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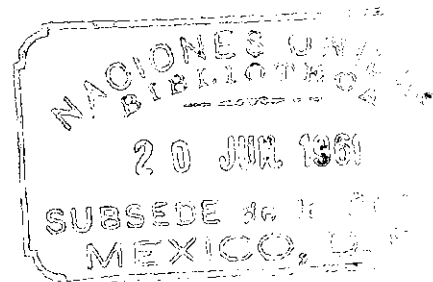
ECONOMIC
AND
SOCIAL COUNCIL



GENERAL
E/CN.12/508
19 March 1959

ENGLISH
ORIGINAL: SPANISH

ECONOMIC COMMISSION FOR LATIN AMERICA
(TRADE COMMITTEE)
Eighth session
Panama City, Panama, May 1959



THE RAILWAY ROLLING STOCK INDUSTRY IN LATIN AMERICA

Note by the Executive Secretary

Note: This document will be submitted first to the Trade Committee at its second session and later discussed by the Commission under item 9 of the agenda of the eighth session.

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Secretariat note on the First Meeting
on Railway Equipment

In response to the recommendations made by the Working Group on the Latin American Regional Market^{1/} and a suggestion made by certain industrial groups in Argentina, Brazil and Chile, it was decided, after consultation with the Governments concerned, to convene a meeting on railway rolling stock. This meeting was held from 2 to 5 March 1959 at Córdoba, Argentina, and was attended by delegations from the industries concerned, railway representatives and governmental observers from the three countries mentioned as well as from Bolivia, Cuba and Mexico.

During the meeting, a programme was outlined for the development of the railway equipment industry in Latin America within the regional market. In addition, it was proposed that an advisory group composed of representatives of the railway equipment industries of the different Latin American countries be set up within the Economic Commission for Latin America for the purpose of ensuring, in collaboration with the State railway companies, that the conclusions and recommendations adopted were carried into effect. It was also decided to broaden the scope of the conclusions so as to include all or the greatest possible number of Latin American countries and to approach international credit organizations when the opportunity arose.

The future plan of action, outlined at the meeting, laid particular stress on the need to ascertain what specific items of railway equipment might be traded among the different countries, on the basis of current production levels, national supply requirements and exportable surpluses.

^{1/} The Working Group on the Latin American Regional Market, at its first session held at Santiago, Chile, from 3 to 11 February 1958, requested the ECLA secretariat to carry out inter alia a series of analyses with respect to industrial projects in the different countries of the region, with a view to determining the possible repercussions of Latin American economic integration on specific branches of industry. The Group met for the second time at Mexico City, from 16 to 27 February 1959.

This meeting is the first of a series which the secretariat intends to hold in 1959 and 1960 in compliance with the relevant recommendations of the Working Group on the Latin American Regional Market. The work programme envisages the possibility of carrying out industrial surveys in close co-operation with the producers and governmental institutions of each country that are directly concerned with railway equipment problems, with a view to holding consultative meetings to consider the measures required to promote complementarity and specialization and facilitate trade within the framework of the regional market.

According to the programme, studies are contemplated on railway equipment, iron and steel, tractors and motor vehicles, machine-tools, ship building, equipment for the petroleum industry, machinery for the pulp and paper industry, newsprint and pulp and petrochemical products.

In order that both the Trade Committee at its second session, and the Commission at its eighth session may be kept abreast of the work carried out in this field up to March 1959, the secretariat has prepared the present document. Part One comprises the report of the First Meeting on Railway Equipment^{2/} and Part Two the working paper on which the discussions at Córdoba were based.^{3/} The secretariat hopes that the States members of the Commission will make any observations that they consider might serve to further the progress of the work.

^{2/} Submitted provisionally as document ST/ECLA/CONF.5/L.3. The text in the following pages has been revised and incorporates all suggestions made by the delegations during the meeting at which the report was adopted.

^{3/} The rolling stock industry in selected Latin American countries. Analysis and suggestions for a regional market (ST/ECLA/CONF.5/L.2). The present version has also been amended so as to include the comments made during discussion.

I

REPORT OF THE FIRST MEETING ON
RAILWAY EQUIPMENT

(Córdoba, Argentina, 2-5 March 1959)

INTRODUCTION

1. This report summarizes the work of the First Meeting on Railway Equipment which, after consultation with the relevant Governments, was convened by the secretariat of the United Nations Economic Commission for Latin America (ECLA) in response to the suggestion of certain industrial groups in Argentina, Brazil, Chile and Mexico.
2. Because of the essentially technical and informal nature of the conference, invitations to attend were extended to representatives of the Latin American enterprises producing railway rolling stock. National credit organizations, foreign trade authorities and railway companies were also invited to send representatives as governmental observers.
3. The meeting was held at Córdoba, Argentina, from 2 to 5 March 1959. Its purpose was to study the possibility of expanding inter-Latin American trade in railway equipment, and to propose ways and means of doing so on the bases of complementarity and specialization.

Part One

FIRST MEETING ON RAILWAY EQUIPMENT

A. Attendance and organization of the workOpening and closing meetings

4. The First Meeting on Railway Equipment was inaugurated in the Palacio de Gobierno, Córdoba, Argentina, on 2 March 1959. At the opening meeting, at which Dr. José Carlos Orfila, Secretary of Trade of the Argentine Republic, took the chair, speeches were made by Dr. Orfila, Dr. Arturo Zanichelli, Governor of the Province of Córdoba, and Mr. Esteban Ivovich, Director of the ECLA Trade Policy Division.
5. At the closing meeting on 5 March 1959, the Rapporteur read out the present report, which was adopted unanimously. Statements were also made by Dr. Arturo Zanichelli, Governor of the Province of Córdoba, Mr. Eugenio Heiremans, chief of the delegation of Chilean industrialists, who spoke on behalf of all the delegations, and Mr. Esteban Ivovich, Director of the ECLA Trade Policy Division.
6. The meeting was attended by representatives of Argentine, Brazilian, Chilean and Mexican industry, and by governmental observers from these countries as well as from Bolivia and Cuba. Annex I of this report contains a complete attendance list.

/Officers and

Officers and sub-committees

7. At the first plenary meeting, held on 3 March 1959, the following officers were elected:

Chairman: Alberto Rodríguez Larreta
Vice-Chairmen: Eduardo García Rossi
Eugenio Heiremans
Fernando J. Subirats Rubio
Rapporteur: Eduardo L. de la Torre

8. Mr. Atilio Buriasco, Mr. Eduardo García Rossi, Mr. Eugenio Heiremans and Mr. Eduardo L. de la Torre acted as chiefs of the industrial delegations of Argentina, Brazil, Chile and Mexico, respectively.

9. In order to hold a preliminary discussion on agenda item 5 (a) and (b) and submit their findings to the plenary meeting, the two following sub-committees were set up:

Sub-Committee I

Chairman: Vicente Echeverría
Secretary: Fernando Aguirre
Agenda item considered: 5 (a)

Sub-Committee II

Chairman: Eduardo García Rossi
Secretary: Oswaldo Palma
Agenda item considered: 5 (b)

10. The governmental observers who were also grouped in a sub-committee, held a meeting on 3 March under the chairmanship of Mr. Patricio Huneeus, Under-Secretary for Transport of Chile, in order to make a preliminary study of agenda item 4.

Secretariat

11. The ECLA secretariat was represented by Mr. Esteban Ivovich, Director of the Trade Policy Division, Mr. Pierre D. Manheimer of the Industrial Development Division, who acted as secretary of the Meeting, and Mr. Ramón Suárez, also of the Industrial Development Division.

/B. Agenda

B. Agenda

12. Various amendments were proposed to the draft agenda (ST/ECLA/CONF.5/L.1) and incorporated in the final version adopted which was as follows:

1. Opening addresses
2. Election of officers
3. General discussion and analysis of the secretariat report.
Transmittal of the information and conclusions in the report to all Latin American countries. Latin America's possibilities of covering its own railway equipment requirements.
4. Possibility of reciprocal agreements among two or more countries for the supply of railway equipment.
5. Possibility of drawing up a co-ordinated programme for railway modernization in Latin America and for the future development of the railway equipment industry.
 - (a) Consideration of problems relating to the unification of technical standards, regional complementarity and preferential and protective treatment for Latin American products. Conclusions.
 - (b) Consideration of problems relating to domestic and international financing and regulation of the tariff, foreign trade and exchange systems. Conclusions.
6. Further information on the immediate requirements of railways, on tariff and exchange systems and on special export facilities for railway equipment in general.
7. Establishment by ECLA of an advisory committee on the Latin American railway equipment industry.
8. Closing of the Meeting.

