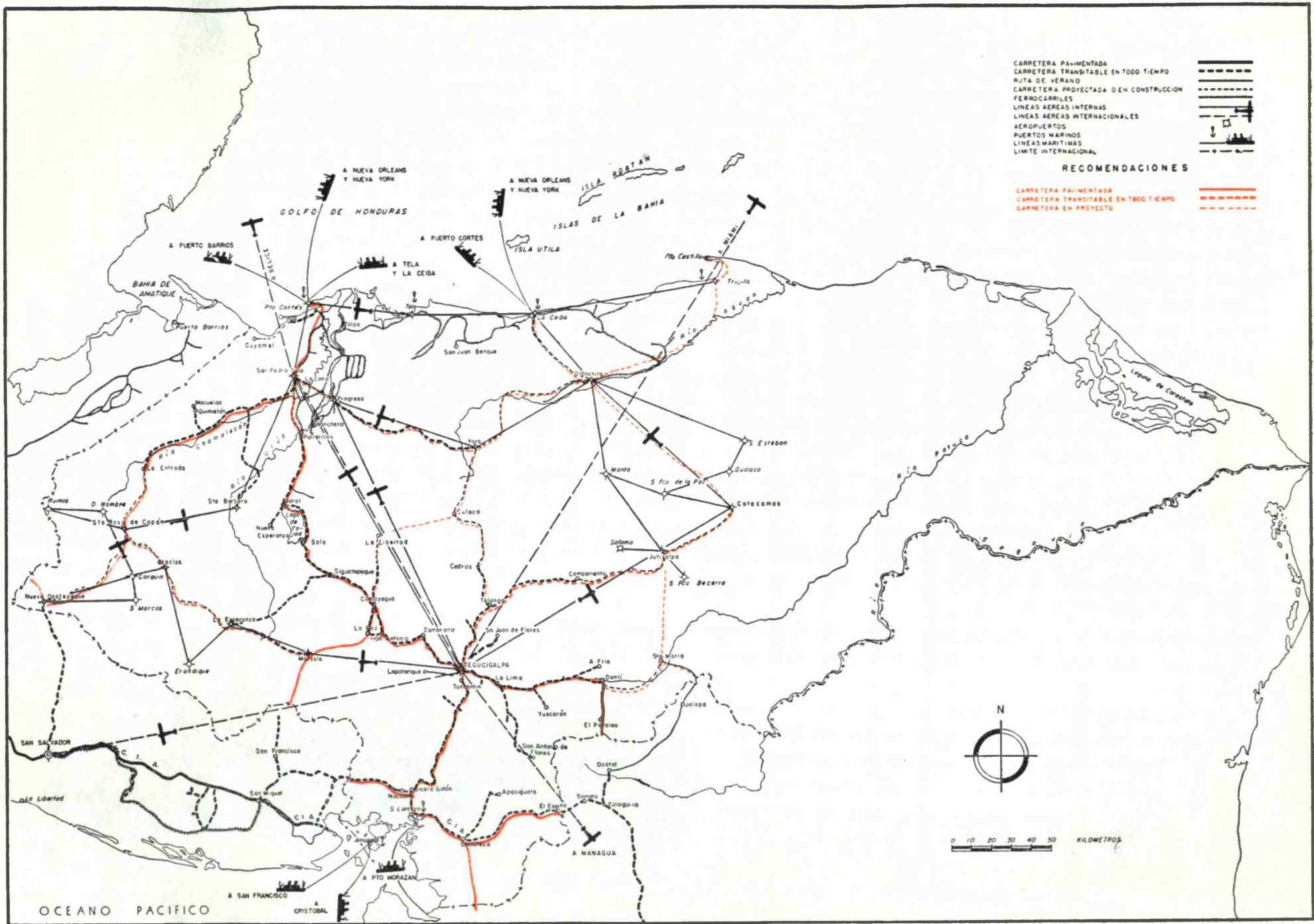
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III. El Salvador: Means of Transportation and Recommendations of the ECLA/TAA Mission with regard to Highways.







IV. Honduras: Means of Transportation and Recommendations of the ECLA/TAA Mission with regard to Highways.





domestic traffic, and its present inadequacy, which causes high operating costs, it is advisable to bring about its gradual improvement, with the object of making it a first-class highway in the future. An expenditure of \$1.8 million over 5 years is involved. (See Table 119.)

RECOMMENDATION LII

The San Salvador-La Libertad Highway should be gradually improved and widened, in such a way as to be able to convert it in the future into a first-class highway, making use of most of the improved road.

ii. San Miguel-Montecristo Section of the Military Route.

This highway should be finished, improved, and paved upon the completion of the Third International Route between El Salvador and Honduras, which will be a paved first-class highway. It is estimated that the 17 kms. would cost around \$400,000 and take about a year to finish. (See Table 119.)

RECOMMENDATION LIII

The San Miguel-Montecristo section of the Third International Route should be finished, improved and paved, to specifications of a first-class highway.

3. Honduras

This is the country depending most on an efficient road network for integrating its economy and for complementing other programs of public works. It is therefore indispensable that Honduras make a great effort from the start in order to build a basic system of roads.

Furthermore, the principal arteries for moving production

/for domestic

for domestic consumption are better adapted in Honduras (more than in any other country) for serving at the same time international traffic. The most important international roads are also the most important for local traffic: (a) Inter-Oceanic Highway of Honduras, (b) Western Highway, (c) Inter-American Highway, (d) Eastern Highway, (e) the projected highway linking Comayagua-La Paz-Marcala and the Salvadorean border.

Other routes of potential importance for domestic transportation are (f) the Santa Rosa de Copán-Gracias-La Esperanza-Marcala Road, and (g) the Olancho-Road. There would be other roads recommended for integrating the basic road network but they are not included in the seven-year plan.

Since the first group of roads were the subject of recommendations in Part II of this Report, the possibilities of the other routes only will be discussed here.

(a) Santa Rosa de Copán-La Esperanza-Marcala Highway. This route is under construction at the present time, and it will make possible the development of farming and livestock production in the Departments of Copán, Lempira, Intibucá and La Paz. The capitals of the first three will be communicated directly, and will connect with the Department of La Paz by means of the Marcala branch, which is a part of the Comayagua-La Paz-Marcala-Salvadorean border route, recommended for international traffic.

This highway will form an important connection between the Western, the Inter-Oceanic of Honduras, and the Third International Route Honduras-El Salvador. In view of the large investment which the international system will require from this country during the first stage of the plan, it is not advisable that this highway be constructed

/until

until the second stage, notwithstanding its importance, because priority would have to be given the other trunk routes. Its approximate cost, as a 2-A (second category) road, will be about \$5.3 million applied over a five-year period. (See Table 120.)

RECOMMENDATION LIV

The Santa Rosa de Copán-La Esperanza section should be built over a period of five years, and the La Esperanza-Marcala section should be improved and widened so that it can serve the purpose of regular and low cost transportation.

Table 120

Honduras: Primary and Secondary Road Plan

First Stage: 2 years

In this stage only highways of the international system will be built.

Second Stage: 5 years

	Kms.	Total	<u>Expenditures in millions of dollars</u>				
			Year III	Year IV	Year V	Year VI	Year VII
Santa Rosa de Copán-La Esperanza-Marcala road	170	5.3	0.3	1.0	1.0	1.5	1.5
Olancho road	202	2.0	0.4	0.4	0.4	0.4	0.4
Total	372	7.3	0.7	1.4	1.4	1.9	1.9

(b) Olancho Highway. This route should be improved gradually, as far as it is economically and technically possible, in order to make it a third class road, and should be extended --in accordance with the basic plan proposed by the Mission-- only as far as Catacamas; that is, improvements would have to be made on the 149 kms. now existing, and 53 more /constructed.

constructed. It is considered that at the present time no more than an average of \$10,000 per kilometer should be spent over the total length, as long as the region does not change its present conditions to other more favorable to the development of transportation. An investment of \$2 million should be distributed over the five years corresponding to the second phase of this plan. (See Table 120.)

#### RECOMMENDATION IV

A road should be built at a cost of not more than \$10,000 per kilometer on the average, over a five-year period between Tegucigalpa and Catacamas, passing through Juticalpa, and an effort should be made to construct it with the general characteristics and alignment of a third class road such as can later be transformed into a high class road.

(c) Other roads which would be recommendable for integrating the basic road network (but not included in the general seven-year plan). Among the roads which it is assumed cannot be built during the seven-year period basic plan because of the additional expenditures, equipment, and personnel required, and which are probably beyond the present economic capacity of the country, the following are believed to be of greatest importance: (1) Comayagua-La Libertad-Sulaco-Yoro-San Pedro Sula. This route would be indispensable, in view of the fact that the department of Yoro, with its abundant natural resources, is at present practically isolated from the rest of the country; and (2) Yoro-Olanchito. The latter important connection, which could be extended, if considered advisable, as far as Puerto Trujillo, would join the La Ceiba-Olanchito road, at present being constructed.

Also it would be interesting to study the possibility of connecting Catacamas with Olanchito, Danlí with Santa María, Juticalpa with Santa María, and Cedros with Sulaco.

#### 4. Nicaragua

The combination of the Inter-American Highway, the Coastal Highway, and the San Benito-Rama Highway of Nicaragua may be considered as a system of two great longitudinal trunk routes, from which in the future will depend the whole network of connecting highways, secondary and local roads, and eventually the roads penetrating into regions hitherto unexploited.

In a first phase of integration of the basic road network of Nicaragua, the application of the seven year plan includes the following recommendations, aside from those already discussed in the section on the international transport system -Inter-American Highway; Coastal Highway (Granada-Masaya-Managua-León-Chinandega-Puerto Morazán-Hondurean border); Northern Highway of Nicaragua (Yalagüina-Ocotal-Hondurean border) -:

(a) San Benito-Rama Highway (under construction). The importance of this road has already been stated in the first part of this report,<sup>1/</sup> and inasmuch as it is a project of the Departamento de Caminos that is being efficiently carried out, no recommendation is necessary.

(b) Other projects of the Highway Department. Along with the Coastal Highway (considered by this report to include the Managua-Chinandega and Managua-Granada projects, as well as the proposed prolongation to the Hondurean border), the Departamento de Caminos is initiating

<sup>1/</sup> See Section II, Chapter IV, point 3 (b) p. 246

/the following

the following projects: (1) Matagalpa-Tuma-Caratera; (2) Matagalpa-Jinotega; and (3) San Jorge-San Juan del Sur. The Mission believes these projects useful and observes that they are being carried forward adequately and efficiently. Therefore, no recommendation need be drawn concerning them.

(c) Chinandega-Corinto Highway. When the importance of constructing the Coastal Highway was discussed, the advisability of connecting Chinandega with the port of Corinto was explained, and it was said that this would make a considerable contribution to the Pacific Coast international highways project, whose double function of absorbing and developing both local and international traffic would be better carried out. This connection would not affect notably the railroad which serves the port, in view of the considerable present and potential demand for transport, which could be divided between the two routes according to the direction and classification of the freight.

The approximate cost of this road --20 kms. long-- is estimated at \$0.7 million, and it could be built during the first two years of the second stage. (See Table 121.)

#### RECOMMENDATION LVI

A paved first class highway should be constructed from Chinandega to the port of Corinto as soon as it is possible to open to traffic the Managua-León-Chinandega Coastal Highway.

(d) León-Sébaco Highway. By means of this road linking the Inter-American and the Coastal Highways, the capitals of the Departments of Chinandega, León, Matagalpa, Jinotega, Estelí, and Madriz in the western section  
/of the country,

of the country, as well as the ports of Corinto and Poneloya, will be connected. This highway will mainly stimulate the development of production in the Departments of León, Chinandega, and Matagalpa. Its estimated length is about 100 kilometers, and it would cost about \$2 million, on the assumption that it will be made a second class road (2-C). It could be built during the fifth and sixth years of the proposed general plan. (See Table 121.)

Table 121

Nicaragua: Primary and Secondary Road Plan

	Kms.	Expenditures in millions of dollars					
		Total	Year I	Year II			
<u>First Stage: 2 years</u>							
Villa Somoza-Rama Section (San Benito-Rama)	114	3.4	1.7	1.7			
Other projects of the Department of Roads	105	1.8	0.8	1.0			
Chinandega-Corinto Highway	20	0.7	—	0.7			
Total	239	5.9	2.5	3.4			
<u>Second Stage: 5 years</u>							
	Kms.	Total	Year III	Year IV	Year V	Year VI	Year VII
San Benito-Rama Highway	—	1.0	0.2	0.2	0.2	0.2	0.2
León-Sébaco Road	100 <sup>a/</sup>	2.0	—	—	1.0	1.0	—
Branch roads of the San Benito-Rama Highway	100 <sup>a/</sup>	3.0	—	—	1.0	1.0	1.0
Total	200	6.0	0.2	0.2	2.2	2.2	1.2

<sup>a/</sup> Estimated length.

RECOMMENDATION LVII

The León-Sébaco Highway should be built as a second class route (2-C) over a period of two years, with specifications and alignment such as to enable its later conversion into a first class highway.

(e) Branches of the San Benito-Rama Highway. The following are recommended, because of the present and potential significance of coordinating traffic on this road with lake traffic and with that on the Inter-American Highway and the Granada-Masaya Highway: (1) San Nicolás-Puerto Díaz; (2) The branch from Acoyapa to San Ubaldo; (3) Tecolostote-El Paso-Granada Road.

It is estimated that the length and cost of these would be about 100 kms. and \$3 million, respectively. (See Table 131.)

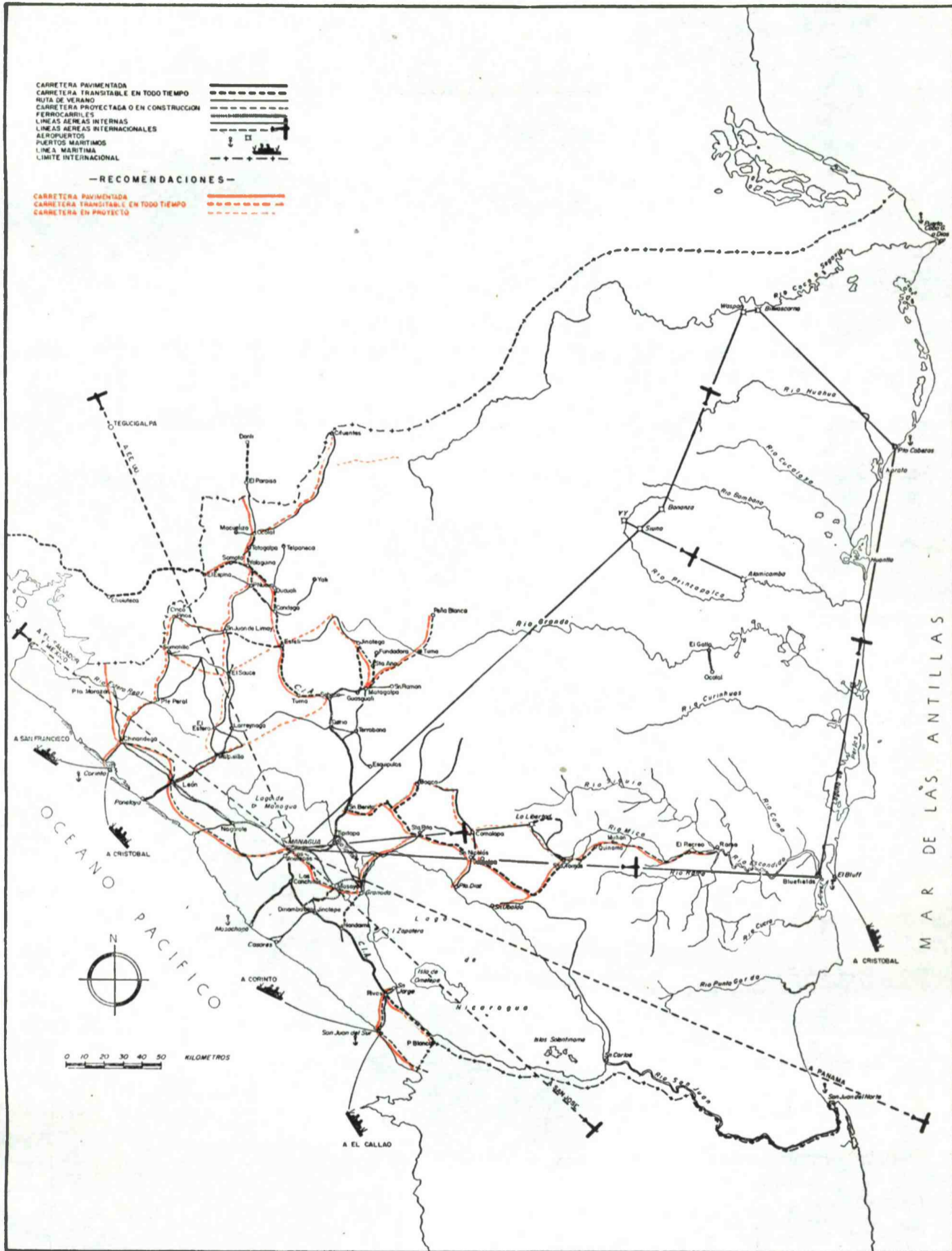
RECOMMENDATION LVIII

By means of a partial relocation, improvement and paving, the San Nicolás-Puerto Díaz road, a branch from Acoyapa to San Ubaldo, and the Tecolostote-El Paso-Granada road should be constructed, with first class features, as soon as the San Benito-Rama Highway is completed and regular navigation service is established on Lake Nicaragua.

(f) Other routes suggested. Although not included in the plan proposed in this report, it is believed that the Departamento de Caminos of Nicaragua should study the advisability and financial possibilities for building the routes or do the works listed below: (1) Improvement of the Yalaguina-Pueblo Nuevo branch and construction of a second-class highway (2-C) from Pueblo Nuevo-San Juan de Limay-El Sauce (junction with the railway); (2) building of a road of the same category between Estelí, El Sauce, and Somotillo; (3) building of a road of the same category between

/Chinandega,





V. Nicaragua: Means of Transportation and Recommendations of the ECLA/TAA Mission with regard to Highways.

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(b) Barranca-Puntarenas Highway. In view of the fact that Puntarenas is the only important Costa Rican port on the Pacific and that this highway is a branch of the Inter-American, it will be called upon in time to provide a growing import and export transportation service, even though most of this traffic at present is taken by the railroad connecting San José and Puntarenas. Its length is only 20 kms., and it is now in a poor condition from lack of maintenance. Therefore, it should be improved giving it preference over other routes. The estimated necessary expenditure for improving and paving it is around \$0.6 million, over two years. (See Table 122.)

#### RECOMMENDATION LIX

The Barranca-Puntarenas Highways should be improved, giving it priority (after the Inter-American Highway), endeavoring to make it a first-class paved highway, and to do this in a maximum period of two years.

(c) Turrialba-Moravia-Puerto Limón Highway. Owing to the difficulties that the railroad offers for economical operation, difficulties which will increase as the years bring greater depreciation, it is from every point of view desirable to build a first-class highway linking Puerto Limón and the capital. The Mission was unable to ascertain on the spot whether the best route would be a prolongation of the present Turrialba-Moravia highway (43 kms.), but, in case a thorough study shows this not to be the case, a new route would have to be found to replace that between Turrialba and Puerto Limón.

/Table 122

Chinandega, Somotillo, Cinco Pinos, and San Juan de Limay; (4) building of a third-category route (3-B) between Ocotal, Santa Bárbara, and Jalapa; to encourage forestry, coffee, and cattle production; (5) building of a second category route (2-B) between San Rafael del Norte and Estelí; and (6) building of a second category route (2-B) between Boaco, Camoapa, Comalapa, and Juigalpa.

#### 5. Costa Rica

Keeping in mind the concentration of most of the country's population on the central plateau and the present distribution of production over very limited areas of the national territory, it is possible to expand the road system of Costa Rica only in a very gradual way. That is to say, a long period of time will be needed to cover most of the national area with a basic road network.

The Mission deems that in order to improve the road system for domestic transportation, at the moment it is only possible to recommend the following routes: (a) Inter-American Highway; (b) Barranca-Puntarenas; (c) Turrialba-Puerto Limón; (d) Nicoya-Santa Cruz-Liberia; (e) Villa Quesada-Florencia-La Vieja-Las Cañas; and (f) other routes specified later.

(a) Inter-American Highway. The same as for international transport, this route should be given priority for domestic transport, since at the present time it constitutes the most important highway to which the entire road system is subordinated.<sup>1/</sup>

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<sup>1/</sup> See Recommendation I, p. 402

RECOMMENDATION LX

A first-class highway should be built between Turrialba and Puerto Limón, giving to it high priority over a period of two years from the date work starts; and the best way of financing the construction of this route from special funds should be studied, after a preliminary investigation has determined the best route.

(d) Nicoya-Santa Cruz-Liberia Highway. This route would help to develop in a short time the already significant livestock and cereal production of the Province of Guanacaste, through the direct communication that would be established with the Inter-American Highway at Liberia. It is suggested that the construction of this route be started as a 3-A category road, during the first two years of the second stage of the plan. Its cost is estimated at \$1.9 million. (See Table 122.)

RECOMMENDATION LXI

A highway from Nicoya to Santa Cruz and Liberia should be built, over a period of two years, to specifications corresponding to category 3-A in its first phase, but so located that it could be easily modified later to a better class highway through the total or practically total utilization of the route.

(e) Villa Quesada-La Vieja-Florencia-Tilarán-Las Cañas Road. The construction of this highway would contribute greatly to the agricultural and stock-raising development of the rich Province of Alajuela. At the same time it would close an important circuit with the Inter-American Highway and its paved branch from Naranjo to Villa Quesada, which would also benefit the Province of Guanacaste and the western part of the province of Puntarenas. The building of a 2-C category road is recommended,

/with a total

Table 122

Costa Rica: Primary and Secondary Road Plan

	Kms.	Expenditures in millions of dollars				
		Total	Year I	Year II	Year III	Year IV
<u>First Stage: 2 years</u>						
Barranca-Puntarenas highway	20	0.6	0.3	0.3		
Turrialba-Puerto Limón highway	100 <sup>a/</sup>	5.0	3.0	2.0		
<b>Total</b>	<b>120</b>	<b>5.6</b>	<b>3.3</b>	<b>2.3</b>		
<u>Second Stage: 5 years</u>						
Nicoya-Sta. Cruz Liberia highway	97	1.9	1.0	0.9	—	—
Villa Quosada-Florencia-Las Cañas highway	90	2.3	1.0	1.3	—	—
Surveying of other probable routes	—	0.1	0.1	—	—	—
<b>Total</b>	<b>187</b>	<b>4.3</b>	<b>2.1</b>	<b>2.2</b>	<b>—</b>	<b>—</b>

a/ Estimated length.

In any case, this highway is recommendable for establishing a rapid and direct means of communication between the towns of the central plateau and the Atlantic coast, and to contribute to the development of the eastern part of the country. For lack of more exact data, it can be estimated that the total cost of improving and rebuilding the Turrialba-Moravia section, and building the rest of the highway to Puerto Limón, would be some \$5 million. It is suggested that this highway be constructed over a period of two years during the first stage of the plan presented in this Report. (See Table 122.)

/RECOMMENDATION LX







with a total estimated cost of \$2.3 million, to be carried out over the first two years of the second stage of the plan proposed by the Mission. (See Table 122.)

RECOMMENDATION LXII

A highway connecting Villa Quesada, La Vieja, Tilarán, and Las Cañas should be built over a period of two years, equal or similar to a category 2-C road, and with specifications and location such that it may be later converted into a higher class road.

(f) Other probable routes. It is suggested that the possibility of building the following routes be studied: (1) Los Chiles-Río San Juan. This route would permit the stock-raising development of the rich regions of the San Carlos plains, while making possible transportation to the San Juan River; (2) La Virgen-Río San Juan. This route would be similar to the previous one; (3) Cascajal-Guápiles. It is probable that building this route would prove advantageous as it would be a direct connection with a branch of the railroad passing through Guápiles.

6. Panama

Since the only trunk highways in Panama are the Inter-American and the Trans-Isthmic Highways, and since very few important branch roads lead out of them, it is necessary to begin to integrate this country's basic road network. This should be done in a gradual way, so as not to exceed the economic capacity of the country, and to obtain the benefits from the use of the new routes by stages. Therefore, the construction only of those routes as that it is believed can be used with considerable possibilities of success have been recommended. It is

/estimated

estimated that these routes would be the following: (a) Inter-American Highway; (b) David-Alanje-Divalá-Puerto Armuelles-Inter-American Highway; (c) Concepción-Volcán-Cerro Punta-Alto Lino-Boquete; (d) Boquete-Almirante; (e) Campana-El Valle-Penonomé; (f) Santiago-Puerto Mutis-Ocú-Pesé; and (g) other routes which are indicated below.

(a) Inter-American Highway. At the present time its greatest importance is for domestic transport as long as it is not connected with the Costa Rican section, which will require some years yet for completion. Priority for this route has already been recommended for international traffic.<sup>1/</sup>

(b) David-Alanje-Divalá-Puerto Armuelles-Inter-American Highway. The building of this highway to which high priority should be assigned is very specially recommended, for it will help greatly to increase the production of rice, corn, cereals, and livestock in the southern part of the Province of Chiriquí, and will largely replace the railroad, whose precarious operation has already given rise to Recommendation XLI in this Report.<sup>2/</sup> There are particularly good possibilities for the rapid development of rice production and for a greater utilization of Puerto Armuelles.

The approximate length of this highway is 80 kms., and it should be given a category similar to 2-B. Its construction could be done during the first stage of the basic plan proposed in this Report,

<sup>1/</sup> See Recommendation I, p. 402  
<sup>2/</sup> See Recommendation XII, p. 552

at a cost of \$2.4 million. Upon its completion an important transportation circuit would be established with the David-Concepción-Costa Rican border section of the Inter-American Highway. (See Table 123.)

