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ECONOMIC COMMISSION FOR LATIN AMERICA
Office for the Caribbean

PROPOSAL FOR A

CARIBBEAN REGION TRANSPORT STUDY

CARIBBEAN REGION TRANSPORT STUDY

Introduction - The Need

During the first nine months of his work, the Caribbean Regional Adviser in Ports and Harbours, has encountered the development planning for various different seaports. In some instances he has reviewed development plans in detail, for example Bridgetown, Barbados, but in other cases his observations have been more general. In no instance has it come to his notice, that port development planning was based upon valid projections of the future amounts of cargo to be put through the port. Intelligent and useful port planning, whether of seaports or airports, requires valid estimates of the quantities of various kinds of things, whether these things are liquid bulk cargo, dry bulk cargo, containerized or break-bulk general cargo, or of people. Without valid projections of the future amounts of cargo and passengers, development planning proceeds aimlessly with a very great probability that planned facilities will miss the mark by a wide margin, being developed for too much, or too little traffic or for the wrong forms of cargo. The need for better estimates of the magnitude and the character of future traffic through seaports and airports is urgent, in the interest of achieving economical use of available development funds in each country of the Caribbean region.

Estimates of the future volumes of traffic should be made by taking into account the agricultural, mining, manufacturing and other activities within each country, and deducing from these activities the amounts of things that will be produced and consumed within the separate areas served by each seaport and each airport. The amounts of things and people needing to move from point to point in order to satisfy the imbalance between quantities produced and consumed determines the volume of traffic needing to pass through each port. Within the island-complex constituting the Caribbean region, it is obvious that the points of origin and destination for the movement of things and of people seldom lie within a single country, or within a single island. Therefore any assessment of the future amounts of traffic to pass through a particular seaport or airport, and over any segment of a highway serving the ports, must be based not only upon the activities within the hinterland of the respective ports, but also on the concurrent activities of the various

commercial trading partners, world-wide, and especially those trading partners within the Caribbean region.

Thus, the need is for valid estimates of the future volumes of traffic through seaports and airports that can only be made by a consideration of each country's activities in relation to the future activities of other countries in the region and the rest of the world.

The need for a regional transport study may be summarized in the observation that without such a study the development of seaports, airports, highways and shipping lines will not accurately anticipate the future requirements, thus resulting in over-building, under-building and wrong-building of the various facilities with the attendant economic waste that such mistakes entail.

Scope of Study

The Caribbean region may be considered to comprise the archipelago of widely distributed islands that are situated off the eastern shores of Northern South America, Central America, Mexico and South-eastern U.S.A. The Caribbean region comprises at least the islands lying between the Northern coast of South America and the Southern coast of the Canadian Maritime provinces, if not also the coastal belts of the mainland areas touching the Caribbean Sea, the Gulf of Mexico, and parts of the Atlantic Ocean. Thus the region includes approximately 62 separately inhabited islands, involving 29 different Governments; and in addition, if the contiguous mainland areas are included there would be 10 additional Governments involved. The names of the separate countries and their respective ports, within the foregoing delineation of the region, are presented in table (1).

The geographic scope of a regional transport study, having as its objective the production of the best available estimates of future traffic through the seaports and airports of the Caribbean region, should include all of the islands within the region as well as the hinterland areas of all the mainland seaports situated on the shores of the Caribbean Sea, the Gulf of Mexico, and the Atlantic Ocean to the extent of Guyana and Surinam southward and the State of Florida, U.S.A. northward. The area is shown on Figure (1).

Functionally, the scope a Caribbean Region Transport Study should encompass all modes of transport; sea, air, rail and road, with due consideration for the different classes or forms by which cargo may be transported, such as the dry and liquid forms of bulk cargo, containerized cargo, and passengers within each mode of transport. Further, the scope of the study should encompass the economic assessment of each component part, and of the composite whole, of the Caribbean region, giving primary consideration to the physical factors involved, such as the distances between points of origin and destination, the land areas of the respective port hinterlands, the natural resources and the limitations imposed by climate, as well as due attention to the political and social factors.

Study Procedure

The study consists of three main areas of effort. The first is a study of the economy of the Caribbean Region taken island by island and for each sector of the hinterland for the mainland ports as well, determining for each one the present and probable future levels of production and consumption of all kinds of materials. The second is a technical analysis of the existing and probable future movements of all kinds of materials and of people within each island or port-served sector of hinterland within the Region and between the Region and the rest of the world. The third is a study of transportation capacities and requirements emerging from the first and second areas of effort.