C. Account of the proceedings

General statements

13. The secretariat submitted a report on The railway rolling stock industry in selected Latin American countries: Analysis and suggestions

(ST/ECLA/CONF.5/L.2), for consideration. This report, which deals mainly with Argentina, Brazil and Chile,^{1/} examines railway requirements

^{1/} Information on Colombia and Mexico is given in the annexes to this report.

and reviews the rolling stock situation from the aspects of supply and demand.

14. This document points out that, while in the past rolling stock purchased by Latin American countries came entirely from overseas sources and was part of the traditional exchange of raw materials for manufactured and capital goods, the efforts made by these countries in the last few decades to develop their own industries were most successful as regards this item. As a result, Latin America is already able to supply an appreciable proportion of its rolling stock requirements.

15. Argentina, Brazil, Chile and Mexico, taken as a group, can cover their requirements of goods wagons, passenger coaches, some spare parts - axles and tyres, wheels, springs, welded and soldered bogies, couplings, welded and forged parts, etc. - and braking and signalling equipment over the short term. Brazil, Chile and Mexico could also have surpluses for export to other Latin American countries.

16. In Argentina, the industry manufacturing traction equipment, such as big diesel engines, rail cars and locomotives, is expanding with the aim of satisfying domestic demand in this branch in five or ten years' time.

17. Accordingly, and bearing in mind the scope of the projected regional market, it would be advisable to further industrial co-ordination among the above-mentioned countries in order to obtain the increased advantages that are inherent in complementarity.

18. In order to give an initial impetus to trade in this branch, credits should be opened in favour of industrialists, thereby enabling them to compete with the more highly industrialized countries which can grant deferred payment facilities over a term of years.

19. There is an urgent need to satisfy the requirements mentioned since, generally speaking, the equipment used by the South American railway systems is antiquated and their finances often show debit balances. Owing to lack of funds, rolling stock cannot be replaced, and the continued use of old equipment raises maintenance costs and worsens the financial situation.

20. For the projected regional market to achieve its objectives in regard to railway equipment, certain measures are called for such as the

/preparation of

preparation of a co-ordinated programme to modernize Latin American railways as a whole, or in certain areas at least, and to develop the railway equipment industry, as a prerequisite to standardization and subsequent mass production.

21. The Meeting congratulated the secretariat on its work and adopted its report (ST/ECLA/CONF.5/L.2) with the reservation that each delegation could transmit to the secretariat by 15 April 1959 any amendments that they wished to make to the statistics on production capacity and requirements or to the text for incorporation in the final version. The Brazilian delegation added in this connexion that diesel and electric rail cars are currently being manufactured in Brazil and that it is hoped to produce complete diesel locomotives as well within the next five years.

Complementarity and trade

22. The delegations agreed that complementarity in the railway equipment industry could play an important part in promoting its expansion and productivity and could lead to a substantial saving in the respective balances of payments as well as to better and bigger supplies.

23. One delegation pointed out that complementarity offered particularly encouraging prospects for specialization among the countries of the area, from the point of view of the importation of items that were major components or parts of units the main structure of which was manufactured by the importer country.

24. It was likewise pointed out that complementarity should apply to the iron and steel industry as well as to the railway rolling stock industry, since it supplied the raw materials required by the latter.

25. It was considered that the efforts made by the railway equipment industries would be greatly encouraged and the possibilities of agreeing on an undeniably beneficial exchange of goods among the Latin American countries would be substantially enhanced if the official and private enterprises which purchased such equipment in the area were to favour Latin American manufactures when inviting tenders.

26. In that connexion, it was felt that the practice should be established of giving Latin American products virtually preferential treatment, provided that their technical standards and prices were equivalent to

/those of

those of foreign manufactures.

Financing

27. The problem of financing trade in railway equipment was cited as being among those which need to be remedied or solved without delay, since it constituted a serious obstacle to the participation of local industries in supplying Latin America.

28. The Brazilian delegation stated that Brazil was studying ways and means of instituting a method of financing exports of capital goods, including railway equipment, for periods of approximately five years, at the rates of interest prevailing on the international capital market for the different types of operation.

29. Such a system would oblige the countries importing the relevant equipment to make a down payment equal to a fifth of the value of the purchase. The suppliers would grant a direct credit for another fifth, and the remaining three-fifths would be covered by the official credit mentioned.

30. The Chilean delegation stated that Chile was studying a project to remedy the current lack of credits for financing exports.

31. With regard to the same point, the Mexican delegation informed the Meeting that Mexico's railway equipment industry was in a position to grant credits on a basis similar to that underlying the method described by the Brazilian delegation. The importer would make a down payment equivalent to 30 or 40 per cent of the value of the operation, and would amortize the remaining sum in periods of up to about four years at the usual international rates of interest in such cases.

32. Various delegations stressed the need to insist, especially in the case of international credit agencies, that credits granted, with or without the support of the respective Governments, to enterprises using railway equipment, could be used in whole or in part for purchases from the country in which the loan originated or from others, provided that the conditions of payment, delivery, price and quality, etc. were similar.

33. Apart from the financing of trade properly speaking, attention was also drawn to the effect on the negotiation of certain exports of the

/lack of

lack of adequate supplies of local currency available to railway companies interested in purchasing. In some cases, that situation was related to the policy adopted by certain countries in fixing their transport rates, when factors other than that of the real cost of such services intervened in determining the scale of rates.

Trade agreements

34. The Meeting was particularly interested in the possibility of agreements being concluded between two or more countries for trade in railway equipment and the feasibility of co-ordinating such agreements with those which would be instrumental in the gradual formation of the projected Latin American common market.

35. In that respect, the secretariat informed the Meeting that the Working Group on the Latin American Regional Market had agreed, at its second session (Mexico, 16-27 February 1959), to recommend to the Governments concerned that during its initial phase of existence the regional market should have the juridical form of a free-trade zone, since such a formula would be compatible with the conclusion of special agreements on economic complementarity between the participating countries.

36. With a view to enabling the ECLA secretariat to proceed in due time with the preparation of possible agreements on intra-regional trade in railway equipment - without prejudice to the incorporation of such agreements in other trade treaties of wider scope -, the Meeting recommended that the secretariat should prepare a report on the treatment accorded to such equipment in Latin America, article by article, in so far as customs duties, equivalent taxes, exchange rates and restrictions of any kind were concerned.

37. In order to facilitate the preparation of such a report, and also to provide provisional criteria for possible trade between the countries that manufacture railway equipment, the delegations submitted the schedules of articles contained in annexes II, III, IV and V to the present report.

38. When supplying its provisional schedule (annex V), the Mexican delegation explained that the items enumerated did not necessarily include

/all those

all those which could be supplied by the enterprise specializing in rolling stock, nor did the schedule indicate the wide range of products which might be obtained from other branches of the industry.

39. The delegations agreed to draw the attention of the authorities responsible for the preparation and signing of agreements on trade and complementarity once more to the importance of ensuring that the forces of production and trade concerned took an active part in the conclusion of all such agreements.

Future activities

40. It was felt that further studies on complementarity and subsequent trade might be undertaken by a group of representatives of the railway equipment industry in co-operation with the ECLA secretariat. The group could hold periodic meetings in accordance with its own rules of procedure or with more general rules which might be drawn up to ensure more effective collaboration among the different branches of the industry in Latin America with a view to the gradual establishment of the projected common market. For its part, the secretariat should try to promote collaboration between the group and representatives of the user enterprises.

41. As dictated by the progress registered and the experience acquired, the group might become the starting point for closer contact and collaboration between the relevant enterprises in the different countries with a view to increasing their contribution to the common objectives of complementarity, productivity and the growth of trade. Furthermore, the group would be an appropriate forum for representing the interests of the Latin American railway equipment industry vis-à-vis international credit organizations.