Table 123

Panama: Primary and Secondary Road Plan

	Kms.	Expenditures in millions of dollars					
		Total	Year I	Year II			
<u>First Stage: 2 years</u>							
David-Alanje-Divalá-Puerto Armuelles- I.A.H. Junction highway	80	2.4	1.4	1.0			
Concepción-Volcán-Cerro Punta-Alto Lino highway	70	2.1	1.1	1.0			
Total	150	4.5	2.5	2.0			
<u>Second Stage: 5 years</u>							
	Kms.	Total	Year III	Year IV	Year V	Year VI	Year VII
Boquete-Almirante road	70	3.2	1.6	1.6	—	—	—
Campana-El Valle-Penonomé	65	2.0	1.0	1.0	—	—	—
Santiago-Puerto Mutis-Ocú Pesé	75	2.3	0.7	0.7	0.9	—	—
Total	210	7.5	3.3	3.3	0.9	—	—

RECOMMENDATION LXIII

A David-Alanje-Divalá-Puerto Armuelles-Inter-American Junction highway should be built, giving it priority treatment after the Inter-American Highway; it should first be built as a category 2-B highway, but with features and alignment capable of later improvement to make it a first-class highway.

- (c) Concepción-Volcán-Cerro Punta-Alto Lino-Boquete Highway. With this highway the circuit between Boquete, David and Concepción would be closed, /and it would

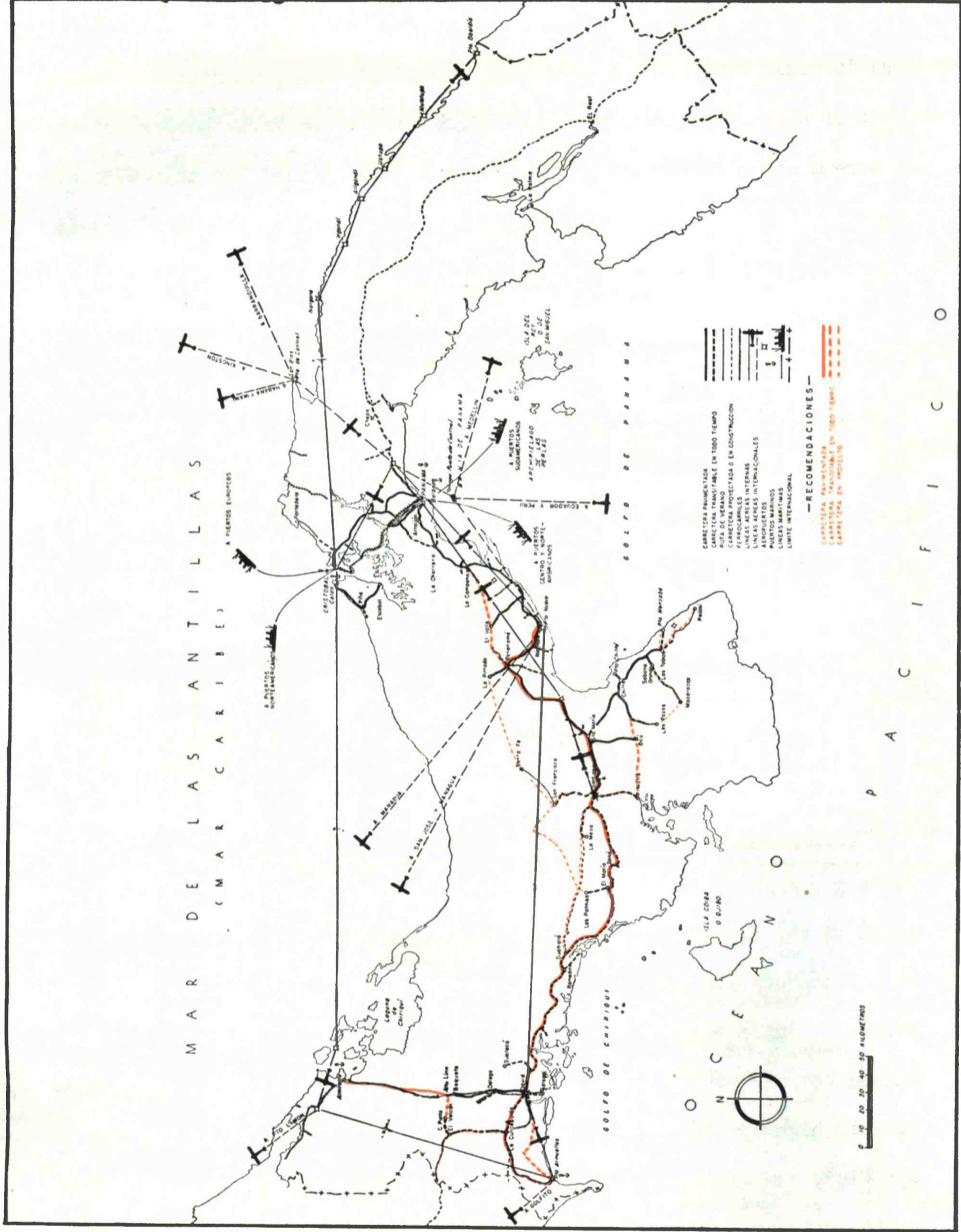
and it would contribute to forestry, livestock, and agricultural development of the zone between Boquete, Volcán, the Costa Rican border, and the Inter-American Highway. It would be necessary to find the most suitable location for the Boquete-Volcán section, since it is a region of rugged and broken terrain with elevations above 3,000 meters. The advantages that could be obtained would be even greater if the Boquete-Almirante road were constructed, as is proposed below. The approximate length of this Concepción-Cerro Punta-Boquete route is 70 kms., which could be built at an approximate cost of \$2 million during the first stage of the plan proposed in this Report. (See Table 123.)

RECOMMENDATION LXIV

A preliminary study should be carried out to determine the possibilities of constructing a Cerro Punta-Boquete highway; the already built Concepción-Volcán-Cerro Punta section should be improved and the new section be built with features similar to category 2-B road.

(d) Boquete-Almirante Highway. A connection between the David-Boquete Highway and the port of Almirante would be highly useful for the western parts of the Provinces of Chiriquí and Bocas del Toro, which have considerable prospects for agricultural, livestock, and forestry development. Besides, Almirante is a terminal point of the railroad belonging to the banana company established in this zone. This would become a new inter-oceanic highway with terminal points at the ports of Pedregal (on the Pacific), and Almirante (on the Atlantic). The approximate cost of this route, with an estimated length of 70 kms., would be \$3.2 million, assigning it first category (1-B). (See Table 123.) Its construction could

/be carried



VII. Panama: Means of Transportation and Recommendations of the ECLA/TAA Mission with regard to Highways.



be carried out within the first two years of the second stage of the plan proposed in this Report.

RECOMMENDATION LXV

A Boquete-Almirante Highway should be built over a period of two years with specifications of category 1-B.

(e) Campana-El Valle-Penonomé Highway. The estimated length of this route is 65 kms., with terminal points on the Inter-American Highway, closing a circuit which would promote the development of zones already in production as well as new ones not yet exploited. One of the intermediate points of the proposed route is El Valle, terminal point of a paved branch road leading off the Inter-American Highway. It is recommended that at first a second category (2-B) road be built, at an estimated cost of \$2 million, to be carried out in the first two years of the second stage of the plan proposed in this Report. (See Table 123.)

RECOMMENDATION LXVI

A highway should be built between Campana, El Valle and Penonomé, over a two-year period, to category 2-B specifications.

(f) Santiago-Puerto Mutis-Ocú-Pesé Highway. It is believed that the building of this route would stimulate agricultural production and cattle raising (and derived industries) in the Province of Herrera and the southern part of the Province of Veraguas; and that it is important to form the circuit with the Inter-American Highway and its two paved

/branches:

branches: Divisa-Pesé and Chupampa-Ocú. Its approximate length would be some 75 kms., and its estimated cost \$2.3 million, to be built as a Category 2-B road in three years during the second stage. (See Table 123.)

RECOMMENDATION LXVII-E

A Santiago-Puerto Mutis-Ocú-Pesé highway should be built for over a three-year period, to category 2-B specifications.

(g) Other routes suggested. An investigation should be carried out to determine the possibility of constructing, subsequent to accomplishment of the road plan proposed in this Report, or before if sufficient funds are available, the following routes: (1) Santiago-San Francisco-Santa Fe-La Pintada; (2) Las Palmas-Cañazas-San Francisco; (3) Pesé-Los Pozos-Macaracas-Sabana Grande; (4) Santo Domingo-Pedasí; and (5) Las Tablas-Puerto Mensabé.

II. Farm-to-market Roads

Although it is difficult and not altogether desirable to establish a rigid classification of a country's roads on the basis of their function, its road system should, in general terms, be made up of primary roads (national and international), secondary roads (departmental, provincial or regional) and feeder roads (local and farm-to-market). This report has assigned chief importance to the primary and secondary roads, and the recommendations presented so far

/have had



have had reference only to them. However, the Mission wishes to make it clear in this report that the functions of feeder roads is by no means less important.

The building of local and farm-to-market roads should be given considerable attention in each of the Central American countries, but at the same time it is essential that there first be built up the basic system constituted by primary and secondary roads, and for this reason it has been thought advisable to give preference to the discussion of these. It is now pertinent, however, to include a brief analysis of the function of farm-to-market roads in a transportation system and within the economy of a country.

Each of the Central American countries is confronted to a greater or lesser degree with the problem of building new farm-to-market roads and improving existing ones, and at the same time integrating them into the complementary and primary systems in order to coordinate activities of transport with those of production. The solution of this problem would represent the fulfillment of one of the most important objectives of a road system: to channel products out of production zones and transport them to ports or markets.

Since in the majority of cases a considerable number of farm-to-market roads is needed —whose cost of construction and maintenance represents the provision of large capital investment, mechanized units and executive personnel, which tend to benefit the producers directly and the nation indirectly— it is most convenient for the government to discharge all or part of the financial responsibility of their building /and maintenance

and maintenance to those deriving the most profit from their completion. This is the course which other countries have taken. Central America has not advanced much in the construction of a farm-to-market road network. However, the plans of El Salvador and Nicaragua in this regard are of interest. In El Salvador, District Road Boards (replacing former Local Road Boards) have been functioning for the purpose of obtaining the financial cooperation of farmers. Through them it has been possible to finance, build and maintain about 4,300 kms. of farm-to-market roads.<sup>1/</sup> As the Coastal Highway progresses, together with its 13 projected branch roads, it would be practicable to build more feeder roads. The specific amount to be invested in their construction has not been stated yet, since they are dependent upon the other highways mentioned and upon other important works. The plan of the Dirección General de Caminos de El Salvador foresees an expenditure of \$14.8 million on the Coastal Highway and \$4.8 in the 13 feeder roads; expenditures so far have been \$4.4 million and \$0.8 respectively.

In March 1953, Nicaragua prepared a program for the construction and maintenance of 717 kms. of farm-to-market roads at an estimated cost of \$5.2 million. These roads are to benefit 14 of the country's departments: Managua (78 kms.), Masaya (39 kms.), Granada (30 kms.), Carazo (27 kms.), Chinandega (16 kms.), León (57 kms.), Rivas (30 kms.), Nueva Segovia (53 kms.), Madriz (71.5 kms.), Estelí (54 kms.), Jinotega (62 kms.), Matagalpa (50 kms.), Boaco (100.5 kms.), and Chontales (49 kms.). The Departments of Celaya and Río San Juan are not included in the program. According to the budget, the chief item of cost

<sup>1/</sup> See Part I, Chapter II, Appendix III. p. 152

/is for grading

is for grading operations which represent 34% of the total expenditure. Select materials amount to 21% and clearing of land to 7%.

A very significant example is that of Mexico, where the results obtained in a few years of economic and technical cooperation

between semi-official and private interests and the government are

particularly impressive. The following quotation expresses the views

held on this subject by the Ministry of Communications and Public Works

of that country.

In any country the network of feeder roads has been a basic factor in the integration of (its) nationality. To bring the benefits of the major routes to the humblest villages, enabling them to participate in the advantages and responsibilities of Mexico's progress, is the objective pursued through (building of) farm-to-market roads. It is really a circulation system which joins by means of primary highways, small towns with important cities, and which establishes the necessary cultural and human interchange.

In hardly three years more than seventy million pesos were invested in the construction of nearly three thousand kilometers of farm-to-market roads. It is estimated that for Mexico to be adequately communicated, at least fifty thousand kilometers of this kind of roads will be needed. It is the work of years; the important thing is that it was already started and that it will continue. Work was begun in 1949, with only two million pesos.

The government resolution regarding this matter...was issued in the latter part of 1948. It was necessary to interest all parties. The farm-to-market road, according to the plan developed by the Department of Road Planning and Development of this Ministry and the National Committee for Farm-to-Market Roads, is being constructed through the cooperation of private citizens and of the towns themselves. And the farm-to-market road is at one and the same time a bond and a symbol of national solidarity and a high and authentic school of civic action. It is being financed jointly by the towns, the State governments, the National Committee for Farm-to-Market Roads, and the Federal Government.

In a very short time national interest has been awakened by this work, and investments increased to a surprising degree, so that it is foreseeable that within a few years one of the most essential items of government planning will be farm-to-market roads. This objective not only solves communication problems between towns, but also urban and suburban problems of long standing.....

/With this program

With this program, Mexico has enriched its road system by more than three thousand kilometers, in addition to the considerable highway building which has been completed under the present administration. We have farm-to-market roads ranging from a mere five meters width to the spacious paved roads, such as those from El Mante to Xicoténcatl; from Uruapan to Zamora; the Laguna road network in Durango, and many others.

The most significant fact is that the farm-to-market road system has been planned in each of the regions, and the effort of multiple cooperation is considerable, because it indicates the hope of the towns, the faith of the people and the desire for progress of all Mexico. At the same time a number of companies, such as automobile assembly plants, tire factories, etc., have participated in this cooperative job through an increase in taxes, applied to (the construction of) such roads....

I believe that the work of the National Committee of Farm-to-Market Roads is an example which should be followed in the solution of other problems. During the Inter-American Road Convention held recently in the United States, the task being done by the National Committee in Mexico was recognized as outstanding. In India it has been agreed that the local road problem --very similar to that of Mexico-- should be solved in the way it is done here. Words of praise have been received from Cuba and from other countries.

In regard to the financing of this program the following comments by the Chief Engineer of the Departamento de Planeación y Fomento de Caminos Vecinales of México are of interest:

The program of farm-to-market road construction in Mexico is being carried out on the basis of two main formulae:

(a) A number of communities, generally at a short distance from the existing highways and railroad lines, have offered their contribution to construct their own roads, freely providing all the necessary labor and receiving only technical guidance, hand tools, explosives, construction materials, etc. This working formula has already permitted the communication of numerous towns with the Mexican road system, and, although it progresses slowly and cannot operate on any regular working schedule, it makes possible the building of many kilometers of feeder roads per year, which directly benefit their builders.

(b) The second working formula, although less impressive, is more practical and consists of dividing the cost of the projects between the Federal Government or the National Committee for Farm-to-Market Roads, the State governments and the private citizens to be benefited, as follows:

If the Federal Government has the necessary funds available, it provides one-third; another third is derived from the government of the

/State

State in which the road is located and the remaining third is provided by private citizens who will be directly benefited by the project. If the Federal Government does not have the necessary funds, the National Committee supplies the one-third which would come from the government, the other two parts being provided by the State Government and private citizens. In each case, both the State in which the road is located and the private citizens who will directly benefit from it contribute 33.3% of its cost; but in the first case the Federal Government contributes 33.3%, while in the second case it only provides 16%, since the funds of the National Committee for Farm-to-Market Roads are contributed equally by the Federal Government and by the country's tire and automotive industries. This formula, which has been widely accepted throughout the country, has overcome the previous difficulties, when lack of funds prevented these roads from being built. For the private citizens directly benefited by the roads the donation of a third of the cost represents a very small sacrifice in comparison with the benefits they receive; the State Governments are also benefited through acquiring new means of communication which increase their revenues, because of increased gasoline consumption and because of all the commercial activities which spring from greater production and consumption.

#### RECOMMENDATION LXVIII

(a) The technical road-planning organization of each of the Central American countries should work out a plan for the construction of farm-to-market roads which will answer the real needs in the field of the transportation and development of transportation products in the different economic zones already studied;

(b) the possibility should be studied of establishing, together with the above plan, the most suitable formula for its financing, execution and maintenance, discharging most of the financial responsibility of these projects to the producers and to the semi-official and private interests which will be directly or indirectly benefited by these roads and sharing the technical direction in the most adequate form;

(c) ways should also be studied of utilizing the labor of the towns which voluntarily offer their cooperation, supplying them with the necessary working elements and technical direction.

### III. Some of the Most Important Technical Problems Common to the Central American Countries

#### 1. Insufficient funds allocated for the construction, improvement and maintenance of roads.

One of the gravest problems facing the countries of Central  
/America

America is the very limited availability of capital which can be used for the carrying out of road programs. It must be kept in mind that there is an urgent need for the accomplishment of these programs, that the cost of construction and maintenance of highways is high in every one of the countries and also that, in order to try to reduce these costs and in many cases the time involved in their execution, more and more expensive mechanical equipment must be imported.

The annual expenditures on the building and maintenance of roads during the past 5 years in each of the Central American countries was discussed in the first part of this Report. Nevertheless, it must be stressed that the average annual expenditure during the past five years has been so small in relation to the minimum needs of each country, that it is still insufficient to carry out an appropriate basic program on a limited scale. The countries which have been investing larger amounts of their own funds during these five years are Panama, Guatemala, and El Salvador. Not including certain special appropriations for special projects —the Atlantic Highway in Guatemala <sup>1/</sup> and the Coastal Highway in El Salvador—<sup>2/</sup> the average annual expenditure has been some \$3 million in Guatemala and Panama,<sup>3/</sup> and \$2 million in El Salvador.

<sup>1/</sup> Special funds were set aside for the construction of this highway. During the period from July 1951 to October 1952, \$7.24 million had already been spent.

<sup>2/</sup> In the General Budget of the Republic for 1953, a sum equivalent to \$2.88 million was assigned to this highway.

<sup>3/</sup> This country spent from the General Budget of the Republic an approximate sum of \$3.9 million in 1950 and \$3.4 million in 1951.

/In the other

In the other countries the average annual expenditure fluctuates around 1 million dollars. These figures represent approximately from 4% to 8% of the national budgets.

From the data shown previously <sup>1/</sup> it can be inferred that none of the Central American countries has been able to carry through an effective program of construction, improvement, and maintenance of its roads, because of the impossibility of applying large enough funds to those activities. Even assuming that ordinary appropriations could be doubled, this amount would still be insufficient in practice to take care of the effective execution of these activities.

In view of the quality and condition of the Central American roads, it should be pointed out that in order to make maintenance work effective, a sum of no less than 3% <sup>2/</sup> of the total cost of the all-weather roads (not including dry-weather roads) would be needed. In order to have a nearly approximate idea of the necessary annual sum, the actual cost of the paved highways in Central America (2,660 kms.) could be conservatively estimated at \$133 million, and that of the non-paved all-weather roads (8,790 kms.) at \$220 million, or a total of \$353 million for all-weather roads. The minimum amount to be assigned to their maintenance would then have to be \$10.6 million, which is approximately the same as the total budget assigned to roads in the whole region at the present time.

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<sup>1/</sup> See the sections on public expenditures on roads in each chapter of Part I of this Report.

<sup>2/</sup> With the growing improvement of the presently unpaved roads and with the construction of new highways of better quality, the relative amounts applied to maintenance work will decrease.

/This represents

This represents only the indispensable amount for protecting the investment already made on all-weather roads, and to avoid greater transportation costs as well as losses resulting from interruption or abnormal operating conditions.

The conclusions that can be derived from this fact are important: (1) maintenance activities on the all-weather roads in the Central American countries alone require expenditures more or less equal to those now made from budgetary appropriations for all road activities; (2) funds now assigned to all road activities are applied to each one of them in proportions, which vary from country to country and from year to year, which means that the building of new routes, or the improvement of existing ones, brings as a result a lack of maintenance on a part of the road system and, consequently, causes a loss in their value which is much greater than normal depreciation, except in those cases where the total budget is increased in the amount necessary for the building or improvement of new routes; (3) if the ordinary annual road budget were used exclusively for maintenance activities, the carrying out of any program of new road building or improvement of existing ones would require the setting aside of special funds for such a program; and (4) even if it were possible to defray the expenses of necessary road maintenance, and appropriate additional funds for building new routes, the whole problem would still not have been solved, for the greater part of the secondary or complementary systems comprising dry-weather routes would not have been attended to.

Funds appropriated to the national road organization and  
/services



services go to the following activities: (1) planning; (2) surveying; (3) importation of mechanized equipment (construction and transport) and spare parts, as well as materials and fuel; (4) construction (new projects and improvements); (5) maintenance, and (6) administrative expenses.

The efficient execution of the different stages of a project requires the appropriate financing of each one of them. Failure to carry this out, in regard to the amount of annual budget allocation or to the timely provision of the funds, gives rise to serious problems which affect the cost and the construction schedule of the projects.

Every one of the Central American countries needs to carry out important road programs at the present time. Most of these programs involve a high capital investment for the construction of a considerable number of primary and secondary routes, some of which will have to be first-class roads because of their importance; others, not requiring such high initial expenditures, would probably be at first of a relatively lower category, that is, all-weather roads capable of carrying satisfactory traffic. To fulfil these conditions means the building of a type of road with a solid base surfaced structure and with such features as to permit operating costs that are not prohibitive for the development of transport over a more or less long period of time, and in relation to the potentialities for economic development of the regions served.

It is also essential that such programs foresee the expenditure of the amount strictly necessary for the maintenance of the existing road

ing road networks, for otherwise not only would transport activities be made more difficult and expensive, but also there would be the risk of rapidly and increasingly losing the capital invested —capital which is the more precious in proportion to the smallness of the economic capacity of the country. Furthermore, from the economic and social point of view, it is most advisable —and in some cases imperative— to improve certain routes whose features, state of upkeep, and traffic capacity are no longer adequate for the size of the present demand for their services.

Finally, there is a need for reforms that probably will be required in almost all the Central American countries in order to obtain better technical and administrative organization of personnel and of government road departments, as well as to acquire more and more specialized personnel, mechanized equipment, accessories and replacement parts, construction and office materials, laboratory equipment and materials, engineering instruments and materials, the installation of better and new offices and camps for regional maintenance,<sup>1/</sup> etc.

#### RECOMMENDATION LXIX

(a) That in the National Budgets, the largest possible sums be annually, regularly, and increasingly appropriated to the official organizations and services charged with roads and highways, until all their requirements are met so that they may carry out their assignment effectively;

(b) that all technical and administrative activities and the acquisition of essential work elements relating to planning, surveying, technological study and maintenance of the country's roads be included in

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<sup>1/</sup> These camps and offices are relatively permanent, and urgently require appropriation of funds for carrying out their work.

/these

these regular services;

(c) that for the new highway construction projects and the improvement of existing ones, as well as for the acquisition of equipment and materials required for these projects, additional funds be set aside in accordance with the most suitable procedures and under the conditions that the relevant Ministries of State may establish;

(d) that in view of the importance that the highway programs will have in the economic development of the Central American countries, the financing under equitable conditions, should be attempted with the help of national or international credit institutions.

## 2. Lack of Planning of the Road Systems

The lack of technical planning results in the indiscriminate use of personnel, mechanized equipment and capital expenditures on various projects, some of which perhaps may not have enough importance to warrant the preference given them, since they may not have the necessary conditions for being sufficiently productive in relation to the objectives or the amount invested.

The importance of planning transportation systems in advance arises mainly from the need for coordinating their construction with the various other development activities of a country. In the Central American countries an advanced knowledge or estimate of the direct or indirect influence that these systems will have on the plans for agricultural, forestry, and mining development is indispensable, as well as of the possibilities that could be derived therefrom for the gradual introduction of industry and the increase of trade in the local or international markets. Likewise it is necessary to establish a limiting factor to the amounts appropriated for the construction and improvement  
/of roads

of roads in order not to burden the economic capacity of the country nor throw it out of balance and prevent other local problems of greater urgency or importance from being attended to.

Therefore, before deciding as to the suitability, magnitude and order of priority to be given to the construction or improvement of a road and highway system, it is necessary to explore and study the different representative sectors of production so that the selection and order of execution of the projected routes, as well as the limit of expenditures that it would be prudent to consider, will be made according to a well-defined technical and economic criterion. This kind of planning comprises the general aspects of programming in relation to the most important sectors of the national economy. By means of such planning it will be possible to establish the basic outlines of the road system that should be built, the approximate total amount of investment that can be applied to it and the different stages in which it should be carried out. That is to say, it constitutes the fundamental stage in a road and highway project, for it is the time to define the goals of the program, and to lay out the necessary elements for beginning the second phase of the planning.

The second phase consists primarily of the technical study of the possibilities for carrying out the plans. This requires above all the help of engineering for establishing possible routes and determining their general specifications, in relation to the already defined objectives and within the financial limits imposed. Notwithstanding its essentially technical basis, such an investigation should also include economic considerations and try to establish, in the most approximate way possible, a balance

/between

between the estimated benefits to be derived from the projects and their cost. It should also consider the projections and implications that could be derived in the short and long runs from the choice of the routes and general specifications. Furthermore, it will have to determine the future possibilities for enlarging and improving the plans, as well as to establish the different categories and functions of the proposed routes. In other words, by means of this second phase it will be possible to determine the magnitude, quality, and approximate cost of the routes, deciding which will be primary and which will be secondary and feeder routes, which will have international importance and which will have only national or local importance, and approximately the material and mechanical equipment requirements.