The economic analysis is performed by professionals who are specially skilled in the fields of agricultural, industrial and transportation economics. The agricultural economists and the industrial economists consider the economy of each island or hinterland sector and make the best judgement possible concerning the probable future amounts of production and consumption within each island or mainland sector. The transportation economists translate the projections of the agricultural and industrial economists into weights and volumes of materials to be produced and consumed within each area and sub-area, thereby ascertaining the nett amounts of materials (and people) needing to move between each of the identified areas. The final product of the economic analysis may be presented as a diagram that may be called a "movement desire chart",

showing the tons of cargo (and numbers of persons) that need to move from and to each sub-area of the region, to and from each of the other sub-areas of the region, as well as to and from the rest of the world.

The technical analysis is performed by professionals who are specially skilled in the various modes of transportation, engineering and electronic modelling. These experts produce a mathematical model that is used in performing an inter-modal transportation analysis. It consists of a network of points representing the centroids of the respective sub-areas of production and consumption, connected by lines representing the respective possible transport services between those points. For purposes of making the inter-modal transport analysis, the network points are the points of origin and destination of cargo (and people) or they are intermediate points where cargo (and people) are transferred from one mode of transport to another. Using the desired amounts of cargo (and people) movements produced in the economic analysis, the technical analysis produces results that may be presented as a diagram showing the requirements for moving cargo (and people) between all pairs of points by each mode of transport.

The engineering analysis is performed by professionals who are specially skilled in the design, operation and maintenance of the facilities involved in the respective modes of transport, separately for sea, air, rail and road. The existing capability for transporting cargo (and people) over each link of the regional transport network, and through each transfer point is determined. The existing capabilities are compared with the future requirements and thus the deficit in transport capacity is ascertained for each link and for each transfer point of the Region. Preliminary designs and estimates of cost are made for providing the increased transport capacity indicated by the aforementioned comparison. A plan is evolved for the development of facilities according to a schedule that will provide the increased capacity when required by the increasing amounts of traffic.

As described above, in the barest essentials, it might appear that the three main efforts of the transportation study would be performed in sequence, but this is not practically possible because there is an interplay between parts. This will be appreciated when it is considered

that in some cases the amount of cargo to be moved depends on the cost of movement, thus the economist, in making the projections of future amounts of production, must ascertain what will be the future transportation cost, and his final judgement with respect to the future amount of traffic will be influenced thereby. Similarly, the determination of the amounts of cargo that may move by alternative modes is profoundly affected by the relative costs of the various expansions of facilities' capacity, and thus the modelers look to the engineers for unit costs which the modelers use in the mathematical model. Variations of the unit costs, reflecting facilities development investments, affect the determination of the quantities of cargo requiring movement by the respective modes. Thus, the work of the transportation study group is an integrated effort.

Study Organization

The study should be performed by a closely-knit team of professional economists and engineers, all specially qualified in the field of transportation.

The team should be composed of a Project Manager, Chief Transport Economist and Chief Transport Engineer, supported by respective specialist assistants and by adequate office and field staff. A possible organization and a very rough idea of the respective man-months of effort may be required is listed below:

Table of Organization
for Regional Transport Study

	Man-Months		
Project Manager	12		
Chief Economist	10		
Agricultural Economist	6		
Industrial Economist	6		
Transport Economist	6		
Chief Engineer	10		
Shipping Consultant	6		
Seaport Consultant	6		
Airport Consultant	6		
Chief Statistician	10		
Statistics Analyst	6		
Mathematical Modelist	6		
Computer Programmer	6		
Data Collector	6		
Accountant	12		
Draughtsman	5	=	119 mm
Stenographer	24		
Typists	36		
Clerks	24		

Sponsorship - The Cost

Every country within the Caribbean region has a vested interest in the proposed study, of course. However, it is not practical for all of the interested countries to jointly sponsor the study. It is reasonable to consider one or another of the several different organizations having an overall involvement in the region as a prospective sponsor. Such organizations include:

UN Development Programme (UNDP)
UN Conference on Trade and Development (UNCTAD)
UN Economic Commission for Latin America (ECLA)

International Bank for Reconstruction and Development (WORLD BANK)

Inter-American Development Bank (IDB)

Caribbean Development Bank (CDB)

Also, there are organizations having an interest in the development of sectors less than the whole region, who nevertheless, may be considered as potential sponsors of the study. Such organizations include:

British Development Division

Caribbean Free Trade Association

Central American Bank for Economic Integration

Canadian International Development Agency

US International Development Agency

There is particular merit in having the proposed study sponsored, i.e. financed, by an organization, which has demonstrated broad overall interest in the whole region, and thus it would appear that any one of these: UNDP, UNCTAD, ECLA, IDB or the World Bank, would be most suitable. However, it would be entirely acceptable to have the proposed study sponsored by any other agency provided safeguards were employed to ensure that the study would be performed objectively in the interests of the whole region.