Part Two

CONCLUSIONS AND RECOMMENDATIONS ADOPTED

42. As a result of its discussions, the Meeting agreed to adopt the following conclusions and recommendations and to submit them for the consideration of the ECLA secretariat, at the same time recommending that they should be brought to the notice of the States members of the

/Commission and

Commission and be taken into account in future studies on the gradual formation of a Latin American regional market and the intensification of inter-Latin American trade.

Advisory Group

To set up within the Economic Commission for Latin America an advisory group to be composed of one representative of the railway equipment industry from each Latin American country. The group would have the following duties apart from any other functions that it might agree to undertake:

- (a) To compile and keep up-to-date quantitative data on the goods produced by each country and their standards of manufacture, as well as domestic market requirements and exportable surpluses;
- (b) To promote the adoption of measures to modernize the railways and standardize rolling stock and permanent way equipment, thereby facilitating their manufacture in the area;
- (c) To outline a programme for the development and complementarity of the railway equipment industry;
- (d) To ensure that possible agreements on trade in railway equipment should be duly extended, on the basis of reciprocal concessions, to Latin American countries not represented at the Meeting;
- (e) To keep in touch with international credit agencies and, acting as a group, undertake negotiations with them on the basis of joint programmes for complementary production and trade in the area;
- (f) To establish effective systems for the provision of guarantees on behalf of national or international financial organizations to enable them to purchase railway equipment from producers in the area for hire, for a fixed number of years, with or without a sales commitment, to Latin American user enterprises; and also to provide the same guarantee systems in the event that producer enterprises hire out the equipment themselves; and,
- (g) To ensure, in collaboration with the ECLA secretariat, that the conclusions and recommendations of the Meeting are carried out and to extend their scope to include all, or the greatest possible number, of the Latin American countries.

Credits

To promote the establishment of credit mechanisms to finance railway equipment production and trade by the following means:

- (a) Internal credits for producers;
- (b) Official guarantees given by the importer country in respect of the credits granted to users by the supplier country;

/(c) In

- (c) In the case of agreements for payment on account, the provision of adequate levels of reciprocal credit to facilitate trade in railway equipment;
- (d) External credit from institutions such as the projected Banco Interamericano, and so far as possible, the establishment in this bank of a special permanent line of credit for railway equipment; and
- (e) Other types of external credit to be granted by international financial agencies for financing or refinancing purchases.

To ensure that foreign or international credit agencies allow the enterprises which they are financing to obtain credit wherever it is most suitable for them, including the country in which they are situated.

Standards

To point out to the enterprises concerned, and to users in particular, the desirability of continuing to adjust their standards to those of the American Association of Railroads (AAR) and the American Society for Testing Materials (ASTM).

Tenders

To specify in the terms of the tenders that the receipt of equipment should take place in accordance with AAR and ASTM standards.

To ensure that the tenders should so far as possible be brought into line with the proportion of supplies that can be covered by the Latin American railway equipment industry.

To see that manufacturers in the area are given due and ample notice of bids for tenders; and

To give preference to Latin American industry in the allocation of orders provided that technical standards and prices are equal.

National treatment

To ensure that, when manufactured goods are accorded specific benefits (fiscal, exchange or others) under the provisions in force, and such provisions lay down as a condition that the products in question must contain a certain proportion of domestic materials, the respective national authorities include in this concept products originating in other Latin American countries for the purpose of complying with the aforesaid condition. Furthermore, the parity accorded by the respective countries should be on a reciprocal basis.

Transmission of information to the ECLA secretariat

To transmit to the ECLA secretariat, if possible before 15 April 1959, through the heads of delegations present at the Meeting, the following information:

/(a) The

- (a) The different transport enterprises' immediate requirements of railway equipment, taking into account: (i) equipment replacement; and (ii) requirements arising from the expansion of services;
- (b) Ways and means of making the necessary purchases to cover the requirements mentioned in (a), and the length of time that would be involved;
- (c) Customs duties and equivalent taxes, item by item, and exchange and administrative regulations in force with respect to imports of railway equipment.

To propose to the ECLA secretariat that the final version of the report (ST/ECLA/CONF.5/L.2) should include the above-mentioned information and, so far as possible, information obtained from the Latin American countries not represented at the Meeting.

Iron and steel industry

To suggest to the ECLA secretariat the advisability of making plans for and convening, at the earliest opportunity, a meeting of representatives of the Latin American iron and steel industry in order to consider its possible complementarity which is closely related to the complementarity that it is hoped to achieve in respect of railway equipment.

Annex I

LIST OF REPRESENTATIVES AND OBSERVERS ATTENDING THE
FIRST MEETING ON RAILWAY EQUIPMENT

ARGENTINA

Representatives:

Atilio Buriasco	B. Buriasco e Hijos and Chamber of Railway, Tramway and Allied Industries. Head of Delegation
Oscar Rogelio Acuña	Forja Argentina
Alejandro Bossi	Cometarza
Fernando Buriasco	B. Buriasco e Hijos
Francisco A. Giacobbe	Compañía General Eléctrica Argentina
José I. Gigena Centeno	Establecimientos Industriales Eipyk
Helvecio Invernizzi	Compañía Argentina de Talleres Industriales, Transportes y Anexos and Chamber of Railway, Tramway and Allied Industries
Fausto J. Menica	Cometarsa
Humberto Montalenti	Grandes Motores Diesel (FIAT)
Néstor J. Núñez Cámara	Fábrica Militar de Rio Tercero
Carmelo A. Pizzorno	B. Buriasco e Hijos
Alberto Rodriguez Larreta	F.A.V.Y.S.
Roque Romeo Reyna	Forja Argentina
Egidio Saraceno	Cometarsa and Chamber of Railway, Tramway and Allied Industries
Reinaldo Scotta	Forja Argentina
Nicolás O. Spagnolo	Famatex and Chamber of Railway, Tramway and Allied Industries
Harón Weler	Matefer (FIAT) and Chamber of Railway, Tramway and Allied Industries
Julio G. Whelan	Talleres Metalúrgicos Whelan

Observers

Dr. José C. Orfila	-- Secretary of Trade
Dr. Rodolfo Raúl España	-- Under-Secretary of Trade
Paulino D. A. Musacchio	-- Ministry of Foreign and Religious Affairs
Italo M. Brero	-- Trade Department

/Gerardo Palacios Hardy

- Gerardo Palacios Hardy - Trade Department
- Luis J. Fernández Alonso - National Director of Motor Transport in charge of the Railways Directorate, Transport Department
- Rodolfo Carlos Isely - Director and Technical Comptroller of the Railways Department, Transport Department
- Mario G. Besio - Chief of the Programming Division and Workshops of the Department of Traction Equipment and Workshops, Ferrocarriles del Estado Argentino
- Eladio García - Industry Department
- Ernesto Isidro Olmedo Berrotarán - Industry Department
- Rodolfo Angel Bronenberg - Finance Department
- Evaristo H. Evangelista - Banco Central de la República Argentina
- Héctor Ghirlanda - Banco Industrial

BOLIVIA

Observer

- René Zabalaga Canelas - Railways Department

BRAZIL

Representatives:

- Eduardo García Rossi - Confederação Nacional da Indústria, Head of Delegation
- Jacy Barbosa Jr. - Material Ferroviário, S.A. (Mafersa)
- Haroldo de Carvalho - Material Ferroviário, S.A. (Mafersa)
- João Baptista da Costa - Confederação Nacional da Indústria
- Victorio Walter Reis Ferráz - Companhia Sorocabana de Material Ferroviário e Sindicato de Material Ferroviário
- Levindo Ferreira Lopes - Usina Metalúrgica Joinville
- Víctor Resse de Gouvea - Companhia Brasileira de Material Ferroviário
- Jayme Buarque de Hollanda - Companhia Industrial Santa Matilde
- Marcio V. Lemos Monzani - Companhia Industrial Santa Matilde
- Osvan Nogueira - Sociedade Técnica de Materiais, S.A. (Sotema)
- Oswaldo Palma - Freios e Sinais do Brasil (Fresinbra)
- Aníbal Villela - Confederação Nacional de la Industria
- Cid de Carvalho Whitaker - Fábrica Nacional de Vagoes