The third and final phase will determine the final or definite choice of routes, their specifications and cost, the necessary equipment and personnel, and the construction or improvement methods to be applied to the projects.

It can be seen that the first phase of the planning of a transport system is of a national nature, and in doing it maximum importance should be given to the factors having a direct bearing on the country's economy. Technical and economic organizations should work together on this phase of the planning. The second phase can be exclusive responsibility of the official highway agencies or have also the cooperation of others in the fields of economy and finance; and the third phase has to do only with the technical execution of the projects, for which the maximum specialization and competence of the

/personnel

personnel charged with carrying it out are essential.

It is of the utmost importance that the execution of a road and highway plan be carried out following the general outlines that have just been sketched out. No highway system, or main highway, should be planned and built without taking the above-mentioned factors into consideration, and the various phases into which the projects should be divided, for this is the only way to coordinate it properly with the other aspects of the national economy and to give it the continuity which sooner or later will result in the fulfillment of the proposed objectives.

It is thus necessary to begin the elaboration of a highway program with a national plan, from which it will be possible successively to derive partial or local plans, and to set the different stages required for its implementation as well as the necessary annual expenditures which should be applied.

#### RECOMMENDATION LXX

(a) Governments should not authorize or recommend the building of an important highway or system of highways, without first having carried out the necessary general economic studies, drawn up the technical plan for implementation and determined the full personnel, equipment, and other requirements;

(b) for such requirements to be fulfilled, the governments should set up the indispensable technical and economic agencies, as well as provide the means and necessary funds for the technical road departments and the planning organizations to be able to do their work effectively.

### 3. Limited Availability of Specialized and Technical Personnel

Although this problem has been suitably discussed in Part II of this Report -- where a suggestion for its solution has also been

/made

made in the form of a recommendation of a regional nature,<sup>1/</sup> in the belief that it was the most adequate to the magnitude of the problem, it is nevertheless pertinent to present some further consideration at the national level, as indicated in the following recommendation.

#### RECOMMENDATION LXXI

Considering the magnitude and importance of the problem of the lack of availability of technical and specialized personnel in the Central American countries,

(a) the governments of each of the Central American countries should give the greatest importance and urgency to the solution that can be derived from the joint action advised in Recommendation XII;

(b) facilities for theoretical and practical specialization of professional and sub-professional technicians at universities, technical schools and institutes should be broadened (or created where none exist), and students should be incorporated into the different phases of highway and road projects in the field during and after their courses;

(c) mutual exchange of professional and sub-professional technicians among the Central American countries should be carried out as much as possible;

(d) a limited number of technicians who have completed their professional or sub-professional education and who have acquired a certain amount of experience in one or more important projects in their own country should be sent annually to other more technically advanced countries; to such an end, the scholarships that the technical assistance agencies of the United Nations and the governmental and private institutions of various nations grant to many countries could contribute effectively;

(e) in coordination with the regional or central schools which may be established, and by means of the cooperation of the relevant official organizations, private institutions and commercial firms interested in highway construction or sale of mechanized equipment, local schools for theoretical and practical training of electricians, mechanics and operators of the equipment used in road building should be set up;

(f) in each important project which is carried out in the country directly by administration or by contract, and where the use of project master masons, masons, carpenters, blacksmiths, stonecutters, rock drillers, etc. and others requiring a considerable degree of specialization, theoretical-practical training schools should be established, with free schooling.

<sup>1/</sup> See Recommendation XII, p.439 and also Part II, Chapter I, Section II, point 1.p. 431

4. Lack of Statistical and Cartographic Information for the Preparation of Studies

The preparation of the studies for the building of a highway or a system of highways requires numerous statistical data, without which it is impossible to calculate beforehand and with the proper accuracy certain fundamental characteristics of the project, which determine to a large extent its cost and effectiveness. From the data on probable density and kind of traffic, the future increases can be estimated, and the kind of services that the routes should render can be approximately established. Determination of the capacity of the drainage systems and of certain essential characteristics of bridges likewise requires data for several years on the daily, monthly, and annual discharge of the rivers, and of their periodic and extraordinary variations; the establishing of the maximum run-off from drainage areas and the variations in the level of the water-bearing strata (specially the water-table) of the subsoil, in the region within which the projects are located. Cost figures need to be related to those of other similar projects built previously, so that a better approximation may result from the comparison, and certain factors affecting costs may be foreseen. In the same way there should be a certain amount of statistical information about labor efficiency of previous projects. And lastly, among other data of importance, topographic, geologic and hydrographic maps of the region are of great usefulness.

When all or most of the information mentioned is lacking, estimates or approximations which do not always reflect the facts have to be used.



RECOMMENDATION LXXII

(a) Official agencies in the Central American countries in charge of highway projects should gather as much as possible all available statistical and cartographic information;

(b) these agencies should try to prepare and organize in due manner the greatest amount of statistical information available on: (1) traffic density; (2) seasonal discharges of rivers and their periodic variations (3) maximum and minimum run-off of drainage areas; (4) annual rainfall by regions; (5) variations in the levels of the water-bearing strata (specially the water table) of the subsoil; (6) costs; (7) labor productivity; (8) efficiency of mechanical equipment; (9) prices of construction materials, both of local and foreign manufacture; (10) prices of imported mechanical equipment, replacements, and fuel.

5. Insufficient Number of Units of Mechanized Equipment for the Building and Maintenance of Roads and Highways

In discussing the problem of the limited number of trained technical personnel in Part II of this Report,<sup>1/</sup> and in referring to the importance that their quality has in relation to the methods applied to the construction and maintenance of Central American roads, it was concluded that it was necessary to increase the degree of mechanization in such activities, and to introduce it gradually in those sectors where it is not yet used or is still rudimentary.

Despite the improvement that it has been possible to achieve in work systems in recent years in every Central American country due to the introduction of mechanized elements and a greater application of modern techniques, it is essential to lower the high costs of construction and maintenance. It is estimated that this can be accomplished in two ways: (1) increasing gradually the degree of mechanization up to the point that would permit the most economic utilization of units of

<sup>1/</sup> See p. 431

this type together with the most efficient use of labor, which can be determined only by the technicians of each country, and (2) increasing the productivity of labor and other personnel.

It is necessary to bear in mind that the acquisition of mechanized equipment involves high capital investment, and that it must be imported from abroad, which means spending foreign exchange.

All the Central American countries, and particularly Guatemala, El Salvador, and Nicaragua, have considerably added to their mechanized road equipment in recent years. Although they have all faced inherent limitations in this type of acquisitions, they have been able to establish the fact that only through greater mechanization of road construction and maintenance, and by increasing the productivity of the personnel operating the equipment, will it be possible to achieve a substantial reduction in the cost of grading operations. The probable reasons for this decision are, first, the heavy demand for transport services urging an ever-increasing speed of highway construction, as well as of transport operations; and second, the need to reduce the high cost of road construction and maintenance.

Tables 124, 125 and 126 show the inventories of mechanized road equipment in Guatemala, El Salvador, and Honduras.

The tables indicate that the majority of the Central American countries have such limited quantity of mechanized equipment that it would be insufficient for even one construction project of considerable magnitude. It would not even be enough for the permanent maintenance work in the various zones into which the road system of each country is divided, should an organic and effective road maintenance plan be adopted.

/Table 124

Table 124

Guatemala: Inventory of Road Construction and Maintenance Equipment, 1952<sup>a/</sup>

Bulldozers	13
Angle-dozers	50
Tournadozers	2
Tractors of various types and horse-power	95
Tractor-cranes	1
Tractor-pile driver	1
Mechanical shovels	6
Dredging shovels	12
Shovels and dredges mounted on trucks	13
Portable hydraulic crane	1
Patrols	44
Rollers	20
Tamping rollers "sheep's foot"	20
Motor graders	8
Carry-alls	73
Earth loaders	2
Scarifiers	11
Pull graders	1
Rock crushers	30
Soil stabilizers	1
Mixers	23
Paving machines	1
Asphalt sprinklers	2
Asphalt heaters	2
Euclids	12
Tow trucks	2
Crane trucks	4
Station wagons	2
Small soldering trucks	2
Trailers	2
Loaders	1
Auto-cars	1
Asphalt tanks	1
Gasoline tanks	1
Boiler tanks	2
Boilers	1
Crushed rock spreaders	2
Asphalt spreaders	2
Motorcycles	1
Bicycles	3
Mechanical sweepers	1
Broom-making machines	1
Water pumps	48
Compressors	67
Drills	112

Source: Data from the Dirección General de Caminos.

a/ This inventory includes the machinery, now quite depreciated, which was put into service on the Atlantic Highway, part of which previously belonged exclusively to the Inter-American Highway, and part to the Dirección General de Caminos.

Table 125

El Salvador: Inventory of Highway Construction and Maintenance Equipment,  
September 1952

Mechanical shovels	3
Caterpillar tractors	18
Tractors with pneumatic tires	7
Motor graders	19
Scarifiers	4
Cranes	1
Carry-alls	12
Soil stabilizers	1
Rollers of different tonnages	13
Rock crushers	14
Tamping rollers "sheep's foot"	5
Loaders	4
Asphalt spreaders	5
Asphalt heaters	9
Manual gravel classifiers	2
Gravel mixers	3
Gravel spreaders	3
Water pumps	10
Tank-trucks for water and asphalt	17
Compressors	2
Electric plants	8
Dump trucks (70 trucks of from 2 to 10 tons)	164
Trucks	4
Pickup trucks	41
Power wagons	4
Station wagons	7
American and English jeeps	6
Automobiles	6
Panel trucks	2
Winches with gasoline motors	2
Solderers	3

Source: Dirección de Caminos, Ministerio de Fomento y Obras Públicas  
 of El Salvador.

/Table 126

Table 126

Honduras: - Inventory of Road Construction and Maintenance Equipment, 1952

(a) Construction

Tractors	31
Mechanical shovels	6
Motor graders	4
Carry-alls	6
Rollers	2
Pull graders	2
Pay-loaders	3
Rock crushers	2
Compressors	14
Rock drills	3
Euclid	14
Dump trucks	50
Pickup trucks	10
Platform trucks	4

(b) Maintenance

Motor-graders	10
Rollers	6
Rock crushers	2
Trucks	59
Pickup trucks	10

Source: Dirección General de Caminos, Ministerio de Caminos y Obras Públicas.

RECOMMENDATION LXXIII

(a) The governments should try to purchase more mechanized equipment according to a plan determining the rate of increasing mechanization of such activities, and the limits it should economically reach, in relation to the advisable degree of utilization of manual labor;

(b) a study should be made to determine the most that can annually be spent for such equipment in relation to the minimum needs determined by the size of the road programs and the availability of foreign exchange.

(c) it is advisable to try to achieve a relative uniformity of makes, types, and horsepower of the equip-

/ment that is

ment that is acquired, because of the advantages that can be obtained in the supplying of replacement parts and accessories, and in the possible improvement in operating and maintenance efficiency.

6. Low Efficiency in the Operation and Maintenance of Mechanized Equipment

As a consequence of the limited experience that these countries have had, not only on account of the relatively belated introduction of mechanical procedures, but also as a result of their short tradition in road activities (scarcely two decades), and because of the insufficient quantity of specialized technical personnel (professional and sub-professional), deficiencies in technical and administrative organization, and the small appropriations of funds for road activities, it is obvious that the operation and maintenance of mechanized equipment is generally carried out at a low level of efficiency.

There are, however, a few exceptions where certain projects and countries are concerned. It has been possible to obtain high productivity in countries that have been making great efforts to attain that end through increasing their purchases of mechanized equipment. But the problem still remains to almost full extent, and its consequences are shown not only in higher costs of projects but also in a rapid depreciation of the road machinery. The Central American countries should devote the greatest attention to raising the degree of efficiency of these activities.

RECOMMENDATION LXXIV

(a) The governments of the Central American countries should give the greatest possible attention to the problem of the low operating and main-

/tenance

tenance efficiency in the use and upkeep of mechanized equipment, seeing that it is operated by competent and responsible personnel under the general control of specialized technicians, who should at all times try to improve the training of the operators;

(b) the personnel responsible for the operation of the equipment should always be provided with all the elements and facilities indispensable for efficient operation;

(c) the operations of the mechanical equipment should be daily controlled and recorded in order to determine their degree of efficiency and to correct their faults;

(d) schools for practical and theoretical training of operating personnel should be created or enlarged, in accordance with the results of Recommendations XII and LXXI, with the object of increasing the number of expert operators and their quality as rapidly as possible;

(e) an attempt should be made to install theoretical and practical training centers for operators on all important projects, under suitable conditions;

(f) timely appropriations of funds should be made in order to bring about the fulfillment of all parts of this recommendation.

#### 7. Deficiencies in Technical and Administrative Organization

In Guatemala, El Salvador, and Honduras the responsibility for the orientation and technical execution of all activities relating to planning, surveying, construction, and maintenance of roads belongs to a Dirección General de Caminos, whose Chief (or Director) works directly under the Minister of Public Works (Ministro de Obras Públicas). In Nicaragua, with a category and authority equivalent to those of the three above-mentioned countries, the organization is called Departamento de Carreteras, and is directed by a Chief Engineer who also works directly under the Minister of Public Works. In Costa Rica the Departamento de Caminos Públicos is an agency of the Dirección de Obras Públicas of

/the Ministry

the Ministry of the same name, and therefore has neither the status nor the authority of the three mentioned above. The corresponding organization in Panama is called Sección de Caminos, Calles y Muelles, and is also an integral part of the Ministry of Public Works.

In none of these countries is there any other governmental or private entity or institution having to do with road activities, except for the local offices of the Bureau of Public Roads of the United States government which were set up in each country to furnish technical assistance in the Inter-American Highway project. (An outline of the organization of the Direcciones Generales de Caminos of Guatemala, El Salvador, and Honduras is shown in Tables 127, 128, and 129. It was not possible to obtain on time such information from the other countries.)

In none of the Central American countries is there an organization specifically charged with the technical planning of highway systems. Such an organization should be directly coordinated with all those technico-economic organizations concerned with the formulation of such a plan, and with others from the Ministries of Public Works, Health, Agriculture, Education, Economy and Finance, etc. whose functions are also related to road programs.

The lack of centralized control in the road departments in relation to the activities of the various sections of which they are composed has also been noted. This is due primarily to the inadequate coordinated programming of the general and special functions, and is particularly applicable to the sections in charge of expenditures, accounting and costs in relation to those in charge of construction, warehouses, and repair shops.



Table 127

Guatemala: Organization Outline of the Dirección General de Caminos,  
1952

Administrative Offices

- 1 Director General
- 1 Assistant Director General
- 1 Assistant in charge of charts and progress

Secretariat

- 1 Secretary
- 1 First officer
- 4 Clerks
- 1 Filing clerk
- 1 Telephone operator
- 1 Janitor

Accounting Department

- 2 Department Heads
- 1 General Accountant
- 1 Cost Accountant
- 4 Accounting assistants
- 1 Import Promoter
- 1 Stenographer
- 1 Stationery Supply clerk

Engineering Department

- 1 Chief of Projects
- 22 Overseers
- 1 First officer
- 7 Officers: 2nd, 3rd, 4th and 5th
- 10 Draftsmen: 1st, 2nd, and 3rd
- 1 Copyist
- 1 Testing chief
- 1 Laboratory technician
- 2 Assistant laboratory technicians
- 1 Sample tester
- 5 Construction superintendents
- 3 Zone superintendents
- 5 Superintendents' assistants
- 6 Bridge builders, 1st and 2nd
- 1 Explosives expert

38 Road Master Masons

- 1 Fuel storehouse guard
- 1 Messenger
- 1 Machinery costs operator
- 1 Labor costs operator
- 1 Material costs operator
- 1 Indirect costs operator
- 3 Costs assistants
- 2 Payroll supervisors
- 1 Payroll supervisor's assistant
- 3 Payroll men
- 1 Timekeeper
- 1 Assistant timekeeper
- 1 Inventory clerk
- 2 Inventory assistants
- 2 Kardex operators
- 1 Personnel transfer chief
- 1 Kardex operator for machinery
- 1 Assistant Kardex operator for machinery
- 1 Kardex operator for transport

Contract Department

- 1 Contract supervisor
- 1 Materials technical supervisor
- 1 Clerk

Construction Department

- 1 Bridge superintendent
- 1 Asphalt and L. chief
- 1 Maintenance general superintendent
- 1 Construction engineer

Warehouse Department

- 1 Chief of Department
- 1 Order registrar
- 1 Assistant order registrar
- 1 Chief buyer
- 1 Assistant buyer
- 2 Supply clerks
- 1 Overseer

/4 Warehouse guards

Table 127 (continued)

4 Warehouse guards	<u>Transport Department</u>
5 Warehouse assistants	1 Assistant chief
	3 Dispatchers
<u>Machinery Department</u>	1 General distributor (fuel)
1 Department Head	1 Department dispatcher
1 Overseer	1 Dispatcher
3 Machinery inspectors	1 Order supervisor
1 Work order supervisor	3 Assistants
1 Machinery storehouse guard	<u>Medical Dispensary</u>
1 Vehicle controller	1 Chief physician
1 Messenger	1 Assistant

Source: Dirección General de Caminos, Guatemala.

Table 128

El Salvador: Organization Outline of the Dirección General de Caminos,  
1952

<u>Administrative Offices</u>	2 Warehouse guards: 1 for Santa Ana and 1 for San Miguel
1 Director	1 Materials dispatcher
1 Assistant Director	1 Chief of general files and correspond- ence
1 Secretary	1 Stenographer and file clerk
1 Stenographer	1 Orderly
2 1st class assistants	
2 Orderlies	<u>Department of Studies and Projects</u>
<u>Administrative Department</u>	1 Department Chief
1 Department Chief	1 5th class official
2 4th class officers	4 Inspectors of bridge construction and erection
3 5th class officers	2 Design engineers
1 2nd class assistant	2 Engineers' assistants
2 Inspectors	3 1st class draftsmen
1 Chief of circulating fund	5 2nd class draftsmen
1 Chief of warehouses	
1 Chief of card control	
2 Warehouse guards	<u>/Rights of Way</u>

Table 128 (continued)

<u>Rights of Way and Map Filing Section</u>	1 5th class officer 1 Orderly
1 Surveying and Appraisalment Superintendent	<u>Maintenance and Improvement Department</u>
2 Assistants	1 Department chief
2 2nd class draftsmen	6 Zone chiefs
1 5th class officer	6 Zone chiefs assistants
1 Orderly	1 5th class officer
<u>Laboratory Department</u>	1 Orderly
1 Chief of Department	<u>Cost and Statistics Department</u>
1 Assistant chief	1 Department Chief
1 Geologist	1 Cost superintendent
1 Chemist	1 Statistics superintendent
4 Laboratory technicians	3 Cost Statistical clerks
1 5th class official	3 Statistical clerks
1 Orderly	1 1st class draftsman
<u>Construction Department</u>	1 Orderly
1 Department Chief	<u>Highway Location Department</u>
1 Machinery superintendent	1 Department Chief
1 Garage superintendent	1 5th class officer
2 Engineers a/	
1 Engineer's assistant	

Source: Dirección General de Caminos, El Salvador.

a/ This title is paid more than the previous ones.

Table 129

Honduras: Organization Outline of the Dirección General de Caminos, 1952

1 Director	1 General warehouse guard
1 Assistant Director	1 Payroll supervisor
2 Inspectors	1 Unit costs supervisor
1 Project engineer	1 Inventory supervisor
1 Bridge engineer	1 Buyer
1 Laboratory engineer	4 Stenographers
4 Draftsmen	3 Drivers
1 Chief of Administrative Division	1 Radio operator
1 Asst. chief, Administrative Division	2 Janitors
1 Accountant	1 Clerk

Source: Dirección General de Caminos, Ministerio de Fomento y Trabajo, Comayagüela, October 13, 1952.

/Furthermore,

Furthermore, the lack of sufficient construction materials, replacement parts and accessories for mechanized equipment and other work elements in the central and regional warehouses is quite general. In some cases this lack even occurs in materials of low cost, greatest need and easiest acquisition in local markets. This causes delays and greater expense in highway construction and maintenance activities, and in the repair and maintenance of road machinery. Among the principal causes of this situation are: (a) inadequate appropriation of funds; (b) lack of foresight in the annual needs for such materials, as a result of inadequate general planning or incomplete studies in the formulation of each individual project; (c) delayed acquisition of the necessary materials, waiting until the very moment when they are needed; (d) excessive red tape in obtaining order authorizations in the central warehouses and workshops, as well as in the various maintenance zones; (e) the limited previous allocation of these work materials or of the necessary funds for purchasing them in each zone of highway activity. It is also obvious that there is an insufficient number of specialized engineers in charge of the various technical sections, especially in road and bridge construction and maintenance.

If on the one hand the scarcity of specialized technicians in the official highway departments is observed, on the other hand it is clear that in some cases there is an excessive number of administrative or executive personnel in relation to the magnitude of the projects under construction, and to the amounts appropriated annually from the national budgets for road and highway activities.

/RECOMMENDATION LXXV

RECOMMENDATION LXXV

(a) An integral revision of the organization charts of highway construction agencies should be carried out with the object of determining the degree of inefficiency that may exist in the implementation of its fundamental objectives;

(b) sufficient funds, technical and administrative personnel and indispensable work elements should be assigned for undertaking a total reorganization or at least an improvement of the services of these organizations, according to requirements;

(c) the assistance, when suitable or necessary, of national or international organizations of technical assistance, or of experts of recognized experience in these activities, should be sought even if it requires setting aside large special funds or awaiting a rather long time for results.

8. Inadequate Engineering Planning

It is appropriate to refer to this question, even though it is common knowledge that the success of important engineering works depends above all on the quality of the complete studies on which their construction should be based. In the Latin American countries there is a tendency to appropriate insufficient funds for this aspect of the problem, perhaps as a direct result of their limited financial capacity in relation to the number and magnitude of public works projects.

The deficient accomplishment of engineering planning for the construction of a highway is reflected inevitably on higher costs and longer construction schedules, if not on actually affecting the main objectives of the project. It also results in numerous changes in the original projects, and in additional works which, not having been foreseen, involve substantial modifications in the plans and specifications.

/Once the

Once the established orderly steps for the planning of highway projects are followed more or less closely, it is also important that the preparation of studies dealing specifically with its engineering aspects be carried out according to the well-known stages of: (1) regional reconnaissance; (2) reconnaissance of possible alternative routes; (3) preliminary location surveys; and (4) final location surveys.

It is necessary to emphasize that attempts should be made to reduce to a minimum the high costs frequently involved in the execution of each stage. In the special case of the Central American countries there is a very limited number of specialized technical personnel and modern methods, such as aerial photogrammetric surveying and mapping, should be introduced where possible, for they are of multiple benefit in other fields of the economy and for other kinds of public works projects as well. By using such methods it is possible to achieve a considerable saving of time and money, while obtaining highly satisfactory results at the same time.

General Planning and engineering studies for a project should be carried out by personnel as experienced and qualified as that used for the actual construction of the projects. Information on the amounts spent on surveying and preparation of the studies in the Central American countries has not been available, but it is not difficult to see that they have been insufficient, considering the small total budgets.

RECOMMENDATION LXXVI

(a) The necessary engineering studies for a highway project should be carried out following the adequate technical procedures which are universally established for this kind of work;

/(b) sufficient

(b) sufficient funds should be assigned for studies and surveying according to the importance and size of the projects.

Chapter III  
ROAD TRANSPORT

Introduction

From a study of the existing national transportation facilities outlined in the first part of this report, it can be clearly seen that while road transport has very rapidly developed during the last few years, it is still very far from providing the adequate, economic, efficient, and safe system required to meet the economic and national needs.

The position varies from country to country, particularly in relation to highway development and alternative means of transport, but basically the problems are the same, and any differences are more of degree than of substance. This is to be expected since they are neither unique nor unusual, nor related solely to the Central American countries, but are the normal consequence of a particular stage of road transport development -- which itself is part of the much greater problem of unified national transportation policy. It has been the experience at one time or another of almost every country in the world, a factor of far reaching importance to the region, since it can thus benefit freely from the past experience of other countries without paying for the costly trials and errors incurred in the process.

The purpose of this chapter is to review the present national road transport services, to consider how far they fall short of

/requisite



requisite standards, and to suggest recommendations for the attention of governments in order to provide adequate, economic, efficient, and safe road transport facilities for the future.

**I. Number of vehicles and factors that would facilitate their increase**

At present road transport facilities in the Central American countries are very inadequate. At their best --as in El Salvador-- they provide means of transport between most of the large cities but still leave large parts of the country cut off from communication with the rest of the country during the wet season. At their worst --as in Honduras-- they provide only a skeleton communication service leaving the widely contrasted alternatives of air or animal transport to provide the sole means of access to many parts of the country.

How much the inadequacy of road transport facilities seriously hampers the development of agriculture, industry and social progress, has been repeatedly stressed in many economic reports. Thus,

- (a) In agriculture: the shortage of road transport facilities encourages subsistence farming and prevents improved production methods. An excellent example occurs in the Report of the International Bank Mission to Guatemala which states that: "although beans are one of the principal items of the national diet, production will come about through improved transportation, which will allow beans to be grown where they grow best instead of where they are to be eaten." (b) It restricts marketing facilities: the small producer has no access to markets unless he personally carries his limited marketable surplus often over long distances by /animal

animal transport or frequently under his own power. He then either spends more time in retailing his goods personally, or else sells them to a middleman at a price over which he has little or no control.

(c) It limits social development: since so many towns and villages are almost isolated from the Capital and without highway access, social, educational, hospital and medical services, etc., are completely lacking or inadequate.

1. Reasons for inadequacy

(a) Lack of highways. The main reason for the present inadequacy of road transport facilities is undoubtedly the lack of planned national highway networks, a subject which has been treated earlier in Chapter II of this Part.