Cost of the Study

Based upon the concepts of study team composition and employment presented in the preceding section, the cost of the proposed study is estimated as follows:

Top-level expertise	:	68 man-months @ US$5,000	- US$340,000
Second-level expertise	:	45 man-months @ US$4,000	- 180,000
Supporting staff	:	90 man-months @ US$2,000	- 180,000
		Total approximately	US$700,000

The unit monthly costs used in the estimate are believed to be high enough to cover salaries, and travel and all expenses of the logistic support of the study team.

Scheduling the Study

The study should be started as soon as possible and it should be completed within the shortest interval compatible with the achievement of valid results. A degree of urgency should be recognized because important decisions within each country as well as among the sea and air carriers, will be influenced by the conclusions and recommendations produced by the proposed study.

A tentative work plan is presented in Figure 2, showing completion of the study in twelve months time. Considering the lead time required for soliciting a project sponsor, arranging the financing, recruiting the study team, and acquiring an office or offices where the study would be conducted, the study could not commence earlier than mid-year of 1974 nor be completed before mid-year of 1975.

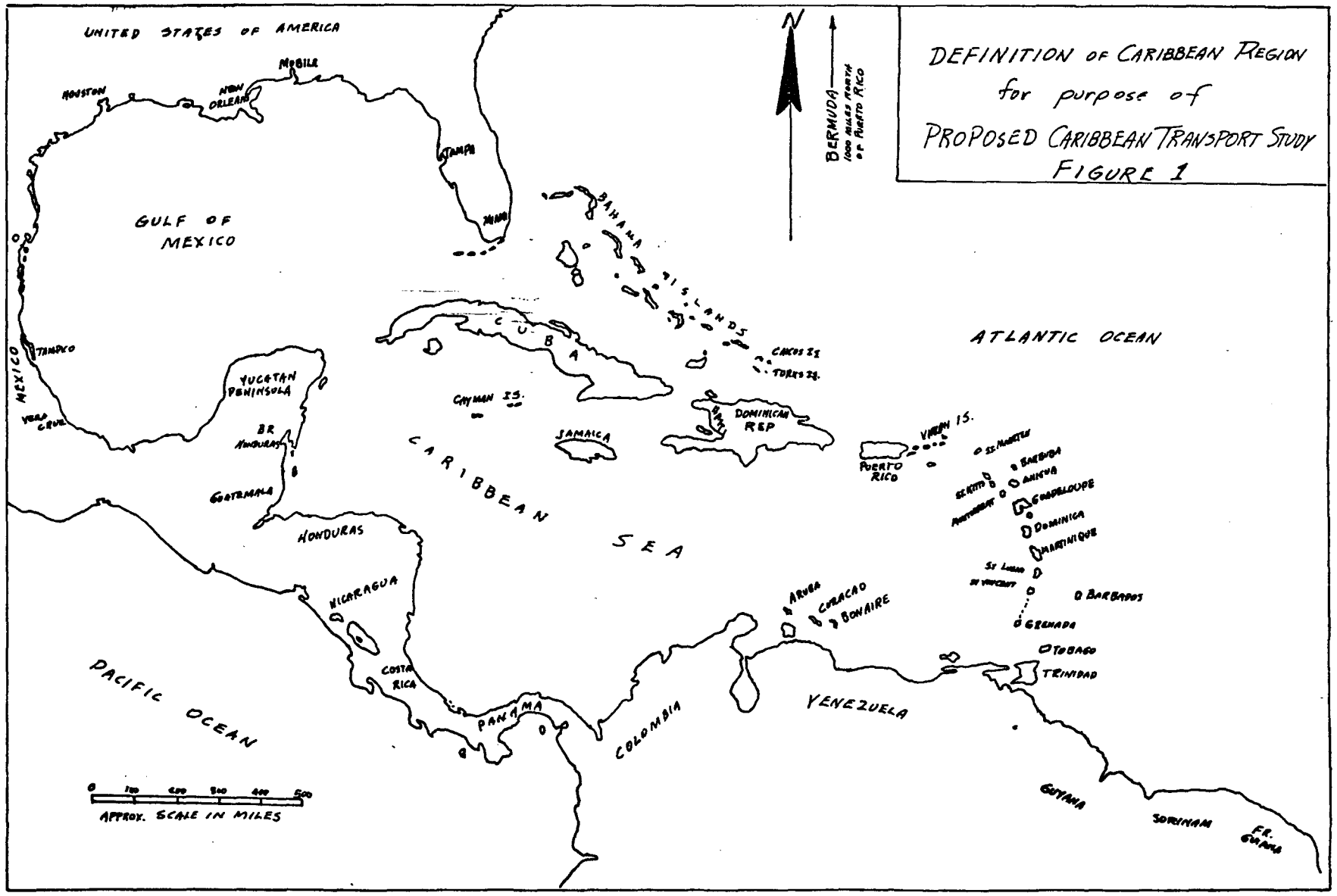
TABLE (1)