/Observers

Observers

- Armindo Branco Mendes Cadexa - Ministry of Foreign Affairs
 Guilherme Augusto Pegurier - Department of Currency and Credit
 Jacinto Xavier Martins - Banco Nacional do Desenvolvimento Econômico
 Joaquin Francisco Capistrano Do Amaral - Railways Department
 Geraldo Albergaria - Rede Ferroviaria Federal

CUBAObserver

- Fernando J. Subirats Rubio - Corporación Nacional de Transportes

CHILERepresentatives:

- Eugenio Heiremans - S.A. Heiremans de Construcciones Metálicas (Socometal), Head of Delegation
 Fernando Aguirre - Instituto Chileno del Acero (Icha)
 Max Burr - Compañía Electrometalúrgica S.A.
 Juan Cárcamo - Maestranza Madrid S.A.
 Ricardo Cortés - Fábricas y Maestranzas del Ejército (Famae)
 Orlando Díaz - Fundición "Sima"
 Houston Daniel Douglas - S.A. Heiremans de Construcciones Metálicas (Socometal)
 Vicente Echeverría - Fábrica Nacional de Carburo y Metalurgia
 Enrique Edwards - Asociación de Industriales Metalúrgicos (Asimet)
 Jorge Guzmán - Sabimet S.A.
 Jorge Pereira - Maestranza Madrid S.A.
 Salustio Prieto - Fundición y Maestranza de la Fábrica de Cemento "El Melon"
 Adolfo Sprohenle - Compañía de Acero del Pacífico (C.A.P.)
 Joaquín Undurraga - Instituto Chileno del Acero (Icha)
 Agustín Venegas - Fábrica Nacional de Carburo y Metalurgia
 Sergio Vergara - Compañía de Acero del Pacífico (C.A.P.)
 Jorge Weber - Industrias Mecánicas y Metalúrgicas Reunidas S.A. (Immar)

Observers:

- | | |
|--------------------|---|
| Patricio Huneeus | - Under-Secretary of Transport |
| Gustavo Valdivieso | - Ministry of Foreign Affairs |
| Domingo Arteaga | - Banco Central de Chile |
| Jorge Merino | - Banco del Estado de Chile |
| Raúl Salvestrini | - Ferrocarriles del Estado |
| Arturo Montecinos | - Ferrocarriles del Estado |
| Enrique Vial | - Corporación de Fomento de la Producción |

MEXICO

Representatives:

- | | |
|------------------------|--|
| Eduardo L. de la Torre | - Constructora Nacional de Carros de Ferrocarril,
Jefe de la Delegación |
| Alejandro Obregón | - Constructora Nacional de Carros de Ferrocarril |

Observer

- | | |
|------------------|---|
| Héctor Hernández | - Director General of Industry, Ministry of
Industry and Trade |
|------------------|---|

Annex II

POSSIBILITIES FOR TRADE IN RAILWAY EQUIPMENT PRODUCED
IN ARGENTINA

Vehicles

Railway workers' cars

Railway workers' cars with reversing box (105 HP)

Electric rail cars and trailers

Diesel rail cars:

electric
hydraulic
mechanical and
their trailers

Passenger coaches:

dining cars
1st and 2nd class ordinary
sleeping cars
mail and package cars
pullman cars

Subway coaches

Tramways

Goods wagons:

low-sided
cocodrilos
covered (box cars)
refrigerator and ventilator
ordinary freight
cattle
open
flat

Tank wagons:

water
oil
wine

Insulated wagons (for milk)

/Hoppers

Hoppers

Rail motor cars and spare parts:

5 - 8 HP for inspection
8 -13 HP for section cars
40 HP heavy, for section cars
Trailers and push cars
Weed-killer sprayers

Spare parts

Coaches and goods wagons:

Complete welded sheet bogies
Tube bogies
Buffer assemblies
Grease box for bogies
Bearings
Cast steel wheel discs
Axles
Central thread coupling
Vacuum brake equipment
Central hooks
Buffer assembly guides
Spencer rubber parts for vacuum brakes
Tyres
Buffer plates
Buffers and automatic couplings
Leaf springs
Coil springs
Brake rigging
Brake shoes
Compressed air brake equipment

Locomotives:

Welded sheet frames
Connecting rods of all types
Welded sheet bogies

Boilers

Cast steel wheel centres for bogies

Cast steel wheel centres for ponies

Cast steel wheel centres for tenders

Cylinders

Crossheads

Crank axles

Straight axles

Pistons

Central thread coupling

Compressed air brake equipment

Vacuum brake equipment

Central hooks

Generators and traction engines

Sellers-type injectors

Detroit type 1 to 6 way lubricators

Tyres

Crank levers

Diesel engines of 1,000, 1,050 and 1,350 HP and 700 and 1,000 r.p.m.,
and spare parts

Diesel engines(150 HP)for shunting locomotives and rail cars, and
spare parts

Traction engines and generators

Plate buffers

Buffers and automatic coupling

Complete reheaters

Leaf springs

Coil springs

Brake rigging

Seamless tubes for boilers

Piston rods

/Track, bridges,

Track, bridges, culverts and structures:

Track bolts

Spikes

Crossings

Points

Fishplates

Turntables

Track tieplates

Metal bridges of different spans

Signalling and locking equipment

Annex III

POSSIBILITIES FOR TRADE IN RAILWAY EQUIPMENT PRODUCED
IN BRAZIL

(Confederação Nacional da Indústria)

Rolling stock

Goods wagons:

Roofed

Refrigerated, for meat

Ventilates, for fruit

Gondola (general purpose)

Drop-bottom gondola

Gondola with side doors

Drop-sided gondola

Hopper

Ballast

Cattle

Tanks for other purposes

Flat

Depressed centre flat

Tip-up gondola

Hoppers for grain shipments in bulk

For sugar-cane

For industrial purposes

Passenger coaches (carbon or stainless steel):

First class

Second and other classes

Dining cars

Lounge cars

Sleeping cars

Mail and packages

Express

Other purposes (funeral, etc.)

For suburban lines

/Rail cars:

Rail cars:

For suburban lines and long distances

- (1) Propulsion system
 - (a) Diesel
 - (b) Electric
- (2) Raw material
 - (a) Carbon steel
 - (b) Stainless steel

Rolling stock parts and accessories:

Cast steel bogies

- (a) self-aligning
- (b) with dampeners and vertical oscillation control

Rolled, welded or hammered steel bogies, for passenger coaches, mail wagons and express trains

AAR standard (Association of American Railroads) couplings for wagons and passenger coaches

Buffers and traction (radial and AAR standard box) for wagons, passenger coaches and locomotives

Brake equipment

- (a) Compressed air AAR standard
- (b) Vacuum
- (c) Hand

Signalling equipment (AAR standard):^{1/}

Signals of all kinds

Relay cases

Impedance "bondes"

Switch boards

Point (switch) controls

Transformers

Resistors

Rectifiers

Spring wrenches

Relays (certain kinds)

^{1/} Other signalling equipment is starting to be manufactured gradually.

Miscellaneous:

Replacement and parts for bogies of cast, rolled or welded steel, especially:

Wheels of:

chilled cast iron

cast iron

forged iron

Axles for wagons, passenger coaches and locomotives

Brass bearings (AAR)

Blocks for brass bearings (AAR)

Unit brake beams

Brake shoe backs

Brake shoes

Springs

Snubbers

Spring and dampener assemblies (packages)

Replacements and parts for couplings

Replacements and parts for draw and draft gear

Replacements and parts for compressed air, vacuum and hand brake equipment

Replacements and parts for signalling equipment listed

Seats of different kinds for passenger coaches

Windows, blinds and curtains for passenger coaches

Locks, hinges, luggage racks and clothes hooks for passenger coaches

Equipment for points (switches) and crossings

Ore wagons

Permanent way equipment such as spikes, coach screws, fasteners, etc.