(b) Inadequate national fleets. Other major factors are the lack of mechanized vehicles and equipment, or, when there are vehicles, the lack of suitable types; and finally inadequate distribution of such equipment when available.

It is difficult to reach any general conclusions as regards vehicle availability in relation to the population. There are 64,646 motor vehicles in the region for a population of 8,847,030 or approximately 136 persons per vehicle, but the actual distribution per person of national fleets varies considerably, e.g., 41 persons per vehicle in Panama compared with 305 persons per vehicle in Honduras. (See Table 130.) These figures contrast with an average of 29 persons per vehicle in Europe,<sup>1/</sup> or approximately 100 persons in Mexico and 50

<sup>1/</sup> United Nations, Annual Bulletin of Transport Statistics, 1951.

in Argentina.<sup>1/</sup>

Compared with countries in other regions there would appear little doubt that Panama and Costa Rica have reasonably adequate fleets in relation to their population, and to a certain degree this applies also to El Salvador. But on the other hand in Nicaragua and Honduras, even allowing for the handicap of their restricted highway networks, vehicle fleets would appear to be inadequate. It should also be noted, as pointed out earlier, that in Central America there are few alternative land transport facilities: railways are very limited and waterways are few and unused, which makes the region more than ever dependent for its main method of transportation.

Table 130

Central America: Number of motor vehicles and population

Country	No. of Vehicles	Population	Persons per vehicle
Guatemala	14,499	2,787,030	185
El Salvador	11,243	1,920,000	171
Honduras	4,625	1,410,000	305
Nicaragua	4,279	1,088,000	254
Costa Rica	10,000	825,000	82
Panama	20,000	817,000	41
Totals:	64,646	8,847,030	136

Source: Transport Mission, from official data.

<sup>1/</sup> International Road Federation, World Road Statistics, 1950.

(c) Mal-distribution of vehicle fleets. The figures given above, however, are rather misleading particularly when applied to the actual geographical distribution of vehicles in the countries concerned, since it will be found that in nearly all the countries more than 75% of the total fleets are concentrated in or near the Capital, while many large departments are almost devoid of mechanized transport, being limited to fifty or so vehicles per province. It follows that these and other large areas are entirely dependent on the ox-cart, the pack-horse or even human porters for local means of transportation. The extent to which the region is dependent on such transport is surprising; unfortunately there are no accurate statistics available, but as can be seen from the various agricultural censuses there can be little doubt that animal transport carries a large volume, if not the largest, of national domestic traffic.

Taking these factors into consideration as well as the extensive highway construction plans envisaged, it will be necessary for the present national fleets to be increased considerably and distributed more evenly if road transport is to provide adequate services to meet the requirements and increasing trade and commerce.

2. Suggested Methods for reducing high capital cost of vehicles and equipment.

Among the most important factors which would appear to limit vehicle fleets as well as raise operating costs is the high cost of equipment. An average 4/5 ton carrying capacity truck chassis which costs about \$2,400 in the United States, or \$2,800 in Mexico, costs

/more

more than half as much again in most Central American countries, e.g. in El Salvador the price is 9,500.00 colones or \$3,800, in Nicaragua 30,000 cordobas or \$4,250, and in Panama \$3,850.

Busses are even more expensive, particularly when they are imported complete with chassis, when prices range between \$5,000 and \$7,000.

These high prices are mainly accounted for by: (a) maritime freight and port dues; (b) customs and other duties; (c) local railway freight; and (d) dealers' commissions.

(a) Maritime freight rates. In the first place maritime freight rates are too high. Thus residents of the Panama Canal Zone are able to import cars at an average flat rate of \$125, while Panama nationals pay rates based on cubic capacity, amounting to \$257.<sup>1/</sup> Equally high are maritime rates in the other countries, thus in Guatemala the rates amount to 23% that of the total cost of an automobile (CIF rates to Puerto Barrios), and 25% that of a truck; and in Nicaragua they amount to 2,500 cordobas per truck or (approximately 360 Dollars).

From the example cited as regards Panama it would appear that these rates could be reduced. Moreover even from the shipping companies' business interests this would appear a desirable objective since motor vehicles are now being imported by air transport in Central American countries at rates which are ultimately cheaper than by sea.

<sup>1/</sup> "The Government of the Republic of Panama wishes to call this Committee's attention to the maritime freight rates charged... they are an obvious, undeniable and unjustified case of discrimination which causes great harm to the Panamanian economy." Statement to the Inter-American Economic and Social Council, March 11, 1952.

If the shipping companies cannot agree to reduce their rates it may become necessary to explore other avenues such as the possibility of import by road or railroad from Mexican factories, or United States factories on the Mexican border, etc. At the present time the two major obstacles in the way of such development are the uncompleted Guatemalan section of the Inter-American Highway, and certain difficulties inherent in the assembly plant system in Mexico, but it would appear very likely that both these difficulties could be overcome.

#### RECOMMENDATION LXXVII

In order to reduce the high cost of motor vehicles, all possible steps should therefore be taken to reduce maritime freight charges for imported motor vehicles, and to this end it is suggested that manufacturers and their national representatives request shipping lines to consider possible ways and means of achieving this end; alternatively, if this is not possible, importers should be requested to investigate the possibility of supply from nearer sources such as Mexico, and by other means of transport such as road and rail.

(b) Customs duties. More important than the above as a responsible factor for increasing the price of motor vehicles in Central America are the various customs duties, taxes, consular fees and other dues, which are imposed on imported vehicles.

Most of the countries charge import duties on an ad valorem basis which varies between 15% and 20%. In some cases, such as Guatemala, duties on commercial vehicles are assessed on a net weight basis of 5 cents per kilo. In addition, consular fees, which sometimes are as high as 5.5% to 8% of the net cost price of vehicles (Guatemala and Honduras),  
/and various

and various other charges —such as pier, warehouse and customs fees— all help to raise the price of vehicles by approximately 20% or more.

Attention is drawn to the practice of customs authorities in some countries of charging duties on packing crates and other packing material, which occurs where the duties are levied according to weight, cubic capacity, etc. As previously mentioned, the result of this has been to encourage motor vehicles to be imported by air where no such packaging is required, and consequently lower duty is imposed.

While the legitimate interests of Government in raising revenues by means of duties on imported goods is fully recognized, nevertheless these would appear to be an inadequate appreciation of the position as regards public transport vehicles. In the first place, a very clear distinction should be made between private passenger vehicles and commercial vehicles. The former are in most cases a luxury or semi-luxury, whilst the latter are essential to the economic development of the country. Again, while taxes on the former should be born by the individual, in the latter, as constituting part of the cost of operation, they will ultimately be paid by the public, and by that section of the public which is least able to afford it. Even as regards passenger cars there is also a differentiation of use: some cars are very essential to the life of the country, e.g. for the use of doctors, public servants, nurses and other official purposes, while others again are used part for business and part for pleasure, and finally some are solely used for pleasure purposes.

Other means of transport do not have to pay similar duties, namely, there are no duties on locomotive rolling stock, or airplanes for

/public

public transport when entering the country.

Accordingly, the present system whereby a uniform scale of import duties is imposed on all type of motor vehicles is not only unjust but detrimental to economic progress, and even more so when applied ad valorem to commercial vehicles, since the duty then becomes a tax on efficiency, that is, better and more suitable vehicles are subject to higher taxes than the cheaper and less suitable types.

On the other hand, the arguments advanced above are not intended to apply to private passenger vehicles, other than the very small minority used for official or public purposes. In fact, one of the more surprising features of road transport in Central America is the unduly high proportion of luxury cars visible on the streets, particularly of the Capital cities, which contribute little if at all to national economic development. If it is considered that a reduction of duties on commercial vehicles might adversely effect the national budget, there would appear to be no reason why any loss of revenue could not be offset by increased duties on private cars, particularly these of luxury types.

#### RECOMMENDATION LXXVIII

In order to reduce the high cost of trucks and busses, it is suggested that governments might consider:

(a) what steps could be taken to reduce the present high import duties, consular fees, and other charges levied on the importation of motor trucks, motor busses, and other vehicles used for commercial purposes;

(b) should it be necessary to compensate national budgets for any reduction in revenue accounted for by the fall in transport duties on commercial and public vehicles, consideration might be given to a pro-rata increase in the duties on private cars particularly as regards those of a luxury type.

/(c) Rail



(c) Rail Freight. Rail freight rates from ports of entry to capital cities are excessive, which may be due to the fact that in most cases there are no alternative transport means, and that a port traffic monopoly is enjoyed by the railroads.

In Nicaragua, for instance, freight rates on automobiles average around 500 cordobas, or 20 centavos per ton-kilometer, and in Guatemala from \$130 to \$150, or over 20 cents per ton-kilometer. Similar high rates are charged in El Salvador (from Puerto Barrios to San Salvador), and in Costa Rica (from Puerto Limón to San José).

In addition to the actual railroad freight charge there are miscellaneous port charges --sometimes included within the railroad freight rate-- such as the charge made in Puerto Barrios for use of heavy cranes.<sup>1/</sup> Considering the rate charges in other countries, and the fact that there would appear to be no justification for discriminatory rates as applied to motor vehicles, railroad companies should reduce their rates.

#### RECOMMENDATION LXXIX

In order to reduce the high cost of motor vehicles where excessive rail freight rates are charged, governments should arrange with the railroad company concerned to reduce these rates, particularly in respect of combined rail and port charges.

(d) Dealers' Commission. While this is a subject difficult to approach, since it refers to a specialized field of private business, and since any figure referred to can only be obtained from the agents themselves, it does appear nevertheless that in many cases commission rates charged by

<sup>1/</sup> See Part I, Chapter I, p. 44

agents are excessive, even when taking into consideration the additional costs incurred by agents to promote and foster the sales of any particular make. However, if governments undertake by every possible official means to reduce the costs of imported vehicles, it follows that it would be only reasonable, and ultimately in the agents' own interest, also to reduce their commission rates.

#### RECOMMENDATION LXXX

In order to reduce the high cost of motor vehicles, distributors and agents, in return for assistance rendered by governments in the form of reduced customs duties, etc., should take all possible steps to reduce their commission to a figure more in line with other countries.

Action on the above lines would tend to encourage the importation of trucks and busses and other commercial vehicles, and thus assist in building up national road transport fleets to a level consistent with the requirements of national economic development.

#### II. Economic Operation

Some indication as regards the economic or uneconomic operation of road transport is normally given by a comparison of the freight rates charged in any particular country, since they are ultimately based on operating costs. Nevertheless, care must be taken in any comparison to take into consideration the many factors such as condition of roads, traffic availability, equipment costs, taxation, etc., which all naturally affect ultimate rates. It is essential that rates charged  
/should be

should be as low as consistent with efficient operation and safety standards, and yet sufficiently high to provide financial incentives to operators. This is particularly important in the Central American countries where road transport has a practical monopoly of much local and domestic traffic.

From Part I of the Report it can be seen that rates charged vary considerably in each country and as between the various countries. For instance, passenger rates range from as low as 1/2 cent per passenger kilometer in San Salvador, to as high as 3 cents in Honduras. While the former would appear to be too low, the latter is obviously far too high. These rates compare with 1-1/4 cents in the United States,<sup>1/</sup> where standards of service are far higher, and with 1/2 cent in Mexico,<sup>2/</sup> (3-1/2 - 4-1/2 Mexican centavos), where the cost of living is lower but services not so good. Taking all the factors into consideration, i.e. the high cost of operation, and poor roads on the one side, and overcrowded poorly maintained vehicles on the other, it would appear that —with the exception of El Salvador— the passenger fare rates in Central America are too high, particularly in relation to the services offered.

- <sup>1/</sup> "Revenue per passenger mile traveled on intercity schedules of Class I intercity-bus companies in 1951 averaged an estimated 1.95 cents in 1951 and about 2 cents in 1952. This is the equivalent of 1.22 cents per passenger kilometer for 1951 and about 1-1/4 cents in 1952." National Association of Motor Bus Operators. United States of America.
- <sup>2/</sup> "Average cost of fare per passenger-kilometer: First Class (on paved roads only), 0.045 Mexican pesos; Second Class, on any type of road, 0.035 Mexican pesos."

/Similarly,

Similarly, goods traffic freight rates are high, in fact proportionately even higher than passenger, varying from as low as 4 cents per ton-kilometer in Nicaragua and El Salvador, to as high as 12 cents in Guatemala and Honduras, which compare with average rates of 2 to 3 cents per ton-kilometer in Mexico <sup>1/</sup> and 3.2 cents per ton-kilometer in the United States.<sup>2/</sup>

Even when making allowance for the fact that gasoline is cheaper and roads are better in both the United States and Mexico, nevertheless considering the far lower standards of service offered, this rate differential is startling, specially since in the United States services are so much more efficient and reliable and operators have to bear much heavier expenses both as regards wages and social services, and administrative overheads.

At first glance it might appear that this high rate structure resulted from excessive profits, but generally speaking this is not so, particularly in countries such as El Salvador and Nicaragua where road transport is operating on marginal profits insufficient to maintain business.

It follows, therefore, that if the rates are high and small profits are being made by operators, then the operational costs

<sup>1/</sup> "Average cost of freight charge, per ton-kilometer on paved roads, 0.178 Mexican pesos; on gravel roads, 0.224." Asociación Mexicana de Caminos, March 31, 1953.

<sup>2/</sup> American Trucking Trends. Average revenue per inter-city-ton-mile varied around 5 cents from 1948 to 1951.

must be excessive, a factor which was repeatedly pointed out by truck and bus operators to members of the Mission when discussing cost of operation.

It has not been possible to obtain any detailed comparative figures, since very few operators keep accurate figures of working costs, but on the average operating costs would appear to range around 3 to 8 cents per ton-kilometer.<sup>1/</sup>

It would also clearly appear from information received that these high costs are mainly due to the following reasons: (1) inadequate highway network and the poor condition of the roads; (2) high price of vehicles and equipment; (3) high price of fuel and tires; (4) high level of taxation; and (5) seasonal traffic flows.

In order to reduce operating costs, it will therefore be necessary to ascertain the reasons for the high costs incurred by the above, and to consider what steps might be taken.

1. Inadequate Highway Network

The lack of a planned highway system and the poor condition of roads as well as the difficult and mountainous terrain is undoubtedly the main cause of the high operating costs in the region. This problem has been discussed and recommendation made to solve it.<sup>2/</sup>

<sup>1/</sup> In 1949, the cost was 2.57 cents per ton-mile (1.60 cents per ton-km.) in the United States. Comparative Cost per net ton mile. Analysis No. 21. The case for the Trucking Industry. June-July, 1950. Testimony at Subcommittee hearing on Senate Resolution 50.

<sup>2/</sup> Part III, Chapter II, pp. 554 ff

2. High Price of Vehicles and Equipment

This problem has also been discussed and solutions suggested earlier.<sup>1/</sup>

3. High Price of fuel and tires

(a) Fuel costs. The price of gasoline is consistently high in all the Central American countries, with the exception of Panama. On the other hand, the price of Diesel oil fluctuates considerably, being as low as 18 cents in El Salvador and as high as 46 cents in Honduras. (See Table 131.) It is interesting to note in this respect that these two countries represent the extremes as regards low and high freight rates, though of course this may only be a coincidence. These prices compare with 5 cents a liter for gasoline and 2 cents for Diesel oil in Mexico, and an average price of 25 cents per gallon in the United States. It can also be seen that taxation of one sort or another amounts for about half of this price.

When considering the price of gasoline in relation to the consumer it should be borne in mind that more than 50% of the national fleets consists of public vehicles, which is a very different ratio from most countries, where private cars are very much in the majority.

The effect of this tax is therefore similar to that of customs duties levied on vehicles, since apart from private owners who bear the cost themselves, road transport operators pass the tax on to the consumer in the form of increased rates, which ultimately become an indirect tax paid by the public, and a particularly unfortunate one, as it affects the cost of food and other basic essentials and therefore falls heaviest on those members of society least able to pay.

<sup>1/</sup> Section I of this Chapter, point 2, p. 624

Table 131  
 Central America: Cost of Gasoline and Diesel Oil,  
 1952

(per gallon)

Country	Gasoline		US Currency	Diesel Oil	
	Price to public in national currency a/	Tax included in price		National Currency	US Currency
Guatemala	0.48	0.22	0.48	0.24	0.24
El Salvador	1.24	0.50	0.50	0.45	0.18
Honduras	1.00	0.58	0.50	0.92	0.46
Nicaragua	2.95	—	0.42	1.45	0.20
Costa Rica	2.80	—	0.40	1.90	0.33
Panama	0.38	—	0.38	0.18	0.18

Source: Transport Mission, from official data.

a/ Guatemala: quetzales; El Salvador: colones; Honduras: lempiras;  
 Nicaragua: córdobas; Costa Rica: colones; Panama: balboas

On the other hand, it is fully appreciated that in practice it would be very difficult for governments to make arrangements so as to differentiate between the tax on gasoline consumed by private owners and commercial users, since a tax reduction on fuel solely for the use of the latter would probably lead to abuses which would be difficult to combat.

The gasoline tax is an important contribution to the national revenue. Nevertheless, the greater the number of vehicles, the larger the ultimate revenue, and any taxes and charges which tend to limit fleets will naturally reduce revenue. Under the circumstances, therefore, while it would be helpful if governments could reduce taxes on gasoline, it is not considered that such a policy would be favorably regarded by governments. An alternative would be to encourage the use of Diesel fuel by operators instead of gasoline, a course which could be

/supported.

supported by the following arguments: (1) it would solely benefit commercial users; (2) there is no doubt that busses using Diesel oil get more mileage to the gallon than similar vehicles using gasoline; (3) similarly there is considerable saving by trucks, where there is a large annual mileage or long hours of operation;<sup>1/</sup> (4) lower consumption of fuel would mean lower imports; (5) lower imports would result in saving of foreign currency.

On the other hand, it should be borne in mind that (1) Diesel equipment is more expensive in the first instance; and, (2) it requires the services of trained mechanics.

#### RECOMMENDATION LXXXI

Considering the urgent need for cheap and economical road transport, which is dependent in turn on low operating costs, governments should consider the possibility of reducing taxes on motor fuel; if, however, for budgetary or other reasons this is not possible, then the taxes on diesel oil should be considerably reduced or abolished.

(b) Tire Costs. Due to the poor design and construction of roads, and particularly to the gravel surfaces which cover a large proportion of them, tire mileage is exceptionally low.

In discussions with operators, the Mission was informed that on some routes the kilometrage per tire was as low as 5,000; and

<sup>1/</sup> Normally in the United States, Diesels are not considered to be more economical for any operation where annual mileage per power unit is less than 75,000 miles or where the vehicle is operated less than 2 full shifts per day in shorter mileage operation. Information supplied by American Trucking Association Inc. 1953.

/while of course



while of course this is exceptional, even the average of 16,000 kilometers per tire on good roads is very low and would appear to be far below the normal standards.<sup>1/</sup> Unfortunately, combined with low mileage tire replacement prices are very high. (See Table 132.)

Table 132

Central America: Purchase price of tires in selected countries,<sup>a/</sup> 1952  
(in dollars)

El Salvador	120.00
Honduras	125.00
Nicaragua	160.00
México	92.00 <sup>b/</sup>
United States	106.55

Source: Transport Mission, from data obtained directly, and Mexican Road Association.

<sup>a/</sup> Size 8.25 x 20 x 12

<sup>b/</sup> Estimated cost.

Thus tire costs form one of the heaviest items in the transportation budget for the Central American operators. There would appear to be three possible methods of lowering these prices: first, by improving road conditions; secondly, by reducing maritime and rail freight rates --which in some cases account for 35% of the cost--; and thirdly, by reducing import duties on tires used by public commercial vehicles. As regards the latter, and as suggested in the case of vehicles, any revenue lost could be compensated by increasing the duties on tires for private cars. There would be little difficulty in implementing

<sup>1/</sup> In Europe the technical life of tires is estimated for goods transport vehicles between 30-40,000 kms. Trial figures of Road Transport Costs. Working Party on Transport Costs and Accountancy. Economic Commission for Europe. Inland Transport Committee. November 4, 1952.

/such a policy

such a policy since the sizes used by heavy commercial vehicles are considerably larger than those used by private cars. The possibility of establishing a tire factory in Central America might also be considered.<sup>1/</sup>

#### RECCOMENDATION LXXXII

In order to reduce road transport rates by lowering operating expenses, particularly in respect of heavy and expensive tire costs, it is recommended that:

(a) importers and manufacturers should consult with shipping and railway companies in order to effect a reduction in maritime and rail freight rates; alternatively, if this is not possible steps might be taken by governments in conjunction with manufacturing interests to study the possibilities of the construction of a tire producing factory in one of the Central American countries so as to provide a regional supply center;

(b) governments should consider the possibility of reducing import duties and other taxes on tires used by commercial vehicles, bearing in mind that any loss of revenues in this respect could be compensated by higher dues on private car tires;

(c) every effort should be made to reduce unnecessary tire wear particularly by more careful driving, and observance of speed and import regulations.

#### 4. High Level of Taxation

Here again it is difficult to give any precise uniform comparison of the practices in the six Central American countries, since both the types and methods of taxation differ considerably. Apart from fuel taxation referred to in point 3 (a) above, there are the following taxes: (1) registration fees; (2) motor carrier taxes; and (3) miscel-

<sup>1/</sup> A recommendation on this subject has been made already in relation to the region's industrial development under the economic integration and reciprocity program considered by the Ministers of Economy at their first meeting in Tegucigalpa, August 1952. See ECLA Document E/CN.12/296.

laneous taxes. Generally speaking, registration fees and motor carrier taxes are not excessive. In the case of trucks, registration fees range around \$30 to \$40, and would appear usually to be levied according to tonnage.

But in addition to these taxes there are often a large number of municipal and other taxes. For example, in Nicaragua, a truck operator would have to pay basic tax charges, i.e., license plates, registration, etc., averaging about 160 cordobas per vehicle per annum. In addition to these taxes there is an additional tax called the social security tax. This tax is levied directly on all road transport operators by means of a sliding scale on the number of vehicles employed, commencing at 10 cordobas per month per vehicle up to 5 vehicles, and 5 cordobas per month for 10 vehicles or more. Thus an operator with 15 vehicles would have to pay nearly 1,000 cordobas tax, or \$140 per annum on this account.<sup>1/</sup>

As far as possible, taxation should be standardized on basic uniform principles. As regards passenger cars this might be on unladen weight, horse power, etc., and as regards trucks according to laden or unladen weight or cargo capacity, and for busses on seating capacity or laden or unladen weight. It is also considered that it would be advantageous if standardized rates could be established in all the Central American countries.

<sup>1/</sup> Municipal and other taxes payable by truck operators in Honduras have already been described. See Part I, Chapter IV, p. 266

/Finally

Finally it is suggested that the municipal and local taxes, such as piso y peaje, be abolished.

#### RECOMMENDATION LXXXIII

In order to reduce the high operating costs of road transport, governments might consider reducing and simplifying taxation on motor vehicles, particularly as regards municipal and other local taxes, and that at the same time consideration is given to standardization of such taxes in all Central American countries.

#### 5. Seasonal Traffic Flows

One of the major drawbacks to economic operation of road transport (goods traffic) is the great divergencies in the volume of traffic available from one season to another. This is primarily due to the fact that the main crops are all gathered in the summer (or dry season) from December to May, and that road condition deteriorate seriously in the winter (or wet season) from June to December, owing to the very heavy tropical rain storms. These two factors combined result in excess traffic being available in the months of December to May, compared with a great shortage in the months of June to November, which is well illustrated by reference to vehicles-operating figures in Guatemala during 1951. (See Table 133.)

While the Ministry responsible points out that these startling figures are not to be regarded as fully complete, for various reasons, yet they are valuable in illustrating a general tendency common to all the Central American countries.

One result of this extensive fluctuation is naturally to develop excessive and unhealthy competition in the slack months, and to

/encourage

encourage irregular trucking activities in the busy season, i.e., private carriers entering the public transport field, etc. Another result is to benefit operators of mixed services.

Table 133

Guatemala: Seasonal freight vehicle traffic, 1951 <sup>a/</sup>

Months	No. of Vehicles	Months	No. of Vehicles
December	44	June	10
January	54	July	8
February	53	August	5
March	61	September	3
April	57	October	4
May	56	November	3
	325		33

Source: Dirección General de Estadística, Tránsito Interdepartmental.

<sup>a/</sup> Fixed route trucks.

The net result is to make the trucking business hazardous and uncertain. It is not easy to suggest remedies, but improvement might be effected by stricter regulation and control of trucking licenses in the first place, and secondly by internal organization of the trucking industry which might be undertaken by the formation of National Associations of Truck Operators.<sup>1/</sup>

<sup>1/</sup> The International Road Transport Union might render useful advice in this respect.

RECOMMENDATION LXXXIV

In order to encourage the development of a sound, well established motor carrier industry, governments should take the necessary steps to:

(a) provide for truck licenses to be granted with priority to operators able and willing to provide all the year round services;

(b) foster and encourage the development of Associations of Road Transport Operators.

III. Efficiency of services

1. Operational Methods

The main obstacles to the efficient road transport in Central America are the methods of operation employed by both public passenger and goods operators. Briefly summarized they are as follows:

(a) City Services. City bus services are generally unsatisfactory, and below acceptable standards as regards frequency of services, comfort of passengers and safety provisions. Conditions however vary considerably from country to country. One general principle, which is evident --perhaps with the exception of Costa Rica-- is that standards of service tend to vary directly with the scale of fares charged. (See Table 134.)

Thus in San Salvador, where fares are the cheapest, the services are by far the worst and the busses most decrepit, and alternatively in Guatemala where rates are higher, the condition of busses is better and services more satisfactory.