SCOPE OF CARIBBEAN BASIN TRANSPORTATION

Countries	Principal Seaports	Principal Airports
Antigua	St. John's	Coolidge Field
Aruba	Oranjestad	Princess Beatrix
Bahamas	Freeport	Freeport International
	Nassau	Nassau International
Barbados	Bridgetown	Seawell
Belize	Belize City	Stanley Field
Bermuda	Hamilton	Kindley Field
	St. George's	
Bonaire	Kralendijk	Flamingo
Br. Virgin Is.	Port Purcell, Tortola	Tortola Airport, Beef Island
Cayman Islands	George Town	Owen Roberts
Colombia	Barranquilla	Soledad
	Buenaventura	Olaya Herrara
	Cartagena	Crespo
	Santa Marta	
Costa Rica	Port Limon	Santamaria (San José)
		Limon Airport
Cuba	Havana	José Martí
	Matanzas	
	Nuevitas	
	Puerto Padre	
	Santiago de Cuba	
	Guantanamo	
Curacao	Willemstad	Dr. Albert Plesman
Dominica	Roseau	Melville Hall
Dom. Republic	Santo Domingo	De las Americas
	Haina	

Countries	Principal Seaports	Principal Airports
French Guiana	Cayenne	Rochambeau
Grenada	St. George's	Pearls
Guadeloupe	Pointe-a-Pitre	La Raizet
Guatemala	Puerto Barrios	La Aurora (Guatemala City)
	Matias de Galvez	
Guyana	Georgetown	Timehri
Haiti	Port-au-Prince	President Duvalier
	Cap Haitien	
Honduras	Puerto Cortes	La Mesa, San Pedro Sula
	Tela	
	La Ceiba	
Jamaica	Kingston	Palisadoes
	Montego Bay	Sangster
Martinique	Fort-de-France	Lamentin
Mexico	Vera Cruz	Las Bajadas
	Tampico	Tampico
Montserrat	Plymouth	Blackbourne
Nicaragua	El Bluff (Bluefields)	Bluefields
	Puerto Cabezas	Puerto Cabezas
	Corinto	Las Mercedes, (Managua)
Panama	Cristobal	Tocumen
	Balboa	Tocumen
Puerto Rico	San Juan	Puerto Rico International
	Mayaguez	Mayaguez International
St. Kitts-Nevis-Anguilla	Basseterre, St. Kitts	Golden Rock (St. Kitts)
St. Lucia	Castries	Vigie
	Vieux Fort	Hewanarra
St. Maarten	Philipsburg	Juliana