Annex IV

POSSIBILITIES FOR TRADE IN RAILWAY EQUIPMENT PRODUCED IN CHILE

Steel passenger coaches:

All-metal structure, built in accordance with established specifications and standards

Complete coaches can be manufactured in Chile, except for some parts of the brake and electrical equipment, such as generators and voltage regulators

Metal vans and cabooses for guards:

Idem.

Goods wagons:

Of 20, 30 and 50 tons, and possibly even heavier in the future, of the following types:

- Flat
- Box
- Hoppers
- Tanks for different purposes

Complete bogies for coaches and wagons:

Cast bogies A/3 with ride control, or built according to individual specifications

Welded plate bogies on request

Locomotive parts:

Complete boilers for steam locomotives

Flue tubes

Cylinders

Rods and levers

Copper pipes and tubes

Spring assemblies

Brass bearings sleeves and grease boxes

Bissell bogies and complete bogies

Various cast steel parts

/Axles with

Axles with wheels for coaches and wagons:

Assembled axles with wheels for coaches, wagons and locomotives

Forged and rolled tyres of various shapes and diameters

Forged axles, unmechanized and fully mechanized, according to specifications and of different sizes

Parts for coaches and wagons:

(a) Structural steel and steel plate

special shapes

angles, round, square and rectangular bars

thick and thin plate

galvanized plate

slabs and small slabs

billets and blooms

(b) Cast iron and steel pieces:

bogie beams

"diamond" beams

grease boxes

wheel centres

hubs

brake shoe holders

brake beams

axle-box guides

automatic couplings

brake shoes

brake cylinders

(c) Brass pieces:

bearings and sleeves

valves and fittings

bars, hand rails, etc.

(d) Complete windows for coaches

(e) Upholstered seats for coaches

(f) Complete dampeners for wagons and coaches

Miner and Spencer types

(g) Water and compressed air containers

Track equipment:

Metal bridges

Turntables

Points (switches) and crossings

/Tie-plates

Tie-plates

Curve, retarder and anchorage tie-plates

Track bolts, dog spikes

Equipment for overhead lines and signalling:

Steel posts and towers for overhead lines

Steel cables for overhead lines

Copper cables

Miscellaneous accessories such as presses, arms, crossheads, etc.

Annex V.

POSSIBILITIES FOR TRADE IN RAILWAY EQUIPMENT PRODUCED IN MEXICO

(Constructora Nacional de Carros de Ferrocarril, S.A.)

This company now has sufficient production capacity to manufacture the following railway equipment:

Goods wagons:

Box
Caboose
Gondola
Hopper
Tank
Flat
Special wagons of all kinds

Any kind of freight wagon in the above-mentioned categories used in Latin America, Europe, Asia and Africa can be constructed according to standard or usual specifications in regard to size and design.

The company can also manufacture the following parts, if necessary:

Frames
Walls
Doors
Front partitions
Roofs
Couplings
Bogies
Steps
Hand brake platforms
Running boards
Buffer frames
Traction dampeners
Cast steel and malleable and cast iron pieces

In the near future, the company will be in a position to manufacture passenger coaches, according to the specifications and designs required by individual countries.

II

THE RAILWAY ROLLING STOCK INDUSTRY IN SELECTED LATIN AMERICAN COUNTRIES

Analysis and suggestions for a regional market



INTRODUCTION

It is common knowledge that the scarcity of adequate transport is one of the principal obstacles to the economic development of Latin America. Yet, studies undertaken by the secretariat of the United Nations Economic Commission for Latin America (ECLA) in connexion with the Latin American common market show that Latin America as a whole is now virtually able to supply all its railway rolling stock requirements. This means that the region has made considerable progress, since it was formerly obliged to import a large proportion of its capital goods requirements.

In view of this, ECLA acted on the suggestion put forward by certain industrial groups in Argentina, Brazil and Chile and, after consultation with the Governments concerned, convened a technical and informal Meeting of representatives of the pertinent Latin American enterprises producing railway rolling stock, to which railway representatives and governmental observers from national credit and foreign trade organizations were also invited. The meeting, which took place at Córdoba, Argentina, from 2 to 6 March 1959, was held for the purpose of studying the possible expansion of inter-Latin American trade in railway equipment on a reciprocal basis and to recommend measures towards that end.

In the present report, an attempt is made to state the problems to be dealt with at the Meeting and to facilitate their discussion. It consists of three chapters: I. The requirements of the railways; II. Rolling stock: supply and demand; and III. Conclusions and recommendations. Stress should be laid on the provisional nature of the report, since it contains complete information on only three South American producer countries - Argentina, Brazil and Chile - and on one country that imports exclusively - Uruguay. Some last-minute data that were obtained on Colombia and Mexico are given in annexes to the report. As little time was available, it was not possible to enlarge the report to cover the other Latin American countries, or to discuss such important aspects as the maintenance and extension of the permanent way - rails and accessories, sleepers, bridges, culverts and structures, signalling equipment, etc. -, since equipment for the permanent way differs considerable from rolling stock. The fact that the information available is inclined to be limited /should not

should not jeopardize the success of the Meeting, since the main purpose of this report is to illustrate the problems involved by a few typical cases rather than to make an exhaustive study of every aspect which would have been a lengthy and time-consuming process. On the contrary, the success of the Córdoba Meeting will make it possible, without loss of time, to extend the study to other Latin American countries and to enlarge its scope to include permanent as well as rolling stock. In this connexion, it suffices to note, for instance, the importance attaching to the export of sleepers in so far as the reciprocal trade of such countries as Bolivia and Paraguay with other parts of Latin America is concerned.

Chapter I

THE REQUIREMENTS OF THE RAILWAYS

The railway networks of Argentina, Brazil, Chile and Uruguay all operate with equipment that is antiquated in the extreme, and their balance-sheets show substantial deficits. This creates a vicious circle since equipment cannot be replaced for lack of funds, while the excessive use of worn-out equipment leads to ever-increasing financial losses. Exceptional measures are therefore called for to remedy the situation.

1. Argentina

The Argentine Republic, which has 44 000 kilometres of track, possesses the most extensive rail network in Latin America and one of the most important in the world.

Yet it is common knowledge that the state of the railways is far from satisfactory and that they cannot be operated as efficiently or economically as is required by a big modern country in process of development, in spite of the hard work and zeal of the railway personnel, without serviceable equipment which keeps abreast of technical progress. The situation was recently described in the following unequivocal terms by Dr. Justo P. Villar, Minister of Works and Public Services of Argentina:

"A suggestive and indeed eloquent fact with which the public is familiar is the quantitative decrease in freight transport. From 1948 to the present day, almost 7 million tons have been lost to the railways. We now have 43 900 kilometres of permanent way of which 10 000 kilometres ought to be replaced without delay, to bring the train service into line with commercial traffic requirements and to take due precautions against possible danger as is incumbent upon the Government. The existence of such an enormous stretch of badly kept track is due to the fact that only 1 400 kilometres have been replaced since 1948.

"Out of a total of 3 900 steam locomotives, 50 per cent have been in service almost 50 years, and should be scrapped.

"Of 84 000 goods wagons, more than half have been in use for 50 years; this is sufficient indication of their state of repair without any need for a physical examination.

/"Although it

"Although it is true that hauling equipment has been strengthened by the addition of 400 diesel locomotives, many of these have been immobilised for lack of spare parts or other reasons. To bear out this assertion, it is enough to state that one single railway company has 66 of these machines out of action." 1/

The financial deficit of the Argentine railways worsened in the last few years, as may be seen from the following table:

ARGENTINA: BALANCE-SHEET OF OPERATIONS OF THE NATIONAL RAILWAYS, 1943-58
(Millions of pesos at current prices)

Year	Income	Expenditure a/	Profits (+) and losses (-)	Coefficient of operation (Expenditure/income)
1943	583	485	98	0.83
1944	662	553	109	0.84
1945	757	633	124	0.84
1946	789	764	25	0.97
1947	862	1 029	-167	1.19
1948	1 003	1 459	-457	1.46
1949	1 534	2 050	-517	1.34
1950	1 804	2 320	-516	1.29
1951	2 200	3 059	-860	1.39
1952	3 561	4 200	-639	1.18
1953	3 780	4 437	-657	1.17
1954	3 951	5 093	-1 142	1.29
1955	4 176	5 570	-1 394	1.33
1956 b/	4 670	7 783	-3 113	1.66
1957 c/	6 155	8 813	-2 658	1.43
1958 d/	6 339	9 833	-3 493	1.55

Source: Argentine railway statistics.

a/ Including amortization effected.

b/ The amount of 964 million pesos' worth of retroactive payments made in 1957 have been added to personnel expenditure in 1956 and therefore to the deficit. In addition 145.7 million pesos have been included for amortization payments.

c/ Budget figures for 1957. Under the heading of Income, 1 000 million pesos have been included as the estimated receipt from the increase in tariffs as from 1 June 1957 (Decree 5153/57).

d/ Budget figures for 1958 (La Prensa, 24 January 1958), for the period 1 November 1957 - 31 October 1958.