Frequency of service and route distribution are often very unsatisfactory, and result in overcrowded busses with excessive number of standing passengers <sup>1/</sup> on some routes, while others have too

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<sup>1/</sup> On one occasion Members of the Mission were informed that as many as 100 passengers were sometimes crowded in a 30 seater capacity bus.

/many busses

many busses and some have none at all. In some cases competitive bus lines race each other in order to gain passengers, or alternatively delay at bus stops for longer than necessary. Bus stops are inadequately marked or do not exist, since normally there is no responsible authority to undertake this task, and where they are marked, they are often completely ignored by drivers. Covered waiting bays are almost unknown.

Table 134

Central America: City bus rates <sup>a/</sup>

	In national currencies (centavos)	In US cents
Guatemala	5	5
El Salvador	7	3
Honduras	10	5
Nicaragua	25	4
Costa Rica	15	3
Panama	5 - 15	5 - 15

Source: Transport Mission, from data obtained directly.

<sup>a/</sup> These rates compare with an average of 3 cents in Mexico for 1st class busses, and 2 cents for 2nd class busses, and an average of about 10 cents in the United States of America.

There would appear to be six basic reasons for this

state of affairs. In the first place, there are far too many small independent operating services, for instance recently in San Salvador there were 110 companies operating 200 busses.

Secondly, there is a complete lack of administrative or

/technical

technical staff trained in the organization or operation of large scale public enterprises.

Thirdly, governments --with the exception of that of Panama-- in fixing rates of fares have not properly based these on costs of operation, so that in many instances fares have been fixed at rates prevailing 10 or 20 years ago.

Fourthly, although in most countries there is adequate legislation covering the standards of cleanliness and comfort, bus services inspectors are often very lax, and regulations are seldom implemented.

Fifthly, most of these "one-bus" urban operators do not even allow for depreciation or amortization, with the result that the vehicle gradually depreciates until it can no longer function.

Finally, another of the main reasons for the present disorganized system of operation is lack of capital to replace worn out busses or purchase new types. While replacement from revenue might have been possible in the early stages of operation, i.e. when fares were uncontrolled and presumably profits were adequate to provide for purchase out of revenue, now, however, with controlled fares this is impossible.

It should be noted that there are some abnormal and unusual difficulties which the city bus service operator in Central America has to contend with. In the first place, many passengers on their way to market carry baskets with large quantities of vegetables, fruits, flowers, and items such as live poultry, etc., which not only inconvenience other passengers but rapidly dirty seats, covers and floors. Secondly,

/many



many of the main towns, particularly the capital cities, have narrow traffic-jammed main streets, which prohibits the use of large modern type busses; and thirdly, there would appear to be too many non-paying official passengers.

The cost of operation will rise in proportion to the number of different operators engaged in any given service, since standardization of equipment with all the resultant savings is not possible, and a number of separate garages and other premises are required instead of a few centralized depots, and dozens of separate small management administrations instead of one efficient organization. Moreover, the system is extremely wasteful of manpower resources as well as material, since the number of mechanics and clerical staff is far greater when spread over so many different enterprises.<sup>1/</sup> Nor is it possible to provide the necessary capital required to replace and renew equipment. Such a system also provides a major obstacle to uniform control and operation which is an essential prerequisite to an efficient and cheap public transport service; it also results in increasing traffic congestion due to the fact that the use of private cars increases in proportion to the inefficiency of the public service.

One factor stands out quite clearly, and that is that city services will continue to deteriorate under the present system, until and unless improved methods of operation are introduced, or alternatively a substantial fare increase is granted.

To introduce an efficient public service, some uniform

<sup>1/</sup> A particularly good example of this is the method of operation in Panama of "chivas" or small 16 seater busses, which are rented out daily to drivers whose main objective is to recoup the hire cost with the maximum possible profit. Little "public service" can be expected under these conditions.

control of operation or some form of controlled monopoly is required, and this has been the pattern adopted in most of the world's large towns and cities, as it is the only way of providing a "public utility". The form of monopoly varies according to whether it is granted to public or municipal authorities, or private enterprises. The former types have developed rapidly in recent years. Where private enterprise is entrusted with such a monopoly, certain regulatory controls are usually instituted regarding fares, rates, type of vehicle, distribution of profits, and length of tenure. Where national or municipal authority is concerned, it would appear desirable that the functions of ownership and operation be separated by means of some form of semi-autonomous organization.

Unfortunately and understandably, the concept of a "monopoly" service, is very unpopular in government circles in Central America -although entirely unjustified as regards city bus services-, and in some cases legislation prohibits private enterprise from having such a monopoly, while on the other hand no provision is made for public ownership. Therefore, under these conditions the only alternative to national or municipal operation would be some form of cooperative or "consorcio".

Since city bus services provide a public service they are therefore a form of public utility. It follows that very large capital investments will be required, and this fact cannot be stressed too strongly. Not enough attention is paid by governments and municipal authorities to the fact that a modern city bus service for the average Central American city would require around \$2.5 million to provide for adequate equipment, terminal stations, offices, etc. The provision of finance for new equipment is today a very specialized undertaking, and because /of the large

of the large sums involved usually provides for repayment over 5 to 8 years by means of conditional sales contracts, trust notes, mortgages, etc. It is utterly impossible for the small single bus operator to obtain the advantages of such methods of financing, and accordingly to purchase modern equipment.

Thus if city bus services are to be improved, there is little doubt that this can only be achieved by a reorganization of the present number of small units into one or two large groups which can be effected under either private or public enterprise in the form of one or two large companies, "consorcios" or cooperatives. It will also be necessary to have efficient and skilled direction of such enterprises, and if it is preferred to introduce public ownership, it is suggested that governments approach the relevant international agencies for assistance. Finally, adequate financial resources must be available to provide the necessary capital for large scale organizations and operations.

#### RECOMMENDATION LXXXV

In order to improve the standards of service of urban bus companies, and provide cheap, adequate, and safe city transportation, it will be necessary:

- (a) to reorganize urban bus services into a small number of large units and ultimately one unit or company, operated under private or public enterprise;
- (b) in the choice or selection of such companies, to give due regard to the financial resources which will be required to provide efficient and modern equipment and facilities;
- (c) for governments, when fixing the rate for city fares, to give due consideration to operating costs;
- (d) to provide adequate security of tenure when granting licenses;
- (e) to obtain the services of duly qualified experts to assist in the reorganization of these services;

/(f) to improve

- (f) to improve the methods of government inspection regarding cleanliness and maintenance of busses;
- (g) to reduce the number of officials who are entitled to travel free on busses;
- (h) to revise legislation regarding condition of operation, and improve enforcement of such regulations; and
- (i) to consider the possibility of a "two fare" structure similar to that in Mexico City.

(b) Inter-Urban or Inter-City Services. Inter-city

bus services are still in the early stage of development in most Central American countries, and the following remarks with reference to a similar stage on inter-city bus development in the United States are very applicable.

The early routes were generally short, and there was little or no through traffic as it exists today with the elaborate arrangements for interline transfers at central terminals. The bus operators of the twenties, using elongated touring cars or truck chassis with improved seats, had no terminals as we know them today. They used such locations as hotels as their headquarters and loaded and unloaded their passengers at the curb. Competition was extremely keen and sometimes even vicious, and operators would frequently stand on street corners to solicit any passer-by who looked like a prospect. Often the departure of the bus would be delayed until a load was obtained, and the destination was frequently not decided upon in advance but, instead was determined on the basis of the wishes of the passenger.

Little more than some sort of passenger-carrying vehicle was needed to go into business, and it was, consequently, not surprising that the industry was plagued by the presence of some operators who through lack of resources or responsibility, did not provide dependable services. 1/

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1/ National Association of Motor Bus Operators, Bus Facts. 21st. edition 1952.

/ The majority

The majority of operators own one bus, which is usually many years old, and has a locally made body on a truck chassis. <sup>1/</sup> The owner is usually the driver. There are limited or negligible facilities for garaging, maintenance or repair work. While most city buses elsewhere operate with new efficient Diesel fleets, little progress has been made in this respect in the Central American countries.

Regulation of inter-city busses extend at the maximum to control of routes and fares, and even this is not required in some countries, e.g. Panama. There is little to prevent any owner of a bus getting permission to operate a service. All that has to be done is to complete the official application forms and have his proposed fare accepted.

One of the salient features of local bus traffic is the use of the mixed service vehicles, i.e., a bus which has a portion of the available space used for the carriage of goods, sometimes inside the bus, or sometimes outside, or even both. Thus, fruits, vegetables, livestock, and other produce are often included on the run to town, while in the reverse direction, sacks of sugar, flour, roles of cloth, furniture, and general merchandise are taken to outlying villages.

This type of service is normally not popular in more developed countries, where separation of passenger and goods traffic is a fundamental principle. However, there are sound reasons for the utilization of such service in the present stage of road transport development in Central America. Firstly, there are very limited regular trucking services and no rail services. Therefore, it is almost essential for the

<sup>1/</sup> In the United States the average bus manufactured in 1927 seated only 23 passengers as compared with an average seating capacity of 37 or 38 persons for the typical, vastly more comfortable, safe, and efficient modern bus provided by the manufacturer. Ibid.

villager to take his produce with him to the town, and bring his purchases back even though they are bulky or heavy. Secondly, in some out-of-the-way districts the volume of passenger traffic would probably not be sufficient to maintain the service. This is particularly the case in the wet season, when few trucks operate on local routes, and finally such a service lays the foundation for more developed and separate bus and truck services in the future.

The chief drawback to these mixed services are the increased accident possibilities and lack of adequate sanitary provisions. However, neither of these two objectives is unsurmountable, and it would not be at all difficult to form regulations insuring both the necessary safety standards and sanitary conditions.

Fares vary considerably from country to country, and from town to town in the same country, since a combination of such factors as road conditions, number of services, and density of population affect the fares charged. As mentioned earlier, average rates vary between 1/2 and 3 cents per passenger-kilometer.

Probably one of the main reasons for the present state of inter-city bus services is the existing system of regulation and control, which is unsatisfactory as regards both terms and conditions granted to operators. In the first place, not enough attention is given when granting licenses to public convenience and necessity, i.e. the tendency is to grant additional services to operate on "popular" routes, and ignore the not so popular routes. Secondly, there is very little security given to the operator as regards competitive services, as at any time additional licenses may be granted, which naturally affects the profit-

/ability

ability of operation, and therefore few undertakings are prepared to invest the capital necessary to provide efficient and economic services.

Another adverse factor resulting from the state of affairs is labor conditions, particularly as regards wages of drivers and conductors, attention to which has been drawn in a recent International Labor Organization report which states that:

As long as road transport and inland navigation are carried out by a large number of operators who are allowed to compete freely with each other and with the railways; as long as entry into the industry remains open, requiring only a relatively small cash investment; and as long as the financial position of the operator himself is very insecure, the bargaining position of the workers will be unsound. 1/

This stage of development has been experienced in most countries until official regulation and control was established. For instance, in the United Kingdom the British Road Traffic Act of 1930 established traffic areas and traffic commissioners responsible for the granting of road service license, subject to proof of need for such services, as well as for the provision of Certificate of Fitness for all public service vehicles. And in the United States the Motor Carrier Act of 1935 required:

...among other things, that any prospective bus operators secure a certificate of public convenience and necessity before starting service on any interstate route. To secure such a certificate from the Interstate Commerce Commission, the applicant must prove that his proposed service is needed and desired by the public, that it is not likely to constitute destructive competition for existing services, and that he is financially and otherwise qualified to render service in accordance with legal standards. 2/

1/ International Labor Organization, Inland transport Committee; Coordination of Transport: Labour Problems, Geneva, 1951.  
2/ National Association of Motor Bus Operators. Bus Facts, 21st. edition, 1952.

/It should

It should however, be noted that as regards public passenger transport licenses, they are issued to only one undertaking in respect of any given route.

Further, these undertakings quickly tended to group themselves into large national or regional units, such as the Greyhound System of the United States, the large regional passenger bodies in the United Kingdom before nationalization, or the wide-spread road passenger services in other countries. <sup>1/</sup>

It will be necessary, therefore, for governments to reorganize the present licensing procedure in order to ensure the widest possible geographical distribution of services and that such services are in direct relation to need, that they are only granted to operators with capital to provide adequate equipment, and that licenses are granted on terms which provide adequate security of this investment. Finally, the inspection of public service vehicles should be undertaken by duly qualified experts of integrity.

#### RECOMMENDATION LXXXVI

In order to improve the standards of regularity, comfort, and efficiency of intercity bus services as well as to raise the standard of living of employees, it is recommended that governments should establish by legislation such conditions as regards the operation and licensing of inter-city bus services which will ensure that:

- (a) licenses are only granted when public convenience and necessity require;
- (b) licenses are only granted to operators who are in a position to provide efficient services with modern equipment and if possible service and terminal facilities;
- (c) fares are fixed on a cost of operation basis;
- (d) reasonable conditions of tenure are granted as regards period of license and number of competitive services allowed;
- (e) wages and terms of employment of drivers, conductors, etc., are included in operator's contract;

<sup>1/</sup> International Labor Organization, op. cit.



(f) drivers have adequate technical training.

(c) Goods Transport. The development of mechanized goods transport by road is a very recent affair in most of the Central American countries, and it therefore suffers from all the normal drawbacks experienced at this stage throughout the world, which have been well summarized in a recent report of the Inland Transport Committee of the International Labor Organization which states:

In so far as it is possible to generalize about the evolution which necessarily took a different form according to the political and economic circumstances of the country concerned, the usual development of the road transport of goods for hire or reward has been more or less on the following lines. It started as a very small scale industry in which a great majority of operators owned only one or two lorries, which they often drove themselves. There being no major restriction on entry into the industry and, in the early days, no regulations other than requirements with regard to the minimum standards with which vehicles had to comply to secure a license, an excessive number of operators were soon engaged in the business, which no doubt proved profitable at first. Competition increased; there were occasional slumps. Capacity was then in excess of demand. Charges made for the carriage of goods were usually not published and the terms of contracts were not divulged to other operators. Under these conditions, competition tended to force rates down to the point where revenue covered little more than operating costs, that is, the cost of the fuel, oil, lubricants, and tyres and, where required by law, insurance, together with at most a subsistence wage for the worker or the owner-driver. The operator might carry on without writing off his vehicle and without profit in order to keep himself in business in the hope of better times. These "owner-drivers" carry on their businesses under varying conditions, sometimes buying a vehicle on the uncertain basis of the hire-purchase system, sometimes running a second-hand vehicle without regard to depreciation, often risking final loss for a temporary gain. These uneconomic conditions make for unfair competition with organized transport which undoubtedly has a prejudicial effect on wages in the industry. This situation and the resulting competition from which railways suffered sooner or later obliged the public authorities to step in. 1/

Generally speaking, this report accurately portrays the present position of goods transport in Central America, which has the following characteristics: (1) in some countries and provinces there is cut throat competition, with resulting decline in the reliability

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1/ Ibid.

/and dependability

and dependability of carriers and services, e.g., El Salvador; (2) in other countries rates are regulated, but in most countries there are no rate regulations of any sort; (3) in few countries are rates published; (4) services in most countries are very irregular and unreliable; (5) generally speaking, carriers do not use a way-bill, no insurance is required, and therefore there is no carrier liability; (6) services are concentrated on popular routes, with few on more sparsely populated areas; (7) as there are no Carriers Associations or Freight Offices, it follows that no arrangements are made for centralized collection and distribution services for small packages, parcels, etc., which is one of the reasons for the successful functioning of "mixed service" busses, which cater for this type of traffic.

As an exception to this state of affairs it should be pointed out that on the Trans-Isthmic route in Panama goods traffic has developed very efficiently and there are few of the above handicaps. But in other parts of Panama the position is similar to the above.

It follows that generally speaking road transport has not contributed as much to the economic development of the Central American countries as recent highway developments would allow. It is necessary for rates to be lower and for services to be more regular, reliable and dependable.

Organization and control of the industry would appear to be a possible solution to the problem, and indeed this has been the pattern in most parts of the world.

In most countries, the first measure was to require operators to hold a license, and these were granted only to those who satisfied certain conditions. At first, the conditions might relate to the standards of the vehicle, later, however, several countries made the issue of a license contingent upon the observance of fair wages and conditions  
/of service.

of service. When competition was too intense, some authorities allowed the license holder to operate only within a certain distance from his base, or to carry only certain classes of goods, or imposed both limitations. Sometimes the number of licenses was limited to those required to provide an adequate service. In addition, special licenses were issued to operators working only on their own account, these covering such different cases as that of a large company operating a fleet of vehicles for the carriage of its own goods and the delivery van of the small local shop. This very generalized historical pattern does not, of course, occur just in this form in any particular country. In each case, special factors have to be taken into account. It is, however, not too much to say that economic forces and the nature of the industry have, in every country, forced the public authority to regulate the carriage of passengers and goods for hire or reward by some means or another, usually by attaching conditions to the grant of a license to operate. <sup>1/</sup>

Thus it would appear that the time is now ripe for some form of regulation and control of goods traffic in the Central American countries; it cannot however be too strongly stressed that too much regulation is as bad or worse than too little, and when controls are introduced they should be simple, efficacious and helpful to the industry, and not the reverse.

It is difficult to prescribe exactly the limits of the suggested controls; unless rate regulation is likely to have the support of the carriers and is therefore enforced, it would appear useless to undertake such a measure at this time since there are so many difficulties with regard to its practical application, -e.g. diverse road conditions, seasonal traffic, etc., which would make rate regulation complicated, difficult, and unworkable. On the other hand, there would appear no reason why carriers should not be compelled to publish the rates they are charging.

Greater care should be taken in the granting of licenses. In all cases, definite proof of the need for the service should be estab-

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<sup>1/</sup> Ibid.

lished, as well as the fact that no other service exists already and could provide such a service. Also the ability of the operator to provide adequate equipment as well as his financial stability should be established, priority should be given to carriers who are prepared to inaugurate special service such as carriage of fish in refrigerated trucks, movement of cattle in specially constructed trucks, etc. Finally, when licenses are granted they should be on such terms as to provide reasonable security of tenure for the operator; it might also be of some assistance if way-bills were made compulsory, as well as insurance on both vehicle and goods; however, should the effect of the latter be to antagonize carriers or increase rates, they would not appear desirable at the present time.

#### RECOMMENDATION LXXXVII

In the interests of creating more efficient and reliable road transport services it would appear necessary for governments to introduce legislation which may inter alia provide that:

- (1) Carriers Licenses to operate are only granted:
  - (a) on proof of public need for the service;
  - (b) to operators who have adequate equipment and facilities to carry out the proposed service;
  - (c) on such terms and conditions so as to provide reasonable security to operators.
- (2) That all carriers are under legal obligation to publish their scales of rates;
- (3) Consideration is given to the possibility of introducing a standard way-bill;
- (4) Consideration is given to the possibility of requiring vehicle and traffic insurance by all operators.

(d) Taxi Services. Private hire cars and taxis in most of the countries of Central America are subject to regulation and control both as regards fares and routes. In some cases the fares would appear to be too high. Unfortunately even the implementation of the  
/existing

existing fare regulations is abnormal and exceptional, since none of the vehicles are equipped with taximeters, and in most cases no visible indication is given as regards the official fares.

Inter-urban taxis operating as seven seater public passenger vehicles fulfill a very useful purpose in providing services over thinly populated routes, and also in providing express "rapido" services. In these cases, however, it is most important that the rates should be fixed by regulation and they should be published, and that the services should operate regularly according to timetable irrespective of whether they have a full load of passengers.

The best example of efficient and satisfactory "rapido" services are those operating in El Salvador. The fares are reasonable (being about half as much again as bus fares), and generally the cars are in good condition, the drivers are careful, and the services regular.

On the other hand, the operation of such services in large numbers should not be allowed on regular bus routes, since their operation is basically much more costly, -i.e., consumption of gasoline, tires, etc., than bus services, to the detriment of the national economy. If there is sufficient traffic more busses should be introduced and not taxis.

Owing to the narrow streets and heavy traffic in most of the large towns it would appear desirable both in the interests of improved traffic conditions and economy in fuel consumption, if a percentage of taxis consisted of smaller type vehicles, e.g. as used in Managua.

Maintenance and internal and external conditions of cleanliness leave much to be desired on many of the taxis. This may be due  
/to the system

to the system of hiring taxis out to drivers by private owners at a fixed rate per diem. It would appear better to have organized taxi business with small fleets, rather than a number of privately owned cars.

Distribution of taxis in towns is unsatisfactory. In most cases they are all to be found in the center of the city where they add to the already congested parking facilities. They should be re-grouped so as to provide available services much required in all parts of the city.

#### RECOMMENDATION LXXXVIII

In order to improve existing taxi and hire car services, it is recommended:

- (a) taxi fares should be reduced;
- (b) taxis should be equipped with a taximeter, or should clearly indicate on the outside of the taxi the fares;
- (c) to reduce traffic congestion and to economize on the consumption of gasoline and tires, a percentage of smaller taxis should be employed within cities;
- (d) taxis should be distributed more evenly through city limits;
- (e) better enforcement should be undertaken as regards regulations for condition of use, i.e., appearance and cleanliness of taxis;
- (f) inter-urban taxis or hire cars should be regulated as regards rates and routes, and these rates should be fixed in relation to operating costs and should be published;
- (g) taxis or hire cars services should not be allowed to compete in large numbers on routes where the traffic is sufficient to justify more bus services;
- (h) preference should be given when granting licenses to properly organized taxi companies, rather than individual hired out cars.

#### 2. Maintenance Costs

Lack of adequate repairs and maintenance constitute another major factor in inefficient operations, since repair and main-  
/tenance

tenance charges demand a far greater percentage of total vehicle operation costs than is either necessary or normal. Admittedly the poor road conditions are partly responsible for this state of affairs, but only to a limited degree, and the real cause would appear to be lack of preventative maintenance, and inefficient repair work.

This state of affairs is only logical if one considers the very rapid increase and growth of national vehicle fleets. In some cases the entire fleet has been doubled in the last two or three years. On the other hand, the number of trained mechanics available to service and maintenance of national fleets is about the same, since there are very limited training facilities available in the Central American countries. As a result, maintenance is neglected and repairs are undertaken by inadequately trained garage "hands" which leads naturally to frequent breakdowns and vehicles being off the road for long periods, adding very considerably to the costs of operation. Some trucks and busses are "off" the road, longer than "on" it.

Such a situation is neither exceptional nor unusual and, in fact, has occurred in most countries where road transport has rapidly developed during the last decade bringing with it a very rapid increase in the number of cars, trucks, and busses on the roads without any increase in the number of service personnel available. This factor has also been fully recognized in many economically advanced countries.

The problem in the region would appear to be a two-fold one. First, to provide a simple course of instruction in preventative maintenance for all drivers of commercial vehicles, etc. Secondly, to provide a thorough course for motor mechanics. The objectives in each

case

case are both practical and simple. In the first, it is to ensure that the drivers of busses, trucks, taxis, and to a limited extent, private cars, are aware of and able to undertake standard preventative maintenance methods. As regards the second, it is to ensure that mechanics are able to rapidly and efficiently undertake all "first line" repairs. It cannot be too strongly stressed that in either case what is required is "down-to-earth" practical knowledge and experience under qualified instructors; no advanced engineering courses are suggested nor theoretical work contemplated -however beneficial such work may be, it being considered that this type of training might be provided at some time in the future at a vocational training school. 1/

The solution to the problem would appear to be for arrangements to be made for training facilities by means of night schools using existing workshops and utilizing the services of present work foremen. The reason for proposing night school training is due to the fact that most of the trainees attending such courses would be presumably employed during the day as drivers, garage assistants, cleaners or in other forms of industrial activity. Similarly the suggestion for utilizing the services of motor agents arises from the fact that only practical training in adequately equipped garages working on vehicles is considered satisfactory. If such facilities could be made available by the governments, alternative methods would have been proposed, but it is considered that the great expense involved in the purchase of machinery, equipment, and premises would not render this a practical proposition. In fact, one of the great merits of the proposed scheme is that a great deal can be accomplished with very little capital outlay, since equip-

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1/ A very interesting beginning on this line has just been started in Mexico, where the Asociación Mexicana de Caminos is taking an active part in the formation of a training school.

/ment in the form



ment in the form of vehicles, trucks, tools, are already available, as well as the services of potential instructors recruited from works managers, service foremen, etc.

It is suggested that there should be two courses -one short-term and the other long-term. The former would concentrate solely on preventative maintenance instruction and would cover a period of from two to three months duration with two to three classes a week. The long term course would cover basic repair work and in particular: (a) elementary shop practice and tool handling; (b) chassis work; (c) electrical and ignition systems; (d) engine work; (e) body work; and, (f) diagnosis and automotive repair shop operation. It is considered that this course would probably require a period of from 8 to 12 months with classes two to three times a week. It is recommended that trainees, after taking the course, would be entitled to sit for an examination and obtain a qualification certificate.

It is suggested that arrangements should be made for certain agents to undertake the preventative maintenance course while others might concentrate on a full course in one of the six above-mentioned subjects, thus dividing the curriculum between the available resources.

The first step in the implementation of this scheme would be to hold a conference of the leading motor dealers in the country, to discuss the problem and the suggested training scheme, and to work out a detailed program and work curriculum. Should difficulty be experienced in obtaining the services of qualified instructors, help might be obtained from international or national technical assistance program

/as regards

as regards their provision as well as other necessary aid training equipment, i.e. films, display charts, etc. <sup>1/</sup> Governments might also give a stimulus to the course by announcing that in future only those drivers and mechanics who had attended the course would be employed by the various administrative departments.

There is little doubt of the beneficial results to be obtained from the adoption of such a scheme as outlined above. <sup>2/</sup> In the first place, the provision of a body of trained mechanics in the countries would be a great asset to the national labour force. Secondly, the existence of a body of trained mechanics would considerably benefit not only the road transport industry and all other industries utilizing automotive driven mechanized equipment, but agriculture as well, where tractors and modern farm machinery are dependent on the services of skilled mechanics.