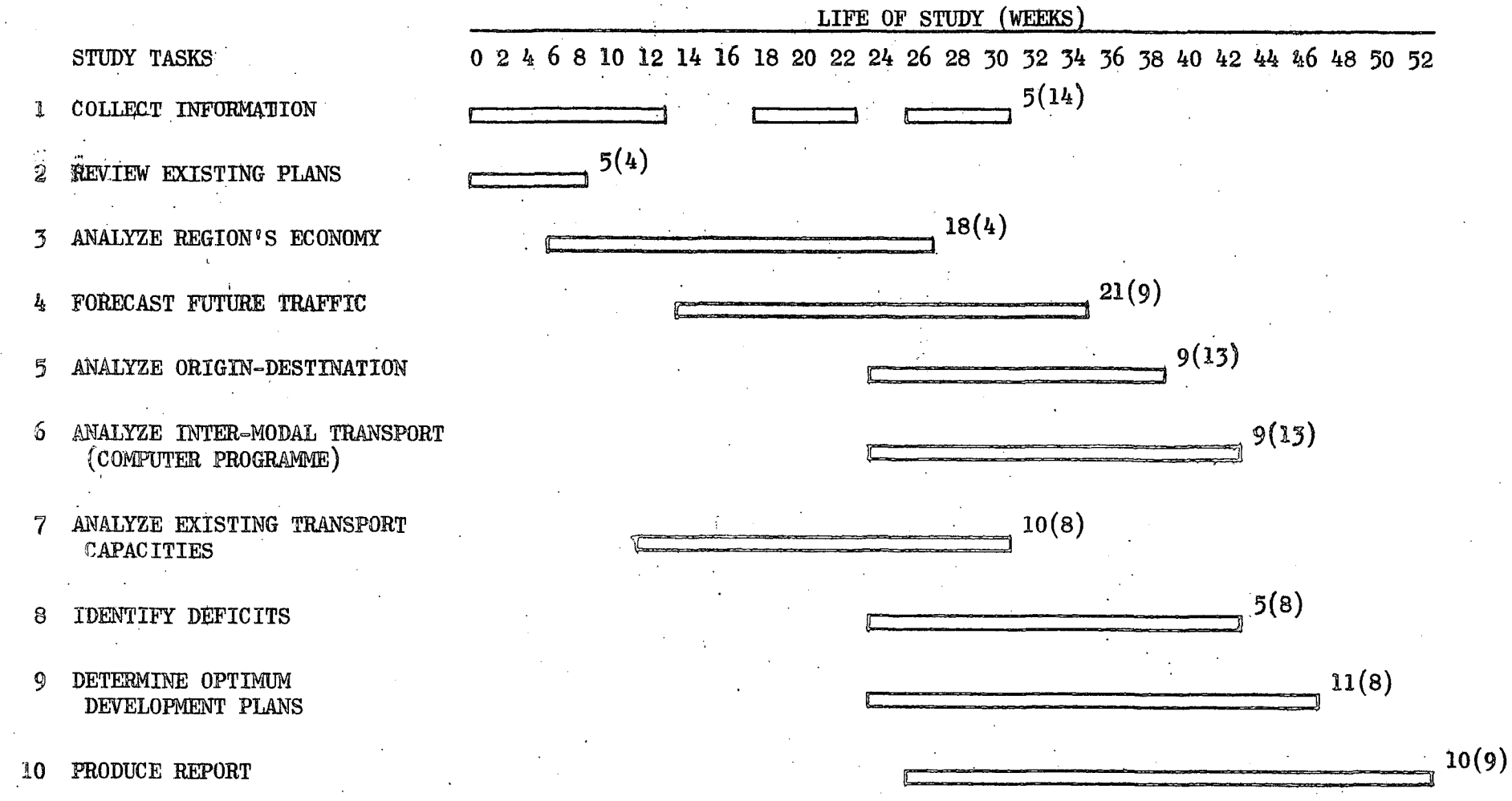
Countries	Principal Seaports	Principal Airports
St. Vincent	Kingstown	Arnos Vale
Surinam	Paramaribo	Zanderij
	Modengo	Modengo
Trinidad & Tobago	Port of Spain	Piarco International
	Port Chaguaramas	
	Point Lisas	
	Pointe-a-Pierre	
Turks & Caicos Is.	Grand Turk Port	Grand Turk
U.S. Gulf Coast	Galveston	Chareston Municipal
	Houston	Houston International
	New Orleans	New Orleans International
	Mobile	Mobile Municipal
	Tampa	Tampa International
	Miami	Miami International
U.S. Virgin Is.	Charlotte Amalie, St. Thomas	Harry S. Truman
	Frederiksted, St. Croix	Alexander Hamilton
Venezuela	La Guaira	Maiquetia
	Maracaibo	
	Puerto Cabello	
	Puerto La Cruz	



DEFINITION OF CARIBBEAN REGION
for purpose of
PROPOSED CARIBBEAN TRANSPORT STUDY
FIGURE 1

FIGURE 2

POSSIBLE WORK PLAN FOR PROPOSED CARIBBEAN TRANSPORT STUDY



ANTICIPATED MAN-MONTHS EFFORT: PROFESSIONAL XX; SUB-PROFESSIONAL (XX).