1/ La Prensa, Buenos Aires, 22 October 1958.

Since ECLA has recently made lengthy and detailed analyses of Argentina's transport situation,^{2/} there is no need to repeat the conclusions reached, but simply to deal here with the questions that have a direct bearing on the main subject of this report, namely, rolling stock.

(a) Goods wagons

According to generally accepted standards and on the assumption that maintenance has been normal - an assumption which of late cannot be applied to the Argentine railways - the useful life of goods wagons ranges from 40 to 45 years. The degree of obsolescence of Argentine equipment may be judged from the fact that, of the 84 000 wagons in existence, about 65 per cent are over 40 years old and only 4 per cent under 20 years old.

These data are clear proof of the high degree of obsolescence of the rolling stock. The situation may very likely become worse in the near future, since much of the equipment that is now in a fairly good or even good state of repair will finish, or approach the end of, its useful life in the course of the next decade.

According to the ECLA studies mentioned, at least half of the 84 000 goods wagons at present in the public service should be discarded during the next decade if circumstances became more favourable; nevertheless, it is proposed to keep 55 000 to 60 000 of them in service until 1967. Moreover in spite of an increment of 80 per cent in productive traffic, it is believed that a number of factors will succeed in raising its yield far above that of the present park.^{3/}

To sum up, goods wagon requirements are as follows:

	<u>Units</u>
Present park	84 000
To be scrapped	27 000
To be purchased	35 000
Total park, 1967-68	92 000

^{2/} E/CN.12/429 and E/CN.12/491

^{3/} A somewhat higher average unit capacity, less equipment out of service for repairs and improvements in traction, permanent way, station yards, a more rapid circulation of wagons, a higher load coefficient, etc.

/Thus, according

Thus, according to the ECLA study, the Argentine railways would need approximately 35 000 goods wagons in the next ten years, in other words, 3 500 annually.

(b) Passenger coaches

Additions to passenger equipment have lagged far behind the accelerated rate of expansion of passenger traffic. In fact, the stock of ordinary and special coaches, including rail motor cars and electric rail cars, for the public passenger service increased by only 20 per cent between 1928 and 1954, whereas traffic in passenger/kilometres grew by 244 per cent. The total number of seats, which is the clearest indication of real passenger equipment capacity went up a mere 18.6 per cent during the period mentioned. It should be pointed out that most of the increment in passenger traffic took place in the last 10 to 15 years.

The marked disequilibrium between the respective increments in passenger traffic and equipment led to a considerable increase in the average employment of trains. They were used most intensively on urban and suburban services and travelling became a veritable trial of endurance for commuters in the area of Greater Buenos Aires.

The normal life of ordinary passenger coaches is estimated at 40 to 45 years and that of rail motor cars and electric rail cars at 35 to 40 years. Even if a slightly higher average is accepted for Argentina, much of the equipment is all too clearly obsolescent, since 45 per cent of the 4 400 coaches in use are already more than 40 years old, and 30 per cent are 50 years old, whereas only 17 per cent are under 20 years old, as the following table shows:

	<u>Units</u>	<u>Percentage</u>
Under 10 years	378	9
10-20 years	362	8
20-30 years	556	12
30-40 years	1 143	26
40-50 years	657	15
Over 50 years	<u>1 353</u>	<u>30</u>
Total	4 449	100

It should also be pointed out that the coachwork of 40 per cent of these units is of wood, which is a source of danger to travellers.

The ECLA study estimates that requirements of passenger coaches of all types in the next ten years will be as follows:

	<u>Units</u>
Present park	4 400
To be scrapped	1 300
To be purchased	3 200
Total park, 1967-68	6 300

The new equipment to be purchased would comprise:

	<u>Units</u>
Ordinary passenger coaches	1 700
Rail motor cars and trailers	800
Electric rail cars and trailers (including suburban services in Buenos Aires)	<u>700</u>
Total	3 200

Annual requirements would therefore be:

	<u>Units</u>
Ordinary passenger coaches	170
Rail motor cars and trailers	80
Electric rail cars and trailers	<u>70</u>
Total	320

(c) Locomotives

The Argentine locomotive park consists of 3 900 steam and 420 diesel units, the latter being almost new, since the most of them were imported after 1948. Notwithstanding, 58 of these locomotives were already out of service in 1956 for repairs, chiefly because of poor upkeep and maintenance.

Sixty seven per cent of the steam locomotives are over 40 years old and 43 per cent over 50, whereas only 6 per cent are less than 20 years old. Their distribution by age groups is as follows:

	<u>Units</u>	<u>Percentage</u>
Under 10 years	47	1
10-20 years	180	5
20-30 "	307	8
30-40 "	740	19
40-50 "	928	24
Over 50 "	<u>1 699</u>	<u>43</u>
Total	3 901	100

/In order

In order to appreciate the gravity of the situation, it should be remembered that the useful economic life of steam locomotives is estimated at about 35 to 40 years, although, in the case of the Argentine railways, an average age limit of about 45 years may be accepted. By mid-1956, approximately 1 250 steam locomotives were out of service, either completely or for repairs.

The general hauling material situation is estimated to be:

<u>Steam locomotives</u>	<u>Units</u>
Present park	3 900
To be scrapped	2 200
To be purchased	0
 <u>Diesel locomotives</u>	
Present park	421
To be purchased (at an annual average rate of 50 units)	1 000

(d) Summary of Argentina's requirements

The Argentine railways' annual requirements during the next 10 to 20 years may be summed up as follows:

	<u>Units</u>
Goods wagons	3 500
Ordinary passenger coaches	170
Rail motor cars and trailers	80
Electric rail cars and trailers	70
Diesel locomotives	50

2. Brazil

At the end of 1955, the total length of Brazil's rail network was 37 000 kilometres, of which 78 per cent belonged to the Federal Government (Red Ferroviaria Federal) and the remainder to State Governments and private enterprises. The break-down by gauges was as follows:

	<u>Kilometres</u>	<u>Percentages</u>
1.60 metres	2 624	7
1.00 metres	33 374	90
Less than 1 metre	<u>1 002</u>	<u>3</u>
Total	37 000	100

/The Federal

The Federal Government leases a portion of its railway to the States but, as it continues to be the most important entrepreneur in the field of rail transport, it has to bear most of the renewal expenditure. At the present time, the investment needed for this purpose is extremely heavy since the federal railways have not been re-equipped for a long time, whereas others, such as the Sorocabana, Paulista and the Vitória a Minas lines, have been continuously modernized. The last three, none of which is owned by the Federal Government, testify to the advantages of re-equipment since they were the only lines which showed a credit balance of almost 6 000 million cruzeiros in 1955, as opposed to the aggregate deficit for the railways as a whole.

The rail transport industry in Brazil is asking for investment to improve operations, lower costs and extend its length of track. If it operated more efficiently and at lower cost, it could recover much of the transport which has been diverted to the roads, and thereby fulfil the essential condition for economic rail operation, namely compensatory traffic density.