#### RECOMMENDATION LXXXIX

- In order to improve standards of maintenance and repair of motor vehicles, the governments should:
- (a) work out with the support and assistance of recognized distributors and agents for motor vehicles, a program for technical training of mechanics, either by means of night school training facilities or vocational training, or both these methods, or by any other methods which might appear more practical;
  - (b) in the planning of such schools, give due attention to the scheme now being introduced in Mexico; and
  - (c) finally, that as regards the implementation of such schemes, advice, and if necessary, assistance be requested either from international or national technical assistance programs.

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<sup>1/</sup> Following recommendations made to combat a similar state of affairs in many of the Far Eastern countries, the International Labor Organization through its technical assistance program is working on this problem now, and would probably be able to render considerable expert advice and guidance in this respect.

<sup>2/</sup> A general recommendation on these lines was made at the recent Congreso Extraordinario Panamericano de Carreteras. <sup>1/2</sup> Unconvenio

3. Uneconomic types of vehicles

It would appear that inadequate attention has been paid to the choice of suitable designed vehicles to meet the specific requirement of regional traffic. In this respect, the absence or limited number of trailers and semi-trailers, as well as containers and other specially designed type of vehicles for the carriage of such traffic as timber, cattle, fresh fish, and vegetables is particularly noticeable.

As regards bus types there would also appear to be (with one or two exceptions) no standards for body design; with the result that their construction is more expensive and the resultant productions are uniform only as regards unattractiveness, heaviness, unsuitability, and lack of comfort and convenience for passengers. Also many busses operate with a limited seating capacity for only 15-16 passengers, where there is adequate traffic for large numbers.

To overcome this, it is suggested that bus body design be standardized by type and seating capacity, and that encouragement be given to local construction. For public passenger transport there is also no doubt that larger busses are more economical to operate, depending naturally on the type of service and the volume of passengers. Long distance express bus services with a high load factor (i.e. per cent seat occupancy) are undoubtedly operated most efficiently with larger equipment, but somewhat smaller busses are required for thinner routes with more local stops.

Very few passenger type chassis have full forward control, although the advantages of this type of design are obvious since bodies can be streamlined, and more body space is provided for passenger accommodation,

modation, while the driver has better visibility and vehicle control.

As regards goods traffic, there can be no question that combination vehicles (truck-trailer, semi-trailer-tractor)<sup>1/</sup> are more economical for over-the-road operation than straight trucks. It is a question of coordinating load carrying capacity with available loads. It is also taken for granted that such equipment can only be utilized on reasonably well designed and constructed roads. Both these conditions, however, are fulfilled to a certain degree in most of the Central American countries, e.g. portuary traffic in Honduras, timber traffic, cattle traffic, portuary traffic in Panama, etc. (the only country in which the Mission saw extensive use of combination vehicles), and it would, therefore, appear that their use would be well justified.

Finally, there can be no doubt as regards the economy resulting from the use of Diesel vehicles where regular and heavy traffic exists.

#### RECOMMENDATION XC

Considering the necessity for efficient operation of road transport, joint action by governments is recommended to encourage the use of more modern type of vehicles such as:

- (a) truck-trailer and tractor-trailer combination and other special type of truck equipment for goods traffic;

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<sup>1/</sup> "The semi-trailer, although essentially detachable, forms an indissoluble whole with its tractor for purposes of study and operation. Since the tractor carries no load and cannot be called a lorry, such a combination is more logically described as an "articulated" vehicle. The appearance on the market of articulated vehicles marked a very important date, and opened up new horizons for profitable road transport, since with the same power a greater load can be towed than can be carried. The advantages of articulated vehicles require no further proof, for they are adaptable and economical in operation. That is why they have rapidly increased in number while the number of ordinary lorries has dropped considerably. It is even safe to say that once the International Highway Code comes into application, heavy lorries will be done away with altogether and replaced by articulated vehicles. "Use of Semi-trailer lorry for medium and long-distance transport", TRANS/XP11/67. Economic Commission for Europe, Inland Transport Committee. January 19. 1953.

- (b) the use of better designed more modern types and standardized types of busses;
- (c) the use of Diesel engined vehicles; and
- (d) for this purpose it is suggested that import or other duties be reduced on such vehicles, or alternatively, registration fees and other licenses fees, taxes, etc., be reduced for carriers operating such type of vehicles.

#### 4. Lack of Credit Facilities

At the present time there are very restricted credit facilities for the purchase of equipment by operators in the Central American countries, which applies equally to the larger operation of city bus services as well as the owner driver of a truck. In all cases a large initial payment is required, and credit terms rarely exceed 18 months, and sometimes a lesser period. Interest rates are also very high, even for a region where normal rates are considered high in comparison with other countries. This is one of the main reasons for the lack of modern and suitable type vehicles in the region.

This compares unfavorably with the financial facilities offered in more economically advanced countries. Credit facilities are extended for 5-10 years for large scale bus operators in the United States; even the small operator can benefit from low initial payments with extended terms for repayment.

Various solutions are possible, for instance, encouragement might be given to the larger distributors in cooperation with the manufacturers to establish credit corporations for the financing of motor vehicles. Banks might be encouraged to extend credit and reduce charges for vehicles. Finally, in the case of large scale operators governments might guarantee loans, or advance money.

It would also appear desirable to investigate and clarify

/-the legal

the legal position as regards hire-purchase for vehicles, as it is understood that in many cases the creditors position is very unfavorable so that even if existing terms were acceptable, credit is restricted due to the legal relations between seller and purchaser.

#### RECOMMENDATION XCI

In order to assist operators to purchase more modern and efficient equipment, it is recommended that governments:

- (a) encourage large scale vehicle distributors, in cooperation with manufacturers, to promote credit facilities for the purchase of busses and trucks;
- (b) assist large scale operators, particularly as regards international lines, and city bus services, to obtain long term credits from the banks;
- (c) revise and modernize hire-purchase legislation in order to provide guaranties for the creditor and just and reasonable safeguards for the debtor.

#### IV. Animal Transport

Primarily owing to the lack of an adequate highway network and the consequent isolation of whole villages and communities, as well as the lack of reliable mechanized transport, a very large percentage of the regional traffic is carried by ox-carts, pack animal, and human carrier.

As there are no or very limited national statistics concerning such traffic, it difficult to give an estimate of the volume, but from specific investigations (such as the Agricultural Census for the Province of Santos in Panama), truck utilization would appear about 2% of the total farm transport while the ox-cart and the pack animal are by far the most popular methods of transport. Very much the same results are shown in the agricultural census en Costa Rica. On farms, the motor

/- vehicle

vehicle provides 5% of the transport used and again the ox-cart is represented as the most popular method of transport. In Guatemala the position is even worse, since there are relatively few ox-carts and pack animals, the greater part of domestic transport is carried on the backs of human porters.

Presumably a similar state of affairs is to be found in the other Central American countries, and if this is the case there it follows that the pack animal, ox-cart, and in some cases human porter are responsible for the collection of local traffic such as corn, rice, beans, sugar, cotton, as well as for the distribution of imported merchandise from larger towns to villages, and between villages. Export crops such as coffee, cacao, abacá, etc., are also mainly carried thus from the fincas to beneficios and other collection centers.

The cost of this type of transport is extremely high. In Guatemala the Ministry of Economy and Labor reports: "An ox-cart has a capacity of 12 quintales; its daily rent costs from 10 to 12 quetzales, according to the goods carried and the point of operation. In most cases, the cart is subject to free hiring."

Not only is the use of animal transport excessively expensive, but is also very detrimental to highway surfaces, unless special measures are taken to prevent "rutting" of the surface by the iron rim of the cart wheels. In addition, large number of ox-carts and pack animals on motorable highways constitute a hindrance to the rapid flow of traffic, and increase the risk of accidents.

A great deal of research has gone into the problem of prevention of damage to surfaced roads by animal drawn carts which have

/- resulted

resulted in specific action in different parts of the world, normally in the form of utilization of rubber tired wheels and improved axles, or fitting a much broader iron rim on existing wheels. As regards the former -the use of rubber tired wheels-, the transport performance and therefore carrying capacity is greatly increased due to improved mobility and greater tractive power. The Mission noted that only in Guatemala had such measures been taken, where the use of broad 4 iron tires by ox-cart owners is compulsory.

There are of course certain arguments in favor of animal transport, e.g., the ox-cart and the pack animal can be used in dual capacity both on the finca for agricultural puoposes and on the road for transport purposes, as well as being very useful for small local movement, etc.

Nevertheless, provided that motorable roads are available, the continued use of animal transport solely for transportation purposes is wasteful and uneconomic, and the position is even worse as regards the use of human porterage where in addition to transport deficiencies there are also serious economic and social problems.

#### RECOMMENDATION XCII

Realizing the expense and handicaps incurred by the extensive use of animal transport over paved roads, it is suggested that this should be gradually replaced by mechanized transport, and in the interim period, ox-carts should be improved, and to this end:

- (a) governments should take immediate steps to prohibit the use of animal transport in city centers and other crowded traffic streets;
- (b) governments should take all necessary steps to prevent damage to highways by ox-carts, and in this respect consider the obligatory utilization by ox-carts of rubber tired wheels or broader iron rimmed wheels;

/-(c) governments



- (c) governments should encourage ox-cart owners to undertake these improvements by various methods such as local loans, preferential hiring treatment, etc.
- (d) Where there is a large volume of traffic carried by human transport, governments should take all necessary steps to provide alternatively animal transport as an interim stage, initially financed by government loans.

#### V. Organization and Administration of Road Transport

##### 1. Governmental <sup>1/</sup>

The absence of an administrative department solely responsible for handling all road transport matters seriously prejudices the efficient development of road transport. There is undoubtedly an urgent need for uniform and centralized control by one department of the government, with the following functions relative to road transport: (a) inspection, licensing and registration of all motor vehicles; (b) carriers licenses for public passenger and goods carrying services; (c) regulation and control of drivers licenses; (d) regulation and control of wages and hours of work in transportation enterprises; (e) fixing of rates for the carriage of goods and passengers; (f) prescription of technical conditions to be fulfilled by motor vehicles, etc.; (g) prescription of routes and timetables for urban and inter-urban passenger services; (h) regulation and control of the functions and duties of inspectors of motor vehicles; (i) coordination of road transport with other means of transportation; (j) consultation with road transport associations on matters within their respective sphere; (k) fixing of standards for construction and use of vehicles.

<sup>1/</sup> On the general problem of transport coordination at the governmental level, see below Chapter VII of this Part.

RECOMMENDATION XCIII

In order to assist governments in the formulation of a road transport policy, and for the efficient execution of such a policy, as well as to safeguard the best interests of the public as well as employees and employers, it is suggested that:

- (a) governments should unify and centralize all regulatory controls affecting road transport, in one single administrative department of the government, preferably under a Director of Road Transport;
- (b) governments should take such steps as may be necessary to ensure training facilities for officials responsible for execution of road transport policy, considering the important and complicated technical problems involved and the lack of trained experts available;
- (c) for these purposes governments should take advantage of the technical training facilities available under international and national auspices.

2. Non-Governmental (Private)

There is also in Central America a complete lack of organization among motor carriers and car owners. While in more developed countries there are automobile and touring associations to represent the interests of the private motorist, and truck and bus operators associations to organize and coordinate their respective functions, in Central America there are no active organizations; and where organizations do exist they would not appear to have the support of the interested parties, nor do they carry out the objectives and principles which such bodies are normally constituted to carry out.

The benefits to all concerned of such organizations should not be overlooked. In the first place, they can and should provide advice and assistance to governments on all matters with which technical advice, assistance, etc.

/-The development

The development of representative responsible bodies of this type in every Central American country would be of the greatest assistance to the efficient development of road transport. This is particularly so in the field of goods transport. The absence of any freight agencies or carriers associations prevents coordinated and cooperative arrangements for collection of small loads, since there are no freight offices, or other terminal facilities in small towns and villages for the collection of this type of traffic.

However, it is fully realized that governments have no power to act in this matter and that it must be left to the initiative and common sense of the interests concerned themselves; nevertheless, the governments could state that they would welcome the formation of this type of associations, and would be prepared to use them in a consultant and advisory capacity when considering automotor transport problems affecting their particular association.

In the field of private motoring it is hardly necessary to refer to the useful and constructive work much appreciated by governments undertaken by organizations such as the Automobile Association (AA) in Great Britain, the Touring Club de Suisse in Switzerland, the American Trucking Associations, Inc. (ATA) in United States, and the Asociación Mexicana Automovilística (AMA) in Mexico, and many other associations too numerous to mention.

It is also useful to have drivers associations and other organizations of the labor force employed in road transport, to represent the workers point of view in any problem.

/-RECOMMENDATION XCIV

RECOMMENDATION XCIV

In order to improve the standards of motoring services, governments should encourage the various parties interested, i.e., private motorists, goods traffic operators and passenger traffic operators, vehicle drivers and conductors, to form associations of their respective interests, or a national transport chamber which might affiliate with a Central America transport chamber that would be careful in coordination, transportation, as well as to develop and improve road transport facilities, and provide representative groups for discussion with the governments on policy problems.

VI. Safety

One of the most important problems which all governments are being faced with today is the tragic increase in the number of road accidents. Although in Central America this is not yet the serious problem which it has become in some countries where the volume of motor traffic is much greater, yet it is growing, and the Mission feels that now is the time for governments to lay down a clear cut policy to reduce and prevent road accidents.

In this respect it should be noted that there are three basic causes of accidents; inadequate design and construction of roads, non observance of traffic regulations, and public ignorance of traffic dangers and how to avoid them.

Throughout the world various bodies, both governmental and non-governmental, are studying this problem. Particular attention in this respect is drawn to the joint work of the European governments in the Transport Committee of the Economic Commission for Europe. The subject was also raised at the last Extraordinary Panamerican Highway Congress in Mexico when the following resolution was offered:

1. To recommend to the American governments that they make a strong effort to undertake an intense traffic educational campaign for motorists and pedestrians.

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2. to recommend to the governments that they investigate the causes of traffic accidents and study the means to avoid them;
3. to request the United Nations and reaffirm to the organization of American States that they proceed to carry out periodic meetings of experts on traffic and road traffic education; and
4. to request the Inter-American Automobile Federation that they transmit to their affiliates the desire to intensify as much as possible the action required to remedy the above problems.

The field of activity is therefore very wide. The Mission considers, however, that governments should as soon as possible undertake certain urgent actions in this respect. Traffic control and highway code regulations should be brought up-to-date and made available to all vehicle drivers. When considering the highway code, the governments might take as a basis the conditions specified in the Road and Motor Convention signed in Geneva in 1949, and as soon as possible adoption and ratification of this Convention is recommended. Steps should be taken immediately to improve the system of road signs and signals on the main highways. There is at the moment a complete lack of direction signs, danger signs, and other signals which play a major part in ensuring both safe and speedy traffic flow. Center line strips should be painted on all roads where traffic is dense, and especially on curves, hilltops, bridges, etc. A road safety publicity campaign should be undertaken by the governments through lectures, radio announcements, advertisements, etc.

However, it is not sufficient to initiate such a program unless traffic law enforcement is improved. At the present time regulations dealing with circulation of ox-carts are in existence, but no at-

/-tempt has

tempt has been made for any enforcement; a similar state of affairs exists as regards the enforcement of regulations dealing with overloading of goods and passenger vehicles. More careful inspection of vehicles is essential.

Another important factor is the collection, study and analysis of information pertaining to accidents. It is recommended that accident statistics should be collected in accordance with the standardized form recommended by the World Health Organization.

Finally, road safety training should be introduced into the national educational curriculum in order that children from the earliest age should be acquainted with the dangers arising from high speed modern motor traffic, and the ways and means of avoiding accidents.

The execution of such a program need not be confined entirely to the government. Here again a great deal can be safely entrusted to non-governmental bodies -the automobile associations, dealer's organizations, chambers of commerce, etc. All that is required of the government is a central policy sponsoring body and for this purpose serious consideration might be given to the creation of a special Department of Highway Safety and Accident Prevention within the responsible road transport organization.

The importance of action on the above lines cannot be overestimated since the problem will become more acute with the ever increasing volume of traffic.

#### RECOMMENDATION XCV

- It is recommended that governments should:
- (1) initiate road safety programs in order to

/-reduce

reduce accidents, and provide safe, speedy, and efficient road transport. Such programs would include:

- (a) revision of present highway codes and traffic laws;
  - (b) uniform and revised regulations as regards vehicle equipment, lighting, brakes, etc.;
  - (c) stricter enforcement of traffic laws;
  - (d) improved accident statistics;
  - (e) education of the public, particularly children, in regard to prevention of accidents;
  - (f) obligatory third party insurance, or other means of established financial responsibility for accidents.
- (2) Encourage non-government bodies such as automobile associations, truck and bus associations, to take part and assist in this work.

#### VII. Road Transport Statistics

It would be most helpful to the Central American governments in assessing the development of road transport to have comparable road transport statistics, which is not possible at the present time because of the various categories and classes under which motor vehicles are classified, and which differ from country to country.

Thus El Salvador refers to: "carros, jeeps, camionetas hasta de 9 asientos (mixta), camionetas de más de 9 asientos (omnibus), pick-ups, jeeps," and Costa Rica refers to: "automóviles, autobuses, carros de alquiler, camiones, jeeps, otros"; other in addition refer to: "automóviles, camiones, autobuses, pick-ups, jeeps, otros".

Not only does this make any comparative analysis impossible between the countries concerned, but it creates difficulties as regards registration since there are so many different classes of vehicles, and finally the terminology used is in many cases confusing. Thus a "camioneta" may mean a small bus or station wagon used for commercial purposes,

/-or a large

or a large car used for private purposes. Under these circumstances it can be seen that practically no comparable use can be made of any vehicle statistics.

It would appear therefore highly desirable for the Central American Governments to agree together first on terminology, then on certain broad statistical classifications, and it would be most helpful for this purpose if use could be made of any accepted regional or world wide classification in order to insure not only comparison within the region but also with countries outside.

In most countries drivers licenses are issued in relation to the various categories of vehicles for which permission to driver is granted, and therefore it is at this stage that the vehicle classification problem commences. Fortunately, attempts at standardization in this respect on a world wide scale have already progressed considerably. Thus Art. 24, Chapter V, of the Geneva Convention on Road Motor Traffic (1949) states:

1. Each Contracting State shall allow any driver admitted to its territory who fulfils the conditions which are set out in annex 8 and who holds a valid driving permit issued to him, after he has given proof of his competence, by the competent authority of another Contracting State or subdivision thereof, or by an association duly empowered by such authority, to drive on its roads without further examination motor vehicles of the category or categories defined in annexes 9 and 10 for which the permit has been issued.

Annexes 9 and 10 establish the following categories:

- a) Motor cycles with or without a sidecar, invalid carriages and three-wheeled motor vehicles with an unladen weight not exceeding 400 kg. (900 lbs.)
- b) Motor vehicles used for the transport of passengers and comprising in addition to the driver's seat, at most 8 seats, or those used for the transport of goods and having a permissible maximum weight not exceeding 3,500 kg (7,700 lbs.). Vehicles in this category may be coupled with a light trailer.
- c) Motor vehicles, used for the transport of goods and of which the permissible maximum weight exceeds 3,500 kg. (7,700 lbs.). Vehicles in this category may be coupled with a light trailer.
- d) Motor vehicles, used for the transport of passengers comprising

/-in addition



- in addition to the driver's seat, more than 8 seats. Vehicles in this category may be coupled with a light trailer.
- e) Motor vehicles of categories B, C or D for which the driver is licensed, with other than a light trailer.

Presumably the governments concerned will accede to this Convention, and since the Article concerned is mainly intended for international traffic, it would be most useful for facilitating regional traffic, as well as standardizing vehicle classification.

Alternatively, if this is not possible, it is suggested that vehicle statistics be contained under the following headings:

- (1) private motor vehicles; (2) goods carrying vehicles, e.g. trucks; and (3) passenger carrying vehicles, e.g. busses, etc.

#### RECOMMENDATION XCVI

In order to improve statistical information and facilitate international comparison, governments should take joint action to consider the possibility of reaching agreement on:

- (a) technical terminology;  
(b) standard vehicle classification, either on the lines put forward in the Geneva Convention for granting of licenses or in any other way suitable to the region.

#### VIII. Conclusion

While the suggestions and recommendations submitted above are not comprehensive and may not in all cases be acceptable to governments, they are in general framed in line with practical experience gained in other countries, and they should provide a sound basis for organization and control of road transport in Central America.

They should, however, be considered as part, and only as part, of a national transportation policy which is essential to the countries' economic, political, and social development.

## Chapter IV

### MARITIME AND PORT PROBLEMS

#### I. Maritime Traffic. Cabotage

Most of the aspects pertaining to maritime traffic have already been considered in Part II of this Report,<sup>1/</sup> since regional and international services are closely connected with national maritime problems. What was then said with reference to the lack of adequate regional coastal services and to the causes of this state of affairs, also holds true for cabotage services.

The Central American countries have long coast lines, numerous ports, and insufficient means of inland transportation. Considerable cabotage traffic might therefore be expected of small craft plying up and down the estuaries of the main rivers and along the coast between the ports. However, except for cabotage traffic along the Pacific Coast of Costa Rica -which in 1951 was approximately 65% of international traffic -there is no other country in all of Central America with a high volume of this type of traffic. Nicaragua has some cabotage, both coastal and intercoastal, and in Honduras and Panama, besides the coastal shipping, there is some traffic between the islands and the mainland. In Guatemala and El Salvador cabotage is practically nil except for some traffic in the Bay of Amatique.

The study of how cabotage has developed in Costa Rica is revealing of the possibilities this type of traffic has for other

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<sup>1/</sup> See Chapter III, pp. 469 ff

Central American countries. Costa Rica has considerable cabotage, and 138 ports are served on the Pacific alone. Cabotage craft in Costa Rica handle a comparatively large tonnage of rice, beans, and corn, and also considerable shipments of lumber, bananas, cacao, copra, coconuts, and mangrove bark.

In 1949, shipments through 40 of these ports exceeded 40,000 tons. (See Table 135.)

Table 135

Costa Rica: Cabotage traffic in Puerto Limón and Puntarenas: rice, beans, and corn discharged, 1948-1949.  
 (Tons)

Products	Puerto Limón		Puntarenas	
	1948	1949	1948	1949
Rice	181.0	738.5	7,036.4	8,080.4
Beans	171.5	524.8	1,496.1	2,296.0
Corn	0.3	14.7	6,167.6	6,479.8

Source: Dirección General de Estadística, Estadística de transportes y comunicaciones, 1949.

The lack of cabotage services in other countries has been attributed to causes similar to those that limit regional traffic, that is, few shipments, inadequate ports, etc.. However, bearing in mind the case of Costa Rica -aside of what influence these limitations may have- it seems that cabotage service is subject to the same vicious circle

/applicable to

applicable to regional maritime traffic: the lack of ships and shipping interests limit traffic, and the lack of traffic limits the services offered. It should also be pointed out that in spite of the abundance of fish and shrimp, fishing fleets are practically nonexistent, and normally these fleets are a stepping-stone for future cabotage services.

Thus, it can be said that a much more intensive use can be made of coastal routes for cabotage traffic if only the ports were subject to minor improvements, so that they could truly be considered sheltered areas and would have adequate facilities for loading and discharging. Such improvements could be carried out simultaneously with other measures essential in order to promote the construction of both small boats and the work-shops needed to keep the craft in service.

In order to do this, no expensive long term project seems necessary, and it is quite evident that the volume of traffic would not justify it. All that has to be done initially is to improve somewhat the existing ports and other facilities for navigation, and to stimulate potential shipping interests, particularly with reference to fishing fleets.

## II. National Ports

### 1. Introduction

The Central American countries have excellent natural ports, and every country has at least one good port either on the Atlantic or on the Pacific. The condition of the wharves and piers, warehouses, and fixed and mobile equipment in the leading port varies considerably. In general the constructions are old-fashioned and

/poorly maintained,

poorly maintained, and the equipment is obsolete. This does not hold true for the ports controlled by the United Fruit Company, that are usually constructed much better and are well maintained.

Port construction and development has been practically in the hands of private interests. The governments of the different countries have shown little interest in ports, in their organization, or in the control of port charges. The following quotation is taken from the report of the United Nations Technical Assistance Mission that studied the ports of El Salvador:

... The attitude of the government of Salvador as regards the operation of its ports is extremely negligent. It appears to have no interest in their functioning beyond the collection of custom duties, which amount to 50% of the state's actual revenue. However, the majority of the nation's economic problems center around its harbors. And it should realize that the port area, whatever its size and operating means, is a transportation enterprise which demands a highly developed technique to facilitate the rapid handling of ships which use its piers. Many of these ships represent a capital investment which is often worth more than that of the port itself. <sup>1/</sup>

Finally, some of the leading ports were specially built for banana exports, and naturally, these ports are closely integrated with banana interests. The other ports, used for general cargo traffic, have been much neglected.

## 2. Port Administration and control

At present, the control of most of the leading ports and of some of the minor ones is in the hands of private companies. For example: (a) the United Fruit Company and the IRCA control Puerto Barrios,

<sup>1/</sup> United Nations Technical Assistance Mission to El Salvador, The Harbor System of El Salvador, New York, 1952, p.67.

Puerto Cortés, Tela, and Cutuco, (b) the Grace Line controls Champerico, San José, and La Libertad (this last port through its affiliate, the Agencia Salvadoreña); (c) the Standard Fruit and Steamship Company controls La Ceiba; and (d) the Salvadorean Railway and the Northern Railway control Acajutla and Puerto Limón respectively.

Thus, of all the leading ports in Central America, only Puntarenas, Corinto, and El Bluff are under government control. The companies also have other transport interests, such as merchant fleets and railways. It is evident that not only is there a virtual monopoly as far as the import and export traffic of the different countries is concerned, but since it is impossible to control legally the freight rates and port charges, these are often high and discriminatory. The analysis of railway transport in Part I of this Report dealt with this problem.

It seems absolutely necessary that the Central American governments should have jurisdiction over their ports, at least in what pertains to port charges, access facilities, and freight rates. If possible, they should also care for their improvement and development. The Report on Guatemala of the Mission of the International Bank for Reconstruction and Development stresses this same point.

#### RECOMMENDATION XCVII

In view of the vital importance that modern and adequate ports have for the economic development of the Central American countries, the Mission recommends that the governments set up as part of their executive branch, National Port

/Authorities

Authorities in charge of building and developing ports, port administration and port operation whenever necessary.

3. National port policy.

Since there is no government department in charge of port development, there is virtually no national port policy. El Salvador has shown recently a great deal of interest in port development, particularly with reference to Acajutla, and Guatemala has undertaken a new Atlantic port at Santo Tomás.

The neglect of port problems in the past has been a serious error. The lack of adequate port facilities leads to wastage of national resources, increases handling costs, and hinders economic development. It is therefore of the utmost importance to set up a clearly defined port policy, and to coordinate it with the economic development of each country, not only with reference to import and export needs, but also to the development of the country as a whole. Port projects should be part of a coordinated transport policy. Before proceeding with projects for port construction or for port improvement, road and railway access facilities, and in general communications with the hinterland should be considered. Thus, a national port policy is fundamental so that each government may be in a position to select from the various ports, the one best suited for the general welfare of the country; to develop the ports according to present and future traffic needs and within financial possibilities; to improve somewhat the minor ports essential for cabotage traffic. In other words, port expenditures should be focused on one objective, and not be scattered

/over a large

over a large number of projects. Private interests should also be stimulated so that they may help maintain and improve local ports.

In certain cases it may be advisable to carry out projects on an international scale, that is, bilateral agreements could be signed as to the use of a port by two neighboring countries. This would result in savings for both countries.<sup>1/</sup>

A brief résumé of the present port policy in the Central American countries is revealing of what little progress has been made:

- (a) port development in Guatemala and El Salvador seems to have been carried out without considering the general transport projects of the countries as a whole;
- (b) as yet nothing has been done to construct ports designed to promote regional development, such as Puerto Cortés and Cutuco, that serve both El Salvador and Honduras;
- (c) expenditures on too many ports have dissipated public funds, as in the case of the Nicaraguan government projects on Corinto, Masachapa and San Juan del Sur;
- (d) the almost complete neglect of existing facilities at certain ports, such as La Libertad and Acajutla.

RECOMMENDATION XCVIII

- (1) The governments should, as far as possible, coordinate their plans and to that end should try to ensure that:
  - (a) Port expenditures should be related not only to present import and export requirements, but also to reasonable future requirements.
  - (b) Port construction and development should be closely coordinated with road and railway access facilities, and in certain cases also with river access facilities.

<sup>1/</sup> See Part II, Chapter III, Section III, points 1, 2 and 4, pp. 491, 493 and 496



(c) Port operation, at least in the leading ports, should preferably be in the hands of independent organizations, or in the hands of private companies but subject to government control of port charges and freight rates. It would also be advisable that the minor ports -although under government control in a broad sense, should be managed by well qualified superintendents.

(2) A long-term program for port construction and development should be worked out the earliest. It should be closely coordinated with the national transport plans, and should be related to future commercial policy, particularly with reference to imports and exports, taking into account, wherever necessary, the requirements for regional traffic.

### III. Operation and Organization

Efficient port organization and operation is one of the essential factors in transportation, for the costs resulting from inefficiency will lower the net revenue from exports and will increase the cost of imports.

In a report on El Salvador it has been expressed that the saving which it would be possible to obtain through efficient port operation is as follows: 3.1 million colones from suppression of lighterage, 500,000 colones from revision of wharfage charges, and 350,000 from elimination of time losses.<sup>1/</sup>

As may be seen in the first part of this Report, there are few ports in Central America that are adequate as regards capacity, available equipment, and proper administration, to handle economically the present traffic volume; and much less to satisfy efficiently future needs. Substantial improvements could be made in (1) piers and access

<sup>1/</sup> See United Nations Technical Assistance Mission to El Salvador, op. cit., pp. 100 ss. The transport Mission is not entirely in agreement with these figures, but they undoubtedly show, the magnitude of the charges and the possibility of making considerable savings.

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to ports, (2) customs facilities and procedures, (3) road and railway access, and (4) repair workshops and facilities for fuel and provisions supply.

1. Piers and access to ports.

(a) Guatemala

(i) Puerto Barrios. The two main problems that this port is facing are the customs difficulties and the pier space limitations for the handling of the present traffic volume. Even though the pier is large -2,400 feet long by 132 wide- the mooring length is only 1,000 feet on each face. As that facing north is used by the company for its banana shipments, only one is left for public service. That the mooring length is not sufficient is confirmed by the following statement of the International Bank Mission:

All the aforementioned factors, taken together, point to the need of additional pier space at Puerto Barrios. The most basic reasons, however, are the growing need for freer movement of cargo and the perils of national dependence upon a single destructible unit of this kind.<sup>1/</sup>

On the other hand, a plan is being worked out by the government for the construction of a national port at Santo Tomás, located at a short distance from Puerto Barrios.<sup>2/</sup>

(ii) San José and Champerico. The San José pier seems to be adequate for the present movement of cargo. The pier at Champerico is in bad condition. However, the Mission does not agree with the opinion expressed in the International Bank's report that no improvement should be done in this port, for despite the small freight traffic that there is at present, it has a rich hinterland with large agricultural and mining production. Consequently if access conditions are improved,

<sup>1/</sup> The Economic Development of Guatemala, Report of the Mission of the International Bank for Reconstruction and Development, Washington, 1951, p.186.

<sup>2/</sup> See Part II, Chapter III, Section III, of this Report, pp. 491 and 493

port traffic will develop considerably.

(b) El Salvador

(i) Cutuco. In the report of the United Nations Technical Assistance Mission to El Salvador the following is stated in reference to Cutuco:

It has a concrete pier which enters the waters of the Gulf of Fonseca in a wide arc. Although it has a total length of 400 feet (122 meters), its design is such that it can only fully accommodate ships up to 100 meters in length. If they are longer, as is often the case, a sizeable section of the hull, usually embracing one hatch, remains beyond the pier. In order to unload from this hold the ship must be advanced to take advantage of the effective mooring area. This limitation holds true for both sides of the pier, but it is particularly accentuated on the inner face which is the shorter. This is not the only inconvenience presented by this pier. Due to the more or less normal direction taken by the pier in entering the water because of the problems of depth, the ebb and flow of the tide cause a ship which is moored or which approaches the pier on a traverse to undergo either a breakage of mooring lines or a violent pounding against the pier so that during the movement of certain tides captains consider it dangerous to remain moored. Moreover, although the Gulf of Fonseca offers a large expanse of calm water, the depths at its entrance are as little as 23 to 25 feet at some points. If a future expansion of trade calls for the entry of C-2 type vessels in the harbor of Cutuco, while they are not the largest cargo vessels they require a depth of 26 feet, which means that either the harbor must be dredged to the necessary depth, which implies the loss of one of its greatest advantages, or ships moving in and out of the harbor will have to await the moment of high tide, which is also a detrimental factor. <sup>1/</sup>

The present Mission learned that, in order to avoid difficulties caused by the action of the tides, this pier could be expanded at a relatively low cost provided larger traffic could justify the required investment.

(ii) La Libertad and Acajutla. This Mission fully agrees with the opinion of the United Nations Technical Assistance Mission regarding the obsolete and uneconomic condition of these two ports:

<sup>1/</sup> United Nations Technical Assistance Mission to El Salvador, The Harbor System of El Salvador, New York, 1952, pp. 31 and 32.

The piers of Acajutla and La Libertad have clearly outlived their usefulness and it is unlikely that anyone considers incorporating them in any major harbor system or continuing their present mode of operation which in itself would call for vast reconstruction. Both piers are in fact in serious states of neglect. To what has been said should be added the fact that since these piers were not constructed for the mooring of large ships, their structures were designed to withstand only limited stresses, with the result that time and disregard for their upkeep have conspired to bring about their deterioration.

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The pier itself is limited because of the shed which completely covers it and only permits access to it through the side hatches. This is such a stumbling block to swift handling of the cargo that it would be said fairly that the length of the pier is equal only to the total widths of the hatches. The working area for the winch operator and the stevedores is so limited that it is constantly causing bottlenecks because the workers are unable to maintain a steady flow of cargo into the railroad cars in the cramped condition. This makes it necessary from time to time to halt the operation of the winch, which leaves the stevedores in the lighter with nothing to do. This condition is particularly aggravated in La Libertad where there are two such bottlenecks; namely, the one we have just cited, and another in the customs warehouse where the railroad cars coming from the pier are not unloaded as fast as they arrive because manual labor alone is employed.<sup>1/</sup>

What has been said about these ports is a typical example of the effects that result from the existing situation of division of interests. Acajutla and La Libertad are national ports given as concessions to private companies -through short term contracts- and neither the government nor the companies are disposed to make any investments in them. Nevertheless, the government plans to convert Acajutla into the most important national port of El Salvador.<sup>2/</sup>

(c) Honduras

(i) Puerto Cortés, Tela and La Ceiba. With reference to Puerto

Cortés provision has been made to increase the available pier space. In view of the fact that Tela and La Ceiba are mainly local ports for banana transport operation, their pier installations are adequate to meet present needs.

(ii) Amapala. The main drawback in this port is its

<sup>1/</sup> Ibid., pp. 32, 34 and 35.

<sup>2/</sup> See Part II, Chapter III, Section III, point 4. p. 496

deficient system of operation. As there is not sufficient depth at the pier, ships have to anchor far away from it and the cargo has to be discharged into lighters in order to be taken to the customs. Unfortunately, the solution for this problem is not easy, this being one of the reasons why due consideration should be given to the possibility to develop Cutuco as a regional port, in accordance with the general plan discussed in Part II of this Report.<sup>1/</sup>

(d) Nicaragua

(i) Corinto. The pier length (500 feet) of this port is insufficient and on this account ships usually have to wait for another to clear before they are able to moor at the pier. Naturally this causes delay in the itineraries and raises costs. Besides, ships can only moor on one face because on the other one there is not sufficient depth and the warehouses stand in the way. These defects were already pointed out in the International Bank Report:

(b) The pier can accommodate only two deep sea ships at once, although it has some additional space for coastal craft at the shallow, lower end;

(c) The tanker berth is sandwiched between the freighter berth and the accommodations for coastal craft, so that ordinary cargo has to be worked side by side with flammable cargo;

(d) There are no cranes to load and discharge cargo, so that even the heaviest and most cumbersome pieces of freight have to be worked by ships' tackle alone;

(e) There are no lift trucks to move freight on the pier, in the transit sheds, or the railroad yards, so that freight handling ashore is slow and expensive. <sup>1/</sup>

<sup>1/</sup> See Part II, Chapter III, Section III, point 5, p.499

<sup>2/</sup> International Bank for Reconstruction and Development, The Economic Development of Nicaragua, p. 235

The Bank recommends that immediate action should be taken to build an additional pier to be used preferably for fuel discharge.

(ii) El Bluff and San Juan del Sur. The main limitation encountered at El Bluff is the difficulty of access of ships to the port due to the existence of several banks at the lagoon entrance which prevent ships of over 12 feet draught from passing. Taking in account the importance of the Rama Road project, an investment required to build a canal 15 feet deep through the Bluefields Lagoon, as proposed by the International Bank, would certainly be justified. <sup>1/</sup>

In San Juan del Sur the problem arises from the inadequacy of the pier. It is so small and the depth there is so little that the ships have to anchor near the bay's entrance, and loading and discharging operations have to be carried out by means of lighters. When the Inter-American Highway is connected to the port, traffic will grow considerably, for which reason the Mission endorses the International Bank's following recommendation:

For some time to come San Juan del Sur will probably continue as a lighterage port. All rail traffic will stop, however, as soon as the port is linked with the Inter-American Highway by an all-weather road. The traffic workload, moreover, is likely to become a good deal heavier as trucks begin to run over the new road. On this basis, the mission recommends improvement of the existing pier, construction of additional storage space, construction of service and access roads in the immediate vicinity of the port, and the purchase of some light motorized equipment goods for use between the pier and the sheds.

(e) Costa Rica

(i) Puerto Limón. The pier and its installations are adequate

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<sup>1/</sup> Ibid., p. 238.

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as regards capacity for present cargo traffic, but, on the other hand, the main disadvantage of the port appears in reference to fuel discharge operations, which have to be carried out at the main pier. Regarding this, experts of the Point IV Program have recommended that adequate steps should be taken immediately to correct that situation. <sup>1/</sup>

(ii) Puntarenas. The pier has two mooring faces: one outside, which is approximately 500 feet long, and the other inside, about 400 feet. It is somewhat deteriorated, for which reason it is not always possible to use both faces. Ships often have to wait for another to clear in order to make possible mooring operations, with the consequent delay in their itineraries and rise in costs.

#### RECOMMENDATION XCIX

Since it is essential for efficient port operations to have adequate loading and discharging areas and to maintain docks and piers in good condition, it is recommended that an investigation be carried out in the shortest possible time to determine the present condition of port installations and facilities, namely, docks and piers, and loading and discharging equipment, maritime access, lighthouses, pilot service, lighterage, etc.; and that a short-term program for improvement and maintenance be initiated at the earliest in accordance with recommendations of other missions for Corinto, San José, and Acajutla.

#### 2. Customs Facilities and Procedures

The inefficiency of customs procedures in Central American ports has been emphasized by all transportation experts visiting the region. The International Bank Mission to Guatemala made the following comments in the case of Puerto Barrios:

<sup>1/</sup> U.S. Department of Commerce, A Point Four Project, Preliminary Survey The Port of Limon, The Port of Puntarenas, pp. 7-8

Shortage of Space. Inadequacy of warehousing facilities for the receipt and examination of merchandise by the Customs Service is a growing problem in both Guatemala City and Puerto Barrios. The system now in use results in congested storage at these points and causes the immobilization of large numbers of railway cars through lack of space into which to unload their cargoes. The latter, in turn, further increases congestion in port areas by curtailing the transport of freight away from the piers.

Slow Procedures. A second factor causing delay in the customs is the system used in the examination, processing, and release of merchandise to consignees. The Customs Service has recently effected a degree of improvement both in warehousing methods and in examination and processing procedures. The former now appears reasonably well handled, to the extent that the cramped space will allow. Procedures, however, still appear cumbersome and unnecessarily slow. 1/

The United Nations Technical Assistance Mission to El Salvador referred to the facilities at La Libertad and Sonsonate in the following terms:

The custom sheds were built to handle a much smaller volume of import goods than they actually do. Thus goods which have had to be stored during the past year have caused such congestions within the sheds that they have had to be placed outside in the surrounding area. For this reason the government has decided to build a new group of sheds. 2/

Regarding Cutuco, the same Mission stresses the considerable expenses caused by the delays in moving freight cars:

Due to the chaotic operation of the three ports a very large number of wagons are permanently out of service whilst delayed at customs warehouses. In the case of the IRCA at Cutuco during the year under review 3,000 wagons have been delayed for an average of 12-14 days whilst awaiting clearance. It is not unusual for batches of 20-30 wagons to wait as long as three weeks whilst merchandise passes into and out of the customs. 3/

1/ The Economic Development of Guatemala. Report of the Mission of the International Bank for Reconstruction and Development, Washington, 1951, pp. 147 and 148.

2/ The Harbor System of El Salvador, op. cit., p. 90.

3/ United Nations Technical Assistance Mission to El Salvador, Inland Transport in El Salvador, New York, 1952, p. 13.



In Part I of this Report it was pointed out that the customs services are unable to provide adequate warehouses, speed up the movement of merchandise, or simplify the procedure for loading port freight on to railroad or truck facilities. This is all due to the fact that customs administrative methods and warehouse space have hardly changed in the last 10 to 20 years. It has given rise to slow, outmoded procedures and to inefficient handling of goods at the customs. Shipment is delayed, warehouses become congested, and the whole flow of traffic is slowed down.

However, there are many cases in which neither present nor future traffic would justify large investments by the governments. The Mission therefore considers that in the meanwhile the most urgent need is to repair and maintain adequately the present facilities, extend mechanization, utilize available space more efficiently, dispatch goods more speedily in the customs warehouses (by restricting free storage time) and revise some administrative methods. All these improvements could be carried out at a reduced cost, which would be soon offset by the savings they would originate.

#### RECOMMENDATION C

With a view to improving customs administration and procedures and speeding up the flow of goods in the ports, governments should:

- (a) restrict free freight storage time;
- (b) review customs legislation with the advice and aid of experts in order to accelerate administrative procedures;
- (c) build warehouse space adequate to the volume of port traffic and introduce further mechanized methods in order to make fuller use of covered vertical space.

3. Access by Highway and Railroad

The closest coordination of port, railroad, and highway facilities is required to reduce the turn-round of ships and to improve operational efficiency.<sup>1/</sup>

As stated throughout this Report, the auxiliary services in the Central American ports are not satisfactory. Very few ports have both railroad and highway access. Thus, Cutuco, although it has road access, cannot be served by trucks. Puerto Barrios, Puerto Cortés, Corinto, and San Juan del Sur either have no access by road, or trucks are not allowed to enter the docks.

It is however expected that in the future the situation will improve somewhat as road systems progress and direct access to ports is permitted. To derive full benefit from the latter, it is essential that highway transportation should be efficient and at low cost, and it is pertinent to recall the recommendation made previously<sup>2/</sup> on the advantages of using semi-trailers, as well as the advisability of issuing road permits only to operators possessing the required equipment and facilities.

<sup>1/</sup> "A port is not a terminus but is essentially a point of transit for seaborne traffic, and its operations must therefore be kept as fluid and flexible as possible; a port is the place where goods are transferred from ship to shore, from shore to ship, or from ship to ship. Ships, ports and the various forms of inland transport are linked together. Each is dependent on the other two!" R. J. Hodges, "Some Factors Affecting the Turn-Round of Shipping at British Ports", The Journal of the Institute of Transport, March 1950.

<sup>2/</sup> See Part III, Chapter III Recommendation XC, p. 664

RECOMMENDATION CI

Governments should take all necessary steps to enable the principal ports to have adequate access by railroad, highway, or internal waterways, and to prevent preferential treatment or discriminatory practices in favor of any particular type of transportation; and they should adopt appropriate measures to enable trucks to enter the dock and warehouse areas in all those cases where this is at present not permitted.

4. Naval Stores and Repairs

Facilities at the principal ports are deficient in regard to supplying and repairing of ships. Adequate establishment of these facilities would not only improve port services but would also provide employment for a large number of skilled workmen.

RECOMMENDATION CII

In the case of national ports, Governments should provide the means required to supply ships and carry out necessary repairs, and should encourage similar facilities in the privately-owned ports.

5. Port Dues and Charges

This subject has been dealt with already in discussing railroads and does not require further elaboration.<sup>1/</sup>

<sup>1/</sup> See Part III, Chapter I, pp. 520 ff

Chapter V

AIR TRANSPORT

For civil aviation to make its maximum contribution to the economic development of the countries of Central America and Panama, it is essential to recognize certain basic principles. The cornerstone should be a modern, up-to-date Civil Aeronautics Law, and such regulations as are needed based on internationally recognized principles of the Convention on International Civil Aviation, and the specific needs of each country.

El Salvador currently has under consideration such a model Law and implementing regulations. <sup>1/</sup> Honduras has found it desirable to revise their Law enacted only three years ago, in March, 1950. Every country should undertake to maintain up-to-date its organic civil aviation law and corresponding regulations.

RECOMMENDATION CIII

Those governments which have not already done so should consider the advisability of appointing a commission composed of legal and aviation authorities and governmental representatives, for the purpose of drafting an adequate Civil Aeronautics Law and corresponding regulations, designed to meet the present and future aviation needs of the country.

An essential corollary to the adoption of a modern aviation law is the creation of an independent civil aviation organization, staffed by an adequate number of competent technical and administrative personnel. Without such an organization, the

<sup>1/</sup> "Proposed Civil Aeronautics Law and Corresponding Regulations", Appendix II, "Civil Aviation in El Salvador", by Glen A. Gilbert, Civil Aviation Adviser, ICAO, prepared for the United Nations Technical Assistance Mission to El Salvador, July, 1952.

/-execution

execution of other recommendations would not be possible. It is important that such an organization be a civil agency, although it is recognized that in certain countries, some divergence from this basic principle may be necessary for the present. In general, however, experience throughout the world has demonstrated that military and civil aviation, despite their seeming similarities, do not mix well. Unless civil air transport is run with civil objectives, civil efficiency and incentive to improve the service suffer. This point has apparently not been fully appreciated in Central America and this has caused some of the present difficulties. In order to realize a change in this situation, civil aviation will have to receive greater support from the governments than it has heretofore enjoyed and the organizations set up for this purpose should have stability of existence and protection from political interference.

RECOMMENDATION CIV

Those governments which have not already done so should consider the advisability of creating an independent Civil Aviation Department, under the supervision of a civil agency of government, independent at least with respect to all economic aspects.

RECOMMENDATION CV

Governments should study adequate measures in order that military officers consigned to duty as officials or employees of Civil Aviation Departments may request their withdrawal from their corresponding military body within a reasonable time so that they serve civil aviation permanently.

RECOMMENDATION CVI

The Civil Aviation Department should be granted sufficient appropriations and provided with technical and administrative personnel competent to prescribe and enforce adequate safety standards, and to promote the development of air commerce through the reasonable control of economic competition.

RECOMMENDATION CVII

Personnel of the Civil Aviation Department should be selected on a merit basis with security of tenure subject to efficient performance of duties. While employed in the Civil Aviation Department, and for a reasonable period thereafter, such personnel should not own any financial interest, direct or indirect, in any aviation enterprise.

RECOMMENDATION CVIII

Salaries of Civil Aviation Department employees should be sufficiently high to attract and retain career - men of technical ability and integrity.

RECOMMENDATION CIX

Full use should be made, both for personnel of the Civil Aviation Department and for other aviation specialists, of training facilities wherever they may be available, and that consideration be given to a staggered system of detailing key technical, legal and administrative personnel to training centers, so that they will become thoroughly familiar with modern methods, procedures and techniques.

Just as effective government regulation of civil aviation requires a basic aviation law and an efficient Civil Aviation Department, so the economic development of air transport depends upon an adequate government program of airport development and a sound schedule of maintenance. The continued use of marginal fields exposes passengers to undesirable risks and seriously affects the efficiency of the operators. Airports, like highways, are a public means of communication and a government responsibility, the construction and maintenance of which are important to the public welfare. Furthermore, once having invested in runways and facilities, it is unsound economics not to maintain them. "Preventive" maintenance is the cheapest and soundest policy. In the long run, postponing

/-maintenance

maintenance turns out to be a costly procedure resulting in greater eventual costs.

RECOMMENDATION CX

Governments should adopt a long-range program of airport development, improvement and expansion, adequate to meet the present and future aviation needs of the country.

RECOMMENDATION CXI

Investments in airports and airway facilities should be protected from deterioration by an intelligent program of "preventive" maintenance.

Throughout most of the world it is accepted practice that certain basic navigation services and facilities required in common by all operators, which affect the safety of the travelling public and the reliability of operations, are properly a function of government and should be provided by it. These services, in effect, correspond to the type of government aid provided to maritime operators. In the field of air transport they include radio communications for flight control, flight information and arrival reports, meteorological data, weather forecasts, and similar aids to air navigation. In the interest of flying safety and efficiency, such services should be the responsibility of one central agency, either the government or some agency designated to perform this function. Because of the small geographic area of Central America, consideration should be given to the desirability of integrating these services to the maximum extent.

RECOMMENDATION CXII

Those countries which have not already done so, should take steps to provide the basic navigation service and facilities required in common by aircraft operating in their area, and to examine the means of organizing these services and facilities in the most efficient manner.

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It is generally accepted international practice that, by means of a system of graduated landing fees and other charges, governments recover at least a part of the costs of the navigational aids thus provided. Obviously, such charges should be related to the quality and amount of services and facilities provided air transport operators. It is also generally accepted practice that repairs or fuel required by an international operator, but destined for use primarily outside the country, are exempt from local taxation. To do otherwise is in reality self-defeating, driving potential business away and depriving local citizens of employment which they might otherwise enjoy.

RECOMMENDATION CXIII

Government airport charges for navigational services provided air carriers should be conservatively related to the value of the services performed.

RECOMMENDATION CXIV

Fuel, spare parts and materials used in the operation, repair or overhaul of planes in international service, not employed between points within the country, should be exempt from import and other local taxes.

Airlines as vital channels for the flow of commerce, require a firm basis for development.

Therefore, it is desirable that they be provided with long-term, stable operating contracts, so that they feel secure in investing their own funds in better aircraft and improved installations and services. Such contracts should be uniform and equitable, and preferences in favor of government personnel or property should be avoided. The experience in many parts of the world has proven it to be an illusory form of economy, invariably costing the country more  
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in the long run, than it saves.

#### RECOMMENDATION CXV

Governments should consider the desirability of reviewing existing contracts with air carriers with a view to revising them along strictly uniform, impartial and equitable lines, and to eliminating all forms of discrimination involving either persons, or property, whether official or non-official.