Notwithstanding the positive results achieved in 1956 by the Sorocabana, Paulista and Vitória a Minas lines, the balance-sheet of rail transport operations showed a striking deterioration during the last few years, as indicated in the following table:

BRAZIL: BALANCE-SHEET OF RAIL TRANSPORT OPERATIONS, 1952-56
(Millions of cruzeiros)

Year	Income	Expenditure	Deficit	Coefficient of operations (Expenditure/income)
1952	5 255	7 272	2 017	1.38
1953	5 529	9 160	3 631	1.65
1954	6 614	10 594	3 980	1.62
1955	9 218	14 743	5 525	1.70
1956	11 788	21 466	9 678	1.82

Source: Office of the President (Presidencia da República), Development Council (Conselho do Desenvolvimento), Programa de metas, Rio de Janeiro, 1958.

The Red Ferroviaria Federal S.A. was recently given as much administrative flexibility as that enjoyed by private enterprises, which opens up a less gloomy prospect for Brazilian rail transport. Moreover, the Federal Government, in view of its enormous responsibility as regards the reorganization of rail transport, has drawn up a comprehensive programme with the intention of preparing the railways to fulfil their important role in Brazil's economy.^{4/}

The programme for the construction of new lines and re-equipment of those already in existence in 1958, 1959 and 1960 will require an investment of approximately 40 million cruzeiros broken down as follows:

Construction:

Main lines	6 415.5	
Branch lines	2 643.4	
Sidings	<u>906.3</u>	9 965.2

Re-equipment:

Modernization of lines	21 692.0	
Diesel locomotives	2 430.5	
Passenger coaches and goods wagons	<u>5 631.5</u>	29 754.0
Total expenditure (to be effected 1958-60)		39 719.2

The deficiencies in Brazil's rolling stock are attributable to the slowness with which outworn equipment is replaced on virtually all lines, and were accentuated by excessive wear and tear during the Second World War. The re-equipment which took place at the end of the war was confined to the importation of a small amount of rolling stock and traction equipment, a few rails and some items for the upkeep of the permanent way. In 1954, the Banco Nacional do Desenvolvimento Econômico placed the first large-scale order for equipment with Brazilian manufacturers, consisting of 700 wagons for carrying the harvest, which was very large that year. During 1956-57 the re-equipment process was intensified, and the present rolling stock position and the re-equipment programme for goods wagons, passenger coaches and locomotives in 1958, 1959 and 1960 are as follows:

^{4/} Office of the President, Development Council, Programa de Metas, Rio de Janeiro, 1958.

(a) <u>Goods wagons</u>	<u>Units</u>
Purchases prior to 1955	54 531
Purchases in 1956	2 616
Purchases in 1957	<u>3 056</u>
Total park	60 203
Anticipated purchases in 1958-60	5 713

The purchases planned for 1958-60 will be distributed as follows among the different railway networks in Brazil:

	<u>Units</u>
Red Ferroviaria Federal	4 500
E.F. Sorocabana	556
E.F. Vitória a Minas	350
Cía. Mogiana	260
Viaçao Férrea do R.G. do Sul	<u>47</u>
Total	5 713

New purchases in the last two years consisted of about 2 500 to 3 000 wagons annually. In the next three years, they will probably be somewhat less than 2 000, in view of the difficult financial situation of the railways. From these figures, it may be concluded, roughly speaking, that the annual requirements of the Brazilian railways are 2 500 goods wagons.

(b) <u>Passenger coaches</u>	<u>Units</u>
Purchases prior to 1955	6 076
Purchases in 1956	222
Purchases in 1957	<u>398</u>
Total park	6 696
Anticipated purchases in 1958-60	766

The purchases planned for 1958-60 will be divided as follows among the different railways:

	<u>Units</u>
Red Ferroviaria Federal	639
E.F. Sorocabana	90
Depto. Nacional de Estradas de Ferro	24
E.F. Vitória a Minas	<u>13</u>
Total	766

/It may

It may be inferred from these data that Brazilian passenger coach requirements are approximately 250 units per year.

(c) Locomotives

The Brazilian railways have about 800 electric and diesel locomotives,^{5/} of which half were bought in the last five years. A total of 276 new locomotives will be bought and put into service in 1958-60 distributed as follows:

	<u>Units</u>
Red Ferroviaria Federal	181
Cía. Paulista de Estradas de Ferro	38
E.F. Vitória a Minas	35
E.F. Araraquera	17
E.F. Sorocabana	<u>5</u>
Total	276

These purchases represent initial equipment which could not be expected to last for long. The railways' requirements as regards electric and diesel locomotives have therefore been estimated at not more than 50 units annually.

(d) Summary of Brazilian requirements

The railways' annual requirements for the next few years may be summed up as follows:

	<u>Units</u>
Goods wagons	2 500
Passenger coaches	250
Electric and diesel locomotives	50

Brazilian experts estimate that 125 diesel rail cars will also be needed during the next five years at the rate of 25 units annually.

3. Chile

The balance-sheet of rail transport operations in Chile is presented in the following table

^{5/} Data on steam locomotives were unobtainable.

CHILE: BALANCE-SHEET OF RAIL TRANSPORT OPERATIONS, 1952-56
(Millions of pesos)

Year	Income	Expenditure	Deficit	Coefficient of operation (Expenditure/income)
1952	4 483	6 322	1 839	1.41
1953	5 489	7 847	2 358	1.43
1954	8 884	13 048	4 164	1.47
1955	14 140	22 575	8 435	1.60
1956	24 497	35 758	11 261	1.46

Source: Memorias de los Ferrocarriles del Estado.

The Directorate of the Ferrocarriles del Estado of Chile has been urging for years that adequate methods should be devised to ensure that the permanent way, equipment and installations are adequate to meet the growing demand of traffic and current requirements and that they are conducive to economic operation. The enterprise's capital is clearly insufficient for these purposes.

Unless proper steps are taken in this respect, the whole of Chile's agricultural and industrial development may be slowed down and it may even become increasingly difficult to satisfy current transport requirements.

In order to have a railway service which would be completely safe, free from interruptions and delays, capable of satisfying current traffic demand effectively and of coping with any increase in such demand resulting from population growth and agricultural and industrial development plans, and reasonably economical in its operations, a combination of measures would have to be adopted, the nature of which will emerge from an analysis of the situation of the different services. As regards rolling stock, the situation is briefly as follows:

(a) Goods wagons

The Chilean goods wagons park has a very high average age, since 40 per cent of the 10 000 wagons in circulation are over 35 years old. The distribution of the park by age groups is as follows:

/Units

	<u>Units</u>	<u>Percentage</u>
Under 5 years	1 002	10
5-15 years	1 724	17
15-25 years	1 055	10
25-35 years	2 314	23
35-45 years	1 309	13
45-55 years	<u>2 708</u>	<u>27</u>
Total	10 112	100

Approximately 8 500 wagons belong to the southern network (1.676 metre gauge) and 1 500 to the northern network (metre gauge).

The antiquated state of the equipment has an adverse effect on operations. The cost of the repairs which have to be made is very high and the average length of time that wagons remain out of service for this reason is substantial. In fact, perhaps as much as almost 20 per cent of the registered capacity of the whole park is idle.

Chilean experts consider that the park should be modernized and the new equipment divided into three groups for the following purposes: special replacement of worn-out equipment; normal replacement to avoid keeping very old wagons in service; and coping with the anticipated increase in traffic, especially from the point of view of agricultural and industrial development. Special replacement would lead to the scrapping of 4 000 wagons over 35 years old, and normal replacement to that of 2 300 wagons from 25 to 35 years old, i.e. 6 300 in all, over a period of ten years, and their replacement by new wagons. However, since it is estimated that the new wagons would have a higher load capacity^{6/} and would not have to be out of service for work-shop repairs for such lengthy periods, purchases for replacement purposes could be limited to three new wagons for every four old ones, in other words, 4 700 units over the whole decade (470 per year).

Moreover, as the annual traffic increment is estimated at three per cent, and the present park consists of 10 000 units, about 300 new wagons would be needed every year to cover the increment. This figure might, however, be reduced to 230 units annually, in view of the greater capacity of the new wagons and their quicker turn-around potential.

^{6/} Thirty tons on an average.

To put it briefly, the Chilean railways would require 470 plus 230 = 700 new goods wagons per year.