In almost every country in Central America there are large areas virtually without surface transportation, where great potential wealth remains unexploited and even virtually unexplored. Air transport can help to open up those sectors, as operations in the Valle del General and the Alajuela and Guanacaste provinces of Costa Rica, as well as in many other parts of Central America, serve to illustrate. If the areas prove to have sufficient growth-potential and the intervening obstacles are not unsurmountable, roads may eventually follow to help carry the increasing volume of low-value produce and heavy freight. The economic importance of air service does not diminish, however, with the advent of roads, when a community has developed to a point where the relatively heavy investment in surface transport facilities can be justified. It is merely shifted into other fields more uniquely related to air transport. Examples of this process of economic growth can be found in many parts of the world. The same process, with proper government support, can be expedited in many of the still undeveloped areas of Central America.

Rates on developmental routes should be kept as low as economically feasible, both for passengers and cargo. Governments should undertake to see that carriers, particularly those which are not subject to the spur of healthy competition, fulfill their responsibility to serve the developing needs of all sectors of the  
/-country

country. There appears to be a tendency on the part of some carriers to be content with transportation of a relatively small group of wealthy landowners and company personnel, rather than to broaden the base of operations by providing other services at rates which the average citizen can afford. There is also a tendency for some carriers with a monopoly of internal scheduled services to be attracted by what appear superficially to be more remunerative opportunities on foreign routes, at the expense of their domestic operations.

#### RECOMMENDATION CXVI

Governments should take steps to assure that the needs of all sectors of the country for air service are adequately met; and to encourage the establishment of pioneering routes in potentially promising areas, as well as the introduction of special reduced developmental fares and tariffs through a program of temporary subsidies if necessary.

In a number of countries which the Mission visited it was evident that statistics relating to air transport operations and traffic left much to be desired. Yet accurate trustworthy statistics are essential for satisfactory government supervision and planning, as well as for many other purposes.

#### RECOMMENDATION CXVII

Governments should review existing statistical procedures affecting civil aviation activities with a view to simplifying presentation and increasing the reliability of statistical reporting.

The activities of private fliers, aero clubs, taxi and charter operators and the like are beneficial to the country in many ways: they provide local jobs; they support a group of trained pilots, mechanics and others whose skills may be useful to the country in time of emergency; they assist in promoting a general knowledge of aviation

aviation; they explore outlying areas and help pioneer new services. The encouragement of such private activities will contribute to the economic development of the country.

RECOMMENDATION CXVIII

Governments should encourage a more widespread use of small aircraft for personal transportation and for the various types of aerial work - agricultural, mapping, survey, etc. Such action may be taken by reducing or eliminating landing fees, import duties, fuel taxes and granting easy passage from country to country as provided by Article 5 of the Chicago Convention.

It is the common experience of most countries that school curricula and teaching practices fail to keep pace with the changing conditions of the modern world. Yet a knowledge of aviation and its impact on the world in which we live is an important part of education.

RECOMMENDATION CXIX

Governments should encourage their Education Departments to familiarize themselves with modern aviation educational methods and materials with a view to incorporating such methods, where practicable, into their school teaching programs.

Chapter VI

INLAND WATERWAYS

I. General Situation

Although river or lake navigation constitutes the most economical system of transport and is highly developed throughout the world, it is hardly used in Central America, since the waterways which could be utilized for navigation are found in thinly populated regions. A typical example is the Coos River, the only means of surface transportation in the Cape Gracias a Dios District, which has an area of 16,500 square kilometers and an estimated population of 17,000 (1 inhabitant per square kilometer). The river's total traffic, carried out almost exclusively by one company, is estimated at 2,000 tons annually, mostly bananas.

The zones traversed by navigable rivers in the countries cited are very fertile, have vast forest reserves and are admirably adaptable to tropical cultivations: bananas, African palm, sugar cane, rice, etc. The development of river and lake navigation would contribute a great deal toward the development of production in these regions.

In Part I of this report reference was not made to El Salvador in regard to inland waterways. With the exception of the Lempa, which runs across the entire country, Salvadorean rivers are short, torrential in the rainy season and hold little water in the dry season.

/They are only

They are only usable for small craft in short stretches near the mouth. Once the hydroelectric projects at Chorrera del Guayabo are terminated, the Lempa River may serve for navigation upstream from the dam.

The Tempisque and Bebedero rivers, which empty jointly into the northwestern end of the Gulf of Nicoya, are used in Costa Rica for coastwise ships serving the numerous ports on that gulf. The Tempisque is navigable from Ballena, terminal point of the road from Santa Rosa, and the Bebedero from Taboga to Palmita. In 1951 3,665 tons were transported on the Tempisque and 3,779 tons on the Bebedero.

The rivers of Panama —with the exception of the Chagres, whose waters are used for the Canal— are short and carry little water and are inadequate for navigation.

A brief description of the navigable rivers, lakes, and canals of Guatemala, Honduras and Nicaragua has already been made.<sup>1/</sup> There follows a list of the principal inland waterways.

<u>Guatemala</u>	<u>Estimated navigable length (kms.)</u>
Usumacinta River	780
Tributaries: San Pedro	150
Lacantum	150
Pasión	250
Salinas	250
Polochic River	50
Izabal Lake	60
Dulce River	45
Motagua River	200
Sarstún River	50
Atitlán Lake	35
Chiquimulilla Channel	110

<sup>1/</sup> See pp. 86, 217 and 275 respectively.

Honduras

Segovia or Cocos River	400
Patuca River	400
Aguán River	150
Ulúa River	150

Nicaragua

Segovia or Cocos River	400
Prinzapolca River	160
Grande River	250
Escondido River and its tributaries	100
San Juan River	200
Lake Managua, perimeter 190 kms.	
Lake Nicaragua, perimeter 400 kms.	

In the Ministries of Guatemala, Honduras, and Nicaragua which have charge of communications and transport there are no departments or sections which deal with interior navigation, and there is no regulation of this system of transport. The rivers have not been investigated nor studied as they should be, and there is no orientation or organization in the field of river or lake navigation.

II. General Proposed measures for the Development of Navigation

1. Administration

It is necessary that each country have an office or section, within the Ministry in charge of communications and transport, to deal exclusively with inland navigation and all matters relating to it, as follows: (a) navigation regulations, (b) registration and licensing, (c) a central registry, (d) statistics, (e) international problems, and (f) labor conditions.

Within the same dependency there should be studies made

/of the navigability

of the navigability of the rivers, in close cooperation with the other administrative departments. If in order to increase the capacity of river transport the short term solution lies in a wise choice of the type of vessels used (particularly the small ones), it is also undeniable that the long term solution lies in the rivers themselves, and is very closely connected with problems of electrification, irrigation, flood prevention and many other problems of river hydraulics. Consequently, this section of the office would dedicate itself to collecting or compiling the data necessary for a better understanding of rivers considered as means of transport.

## 2. Navigable waterways

Before considering the "conservation" of navigable waterways, attention should be given to studies of the rivers as well as of the region which they will serve from the point of view of transport: population, production and consumption, at present and in the future. For the thorough study of a river the most important features are: (a) the basin, divided according to its tributaries, (b) the rainfall at key points of the basin, (c) total length of the principal channel and its tributaries, (d) the level of the bed (with conveniently located level markers) for purposes of indicating its gradients, (e) the permeability of the basin so that knowing this and the gradient it may be determined whether the flow is torrential, tranquil or mixed, (f) the average, least, and greatest depth of the bed in the navigable sections, (g) the Thalweg in medium, minimum, and maximum waters (maximum in the case of non-torrential rivers) in the

/navigable sections,

navigable sections, (h) the average and minimum low water mark of key points in the navigable sections, and (i) the maximum channels in the navigable sections in order to determine the level of fixed structures.

All this data are difficult to obtain, and the acquisition of some of it will consume a long period of constant and careful observation.

The improvement of the physical characteristics of inland waterways is a long and onerous task, above all on rivers where the channel shifts and the bed itself is unstable.

In all the problems relating to the physical aspects of inland waterways it is very important that the authorities in charge of navigation routes be in constant contact with all the other authorities interested in river hydraulics, irrigation, hydroelectric energy, etc., because, far from being rivals, the services of all these agencies are mutually complementary, and their problems are fundamentally one.

The previous knowledge of the river and then the regulation of the width, depth, and radius of curvature of the channels of the different parts of every navigable waterway is a fundamentally important factor in the determination of the types of vessels which may be used and it will lead to the classification of waterways according to their navigability during the rainy season and during the dry season.

### 3. River and lake craft

One of the first methods for increasing the capacity of river and lake transport is the utilization of more aptly designed craft. This method is also the only one which can produce immediate

/results,



results, especially if applied to the small native Central American craft ("pipantes" or "cayucos"--, which are so uneconomical and so unsafe that the Mission believes that it will be both easy and necessary to eliminate them if a regular service is established at reasonable prices. This would represent for the interest of the regions a great saving in material and human energy.

#### RECOMMENDATION CXX

Considering that inland navigation is an economical system of transport and that several countries in Central America have rivers, lakes and canals which could be advantageously utilized for navigation, it is recommended to the governments that, as soon as possible, they carry out or have carried out a study of the principal waterways of their respective countries. This study should be entrusted to experts in the field, who should also consider the possibilities of river and lake navigation in relation to the general program of development of national transport. The physical features of the waterways, navigation, ships, buoyage, etc. should be considered in the study and suggestions and recommendations should be made in regard to organization and administration.

#### III. Special recommendations

1. Guatemala: Polochic River-Lake Izabal-Dulce River-Amatique Bay System

This important system <sup>1/</sup> offers an excellent and economical

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<sup>1/</sup> See pp. 90 ff

/means of transport

means of transport for the region surrounding Lake Izabal and for a large part of the fertile Department of Alta Verapaz. Navigation service on this system is carried out at the present time under extremely precarious conditions by the Ferrocarril Verapaz y Servicios Anexos. Its low transport capacity is a serious obstacle for the development of the areas which could be served by this navigation. It is the opinion of the Mission that the prospects for increased traffic are good. The movement of coffee proceeding from Alta Verapaz, which could be channeled along this waterway, may be estimated at some 7,000 tons annually, to which could be added a substantial tonnage of lead ore, which at present is shipped by road from the mines in the Cobán region to Rancho, a station of the IRCA, to continue by rail to Puerto Barrios. This transport costs about \$30 per short ton as against \$14 for rail freightage and \$16 for truck transport.

If there were good navigation service, coffee, lead ore, wood, etc. could be carried to El Estor, on Lake Izabal, by the existing road, which needs to be improved substantially in order to be used for this purpose.<sup>1/</sup> El Estor, as a terminal point of navigation, offers several advantages over the present terminal point of Panzós,<sup>2/</sup> because it permits the use of barges of greater tonnage and

<sup>1/</sup> See Recommendation L in Chapter II of Part III, p. 569

<sup>2/</sup> See Recommendation XXXV, p. 542. The International Bank for Reconstruction and Development also recommends El Estor as a terminal point.

draught than those which the Polochic River can handle, and this represents a considerable saving in the operating cost per ton and in time, since the river is very winding, has a relatively strong current, and consequently makes for very slow navigation. El Estor also has other advantages over Panzós. It is a larger place in which there are facilities available which are lacking in Panzós, and it already has a small pier which can be enlarged and improved in order to handle efficiently the traffic needs. The Mission believes that it is worthwhile to give some priority to building up the navigation service of the Verapaz Railroad since it could provide practical, rapid and economical service.

RECOMMENDATION CXXI

(a) Panzós should be abandoned as a terminal point of navigation of the Verapaz Railroad replacing it by El Estor on Lake Izabal. At El Estor an adequate pier should be built (enlarging and improvement of the existing pier) and equipment necessary for handling lead ore freight and logs should be installed. A warehouse for coffee and other products should be built.

(b) Regarding craft in use, the present craft should be replaced by a Diesel barge and lighters of greater capacity and greater draught, appropriately designed for the bar in the Dulce River.

(c) It will also be necessary to facilitate the direct transshipment of cargo from the barges to the ocean-going ships at Puerto Barrios, since the present system of transshipping to freight cars in order to get the cargo on board increases the cost of transport and is an operation which may be avoided when the ocean-going ship can load the cargo directly.

/2. Nicaragua:

2. Nicaragua: Lake Traffic

Lake Nicaragua and Lake Managua-Tipitapa River-Lake Nicaragua system could provide an excellent means of transport and would permit the development of production in a very extensive area.<sup>1/</sup> Unfortunately, the Mission did not dispose of sufficient time for an inspection of the region. Although it had at its disposal only the information provided by the Ferrocarril del Pacífico and other official institutions, it seems evident that it is necessary to make a thorough study of the navigation possibilities of the Nicaraguan lakes.

RECOMMENDATION CXXII

Special attention should be given to lake navigation in Nicaragua, a study should be made of the possibilities which this offers and an adequate navigation service, preferably autonomous, but coordinated with the government railroad, should be established.

<sup>1/</sup> "The land adjacent to Lake Nicaragua is fertile, and there is a possibility of irrigation during the six-month dry season. The improvement of transport services on Lake Nicaragua would greatly benefit its coasts, and the cost of the improvement would be small, considering the possible increase in production. Attention is strongly called to the possibility of using medium sized pre-fabricated craft which would be transported in sections, via San Juan del Sur and San Jorge, to be assembled on the shore of the lake, under the direction of competent technicians." Report on Nicaragua, Mission of the Food and Agriculture Organization, November 1950.

Chapter VII

NEED FOR A NATIONAL TRANSPORTATION POLICY

I. Planning and Coordination of Transportation

The basic purpose of all national transportation policies is to provide an adequate, efficient, and economic transportation system to meet the needs of economic and social development. One of the major obstacles in the way of improved transportation facilities in the Central American countries is precisely the lack of any coordinated transportation policy and of overall planning of transport development. This is particularly serious at the present time when most governments are actively concerned with economic and social development plans regarding agricultural production industries, development, power, housing and improved social services. These programs will be greatly dependent for their success on adequate, efficient, and economic facilities. In other words, economic and social planning must go hand in hand with transportation planning, and any disregard of this principle can only result in unbalanced growth, as well as in uneconomic use of resources, which has already happened in certain countries of the region where duplicated facilities as regards railways and highways have already been constructed and where development schemes have been planned for areas without adequate road approaches. In other countries, however, a trend is discernible towards better coordination of different sector plans, although in transportation matters only highways are the subject of special attention.

/Repeated

Repeated references to these matters will be found in Part I of the Report, and many examples have been given of inefficient and inadequate transport organization, arising from the absence of a central authority responsible for transportation policy and from the placing of specific transportation administration under diverse authorities without sufficient coordination.

This is also stressed by the International Bank Mission with reference to Guatemala:

".....there is evidence of a lack of planning with a consequent scattering of national resources over too many projects instead of a concentration on projects essential to the country's development. Responsibility for construction, operation, maintenance and policy control of the transportation and communications systems ranges all the way from a completely governmental function as in the case of highways to the completely private function carried on by the International Railways of Central America. Between these two extremes fall those operations conducted by private enterprise under varying forms of permits, contracts, or agreements with the Government whereby each reserves a certain amount of control. The pattern of taxation, or requirements for profit-sharing between the Government and <sup>1/</sup> the private enterprises engaged in these projects, also varies widely.

Besides lack of general planning, the regulation and administration itself of transport means in the Central American countries is scattered and lacking in unity. Regulation and control differ widely for each form of transport and vary from almost complete control in the case of passenger bus services, to complete freedom in the case of ports and waterways. Responsibility for such controls as exist is frequently divided among almost every department of the government,

<sup>1/</sup> The Economic Development of Guatemala. Report of a Mission of the International Bank Mission for Reconstruction and Development.

/including

including the Ministries of Economy, Agriculture, Public Works, Development, Police, and Defense. Furthermore, transportation is not sufficiently regarded as a public utility, to be governed by national interest and not simply by private profit criteria.

Historically, the present position of transportation in Central America is not difficult to explain. In the latter part of the 19th century and early part of the 20th, the present railway network was constructed, which at the time was the main and only means of efficient transport. However, it catered and was designed solely for export and import traffic, and in almost all cases the railway companies were foreign owned and operated, and governments took little or no interest in their development or operation, limiting themselves to supervising fulfilment of the original contract terms of the concession. A similar position existed as regards port construction and management. It was not until almost the years 1940-1942 that the construction of surfaced highways and the resultant development of road transport forced governments to interfere. Legislation was then introduced as regards traffic rules, passenger fares, and other more general controls.

It should, however, be noted that the absence of planning and coordinated control of transportation is not peculiar to the Central American countries, but is merely one stage in transportation development, a stage which has been experienced at one time or another in all countries, among them all the Latin American republics. For example a recent study on the economic development of Mexico -where general development and in particular transport growth have been rapid in recent

/years-

years- it is pointed out, after analyzing investments in transportation, that although most transport expansion is directly or indirectly in government hands, there is a total lack of coordination, which has led to duplication of installations, unbalanced growth and not fully productive investment:

The conclusion seems unavoidable that there is an urgent need for an overall policy and for the coordination of government transportation agencies. These are primary requisites if serious waste of resources is to be avoided in the further development of transportation facilities and if the railroads are to cease to be a major impediment to economic growth. <sup>1/</sup>

To take an illustration from a developed European country with ample means of transport:

<sup>1/</sup>In the United Kingdom, before the First World War, responsibility<sup>7</sup> was divided between the Board of Trade, the Local Government Board, the Road Board and the Scottish and Irish Departments, other minor transport functions were exercised by the Home Office and the former Office of Works. During the First World War the transportation problems which arose made it clear that the country had no coherent inland transport policy and that there was no single government department which could formulate such a policy. In particular, the growing importance of road haulage and road passenger transport and their impact on the railways demanded attention. Moreover, the departments between which the various responsibilities in connection with transport were divided were themselves already overburdened by the increase in their duties brought about by the war and the growing complexity of the social structure.

There were the main reasons which lead to the decision to set up a Ministry of Transport. The Ministry of Transport Act was duly passed by Parliament and received the Royal Assent on 15 August 1919. The Ministry then became the responsible department for railways, tramways, road vehicles, roads, bridges, ferries, canals and other navigable inland waterways, docks and harbours and also electricity, at a later stage shipping was included, and electricity subsequently transferred to the Ministry of Fuel and Power. <sup>2/</sup>

Even in cases such as this, the problem is far from being solved. In large part, the coordination achieved in the United Kingdom and

<sup>1/</sup> The Economic Development of Mexico, Report of the Combined Mexican Working Party, Washington: International Bank for Reconstruction and Development. 1953. Page 98.

<sup>2/</sup> "The responsibilities of the British Ministry of Transport", prepared by the British Ministry of Transport. United Nations, Transport and Communications Review, Vol. IV, No. 4.

/similar



similar countries is confined to regulating competition. The very term "coordination" of transport is subject to different interpretations. For instance, at a recent international meeting the following was stated:

In the first place the term has been used to denote - the elimination of physical impediments to the movement of vehicles, goods and passengers over separate transport systems. Secondly, it may relate to the legal and commercial measures taken to enable goods to be consigned for carriage on two or more systems, or to enable passengers to purchase through tickets. Thirdly, "the coordination of transport" is a term used by some to refer to the decisions to be taken with a view to determining which branches of transport require to be developed; this subject is related to the more general one of the balance of investments. Finally it covers the regulation of competition between different transport undertakings, more especially between those engaged in different branches of transport. <sup>1/</sup>

Particular attention is drawn to the third aspect, which in the present stage of development of the Central American countries may be the most important. This aspect was referred to also in other reports of international agencies. In a document recently submitted to the Consultative Assembly of the Council of Europe, it is stated that:

The term may include the fixing of that portion of its total investments which a country devotes to transport, (adding that from this angle) the coordination of transport on the European level is hence only one particular aspect of the general problem of the coordination of capital investment... (It is then pointed out that) transportation provides a noteworthy example of duplication and over-investment.

An I.L.O. report states that:

Another aspect of this conception of coordination of transport is the problem of ensuring the development of transport on the lines that would be most suitable for the country concerned. -- Should capital be invested in building new railways or should it be devoted to roads? On what basis should investments be divided between the development of rail, road, inland waterways or air transport? It is natural that many countries should be facing this question today. In regions where there is no likelihood that any great weight of goods will have to be moved, air transport is now, at least

<sup>1/</sup> Coordination of Transport. I.L.O. Inland Transport Committee Report II. 1951.

for a time, obviating the need for the building of extensive railways.<sup>1/</sup>

The report goes on further to give examples of recent developments, in coordination, and finally stresses the fact that it is impossible to lay down any general principles on the subject, since it will be greatly dependent on local conditions such as topography, density of population, economic resources, etc.

(In each case the problem can only be studied by) experts who have had experience in the transport problems involved, working in the light of the relative costs of construction and operation of the possible forms of transport. All that need be pointed out here is that if limited resources are to be put to the best use, decisions have to be taken on the basis of a careful weighing of the relevant factors, and must not be left to chance.

The slow and painful experience of some European countries need not be the rule in Central America. When they came to be faced with the problem of coordinations transport services and regulations, the European countries had already completed in large part their basic networks. Except in aviation, the major investments were already made. This is not the case in Central America, where, as this Report shows, transportation is yet to be developed. This situation has the advantage of permitting an integral planning to be carried out from the start, so that investment policy in different national transport sectors and in inter-Central American transport may harmonize with the policy followed regarding services. If national and regional transportation investment plans - comprising all aspects of transportation - are well conceived, it will be easier later to coordinate and regulate the services, and to avoid the problems arising from excessive competition and the consequent waste of resources to which faulty or incomplete planning, or absence of planning, lead to. It is therefore appropriate

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<sup>1/</sup> Ibid.

appropriate today that special attention should be given in each Central American country to the preparation of technical staff able to view the transportation problem as a whole. Such persons should preferably be utilized in a central technical economic unit linked to the departments engaged in general programming of economic development and participating in the regional cooperation tasks with the rest of the countries in the area.

This latter aspect is particularly important, as already seen in the discussion of sectors in which joint Central American action would be effective in order to solve regional transportation problems, derive maximum benefit from investments and render the services more efficient. In fact a national transport policy in Central America cannot be conceived without including in it an international aspect and, especially, an inter-Central American aspect, that may become increasingly harmonious.

## II. A First Step: Technical and Administration Centralization.

The above would appear to demonstrate clearly how important and complicated are transportation problems, and in particular the problem of planning and coordination, and how necessary and useful it is for governments to be in a position to face these problems without delay. Their solution may differ from country to country, and while their magnitude makes it impossible in such a brief review to give anything but a broad outline, yet it would appear possible and desirable to sketch a suggested first step which is necessary to approach the problem.

The first step for governments to take in the solution  
/of this problem

of this problem will be to decide what Governmental machinery is necessary. The International Bank for Reconstruction and Development has suggested for Guatemala the creation of a Public Utilities Commission

"With powers and duties generally similar to the Interstate Commerce Commission in the United States, but with a broader -- scope of activity. It should be authorized by law to approve or reject in the public interest, all proposals or applications for the establishment of new services and for the termination of existing ones. It should review and regulate all rates and charges for services rendered to the public utility companies or private companies performing similar services and it should also review and regulate services rendered by those enterprises. The scope of the Commission's jurisdiction should include: all carriers (rail, road, water, air, and pipeline) operating wholly or principally within the boundaries of the Republic; all port operations such as wharfage, loading, discharging, lighterage, towage, drayage, storage, and related services; and all telecommunications facilities serving the public. Other utilities, such as electric power, gas, water supply, and similar services, could be added as found desirable.<sup>1/</sup>"

It should be noted, however, that such machinery refers to only one aspect of coordination, namely, the regulation of competition between different transport undertakings. The Mission is of the opinion that something more is required in order to formulate the overall policy on transportation investment programs, including the relative priorities in the various fields of transport and the dovetailing and coordinating of different sector programs and policies. This would require the setting up of a centralized government authority with broad responsibility and powers regarding all transportation policy matters.<sup>2/</sup>

Whether such functions should be discharged by a special Commission or directly by one of the executive branches of the government is a question that would need to be decided in the light of the general organization of governmental functions in each country. But to avoid excessive cost and, particularly, to give the agency adequate authority within the government, the Mission suggests that it would be

<sup>1/</sup> The Economic Development of Guatemala, op. cit., pp. 142 and 143.

<sup>2/</sup> Actual engineering and construction of roads, airports, ports, river improvements, railroad track, etc., need not, of course, be a function of such an agency, but of existing public works departments or minis-

preferable to place such an agency directly under of one of the existing ministries rather than to assign its functions to a semi-autonomous commission. It might be desirable at a later stage to convert the agency into a separate ministry with full cabinet rank. The advisability of adopting a uniform method in each country should not, of course, be overlooked, in view of the common interest in regional integration.

In various parts of this report recommendations are made regarding the desirability of concentrating the planning, policy and administrative or operational aspects of each particular means of transport under an appropriate governmental department. What the present proposal amounts to is to bring together under one single authority at a high government level all these various sector departments, in order to ensure that each government may have at all times an overall and continuous view of transportation development, of competitive problems, of rate regulation, concessions, operations, etc.

Finally, the Mission considers that one of the first tasks that should be undertaken by the general transport authority -if this recommendation is accepted by governments-, would be an overall survey of national transportation requirements and availabilities, and for this purpose it is hoped that the present survey would provide a useful basis.

#### RECOMMENDATION CXXIII

In order to secure a unified national transportation policy and to promote balanced programs of investment in transport facilities and services, the Mission recommends the following action for the attention of governments:

(1) Governments should centralize under a single executive authority all matter regarding national transportation policy and investment programs, as well as the regulation of competition, rate fixing, and other functions requiring coordi-

/nation;

nation; it being understood that engineering and construction operations may continue under their present specialized departments;

(2) Arrangements should be made by governments for the provision of qualified technical experts - particularly as regards formulation of rates and tariffs, to assist in the building of such an authority and to train local officials.

(3) In order to promote harmonious working conditions between the government, carriers, and users of transport, a Transportation Advisory Committee should be set up composed of representatives of all forms of carriers and users of transport.

(4) Finally, in studying national plans, due attention should be given to the relevant regional interests.