(b) Passenger coaches

As in the case of goods wagons, the Chilean passenger coach park has a high average age, broken down as follows:

	<u>Units</u>	<u>Percentage</u>
Under 5 years	157	26
5-15 years	150	25
15-25 years	44	7
25-35 years	127	21
35-45 years	56	9
45-55 years	<u>72</u>	<u>12</u>
Total	606	100

It should be pointed out that the coachwork of about half of the 600 units in service is of wood.

It is estimated that 50 steel coaches will be needed annually to replace the present wooden coaches and to cover the anticipated traffic increment.

(c) Locomotives

In 1957, the Chilean railways had 732 locomotives (563 steam, 65 electric and 104 diesel). Twelve electric and 24 diesel rail cars were also in use.

The distribution of this equipment by age groups is as follows:

	Total	0-5 years	5-15 years	15-25 years	25-35 years	35-45 years	45-55 years
Electric rail cars	12	3	-	9	-	-	-
Diesel rail cars	24	16	-	8	-	-	-
Steam locomotives	563	-	40	65	85	109	264
Electric locomotives	65	-	12	19	4	39	-
Diesel locomotives	104	91	13	-	-	-	-
Total	768	110	65	92	89	148	264

More than 66 per cent of the steam locomotives are over 35 years of age. More than 20 different kinds of steam locomotives run on the 1.676-metre track and more than 10 kinds on the 1-metre track. Together with their excessive age, this fact makes it even more difficult to

/organize an

organize an efficient repair service. Many types have to be kept in operation because of the limited total locomotive capacity, even though they contribute relatively little are expensive to maintain and operate and have a high rate of consumption of fuels, lubricants, etc. In fact, these locomotives are usually unsatisfactory for operational conditions in Chile and their specific consumption is high.

In some cases, the poor state of the rails along certain stretches of track makes it impossible to discard the old types of light locomotive in favour of heavier and more efficient units.

Some of the old steam locomotives which still have to be kept in use have fire-boxes of the size required when railways used coal from the United Kingdom. Chilean coal needs a much larger firebox, since this type of locomotive has an exceedingly high consumption rate. The relation between the diameter of the driving wheels and piston strokes on a large number of units is also a severe restriction on satisfactory speeds.

A careful study has been made of possible solutions for the satisfactory rehabilitation of traction equipment. In view of its general intention to remedy the existing situation, the Ferrocarriles del Estado has made extensive and detailed studies in which the following solutions are compared: (a) the large-scale purchase of steam locomotives that would be as good as the best now owned by the enterprise; (b) the electrification of new sectors; (c) the replacement of worn-out hauling equipment by the purchase of diesel locomotives. As a result of these studies, the enterprise decided in favour of electrification and considered that any delay in carrying out the programme might make it very difficult for the railways to continue to carry the present volume of traffic.

The programme envisages the following purchases by the enterprise over a period of five to ten years:

	<u>Units</u>
Electric rail cars	10
Diesel rail cars	10
Electric locomotives:	
210 tons	26
100 tons	24
70 tons	20
Diesel locomotives	50

/(d) Summary of

(d) Summary of Chilean requirements

The Chilean railways' requirements during the next decade may be summed up as follows:

	<u>Units</u>
Goods wagons	700)
Passenger coaches	50) annually
Electric rail cars	10)
Diesel rail cars	10) joint programme
Electric locomotives	70) over a period
Diesel locomotives	50) of 5-10 years

4. Uruguay

Uruguay's railway system is in an advanced state of obsolescence and its financial situation is precarious. For instance, in 1947 its income was 40 million pesos whereas expenditure amounted to 105 million. The resulting deficit was made up by the Government.

The following figures are illustrative of the situation so far as the rolling stock park is concerned. Out of 3 500 goods wagons, 64 per cent are over 40 years old. The situation is even worse in the case of passenger coaches and steam locomotives, since 77 per cent are more than 40 years old.

Age group	<u>Goods wagons</u>		<u>Passenger coaches</u>		<u>Steam locomotives</u>	
	Unit	Percentage	Unit	Percentage	Unit	Percentage
0-10	439	12	16	9	5	5
10-20	198	6	6	4	-	-
20-30	342	10	11	6	10	9
30-40	278	8	6	4	10	9
40-50	715	20	85	50	42	40
50-60	596	17	17	10	30	28
Over 60	976	27	30	17	10	9
Total	3 544	100	171	100	107	100

The park also includes 54 diesel rail cars and 64 diesel locomotives, which are all fairly new.

The Uruguayan railways are estimated to need 200 new goods wagons and 10 passenger coaches annually. It is also hoped that 62 diesel rail cars and 22 diesel locomotives will be purchased at some future date.

Chapter II

ROLLING STOCK: SUPPLY AND DEMAND

In chapter I it was seen that the number of goods wagons required annually during the next few years would be 3 500 in Argentina, 2 500 in Brazil, 700 in Chile and 200 in Uruguay. In all, the four countries would need 6 900 goods wagons per annum.

What is the present production capacity of these countries?

1. Goods wagons

The surveys carried out by ECLA in the different countries show that, on the whole, production possibilities exceed requirements. Brazil has a highly developed railway industry and five relatively modern and efficient enterprises which could manufacture about 7 000 goods wagons per year. Two other countries - Argentina with three enterprises and Chile with four - could each produce 1 000 units annually. Uruguay has no production capacity.

In the following table, technical requirements are compared with annual productive capacity. The surplus capacity of the Brazilian factories could be used to supply the deficit in the Argentine and Uruguayan markets. Chile is also interested in exporting, although on a lesser scale than Brazil. In addition, the table shows that Brazilian and Chilean factories could satisfy the total requirements of the four countries in question and produce a further 2 100 units for export to other Latin American countries.

GOODS WAGONS: ANNUAL REQUIREMENTS AND PRODUCTION CAPACITY

(Units)

Country	Annual requirements	Production capacity	Surplus (+) or deficit (-) capacity
Argentina	3 500	1 000	- 2 500
Brazil	2 500	7 000	+ 4 500
Chile	700	1 000	+ 300
Uruguay	<u>200</u>	<u>-</u>	<u>- 200</u>
Total	6 900	9 000	+ 2 100

/In actual

In actual fact, the situation is much less favourable than would appear from the table, because of the financial deficit of the railways in all four countries purchases lag far behind technical requirements. As a result, rolling stock is gradually deteriorating, while factories are stopping work owing to the lack of orders, which leaves their production capacity virtually unutilized.

For instance, in recent years the Argentine railways bought only 250 goods wagons annually from domestic manufacturers, a figure far below requirements (3 500 units). Argentine manufacturers, who could turn out 1 000 wagons per year, have practically no new orders at present and spend their time on sporadic repairs.

Much the same occurs in Chile, where the technical requirements are reckoned at 700 units annually. The Chilean railways purchased not more than 2 400 goods wagons during the decade from 1944 to 1953, i.e. an annual average of 240 units. From 1954 onwards, this average dropped to 215 units. Of total purchases, 1 500 wagons were supplied by United States firms, thanks to a credit granted by the Eximbank and 200 more by French factories, also on a credit basis. This is highly discouraging for Chilean manufacturers, who are unable to grant credits and whose production capacity (1 000 units annually) is virtually reduced to occasional repair work.

Uruguay needs 200 new goods wagons annually. In spite of this, total purchases by the Railways Administration (Administración de los Ferrocarriles) in 14 years (1944-57) were not more than 350 units. The wagons were imported from the United States, Belgium and Japan, payment being made on an instalment basis.

During the last few years, the Brazilian railways were the only ones which were capable of financing effective purchases that were more or less equivalent to requirements, estimated at 2 500 units. Most of the goods wagons which have been recently put into service are Brazilian-made, a small proportion only being imported on the basis of foreign credits.

/Nevertheless, in

Nevertheless, in view of the fact that Brazilian production capacity - estimated at 7 000 units - far exceeds the country's requirements, manufacturers of rolling stock in Brazil, as in Argentina and Chile, do not receive enough orders to make full use of their production capacity.

To sum up, the countries in question have a well-developed rolling stock industry, which could easily supply the railways with all the goods wagons that they require, especially if possibilities of exporting from Brazil and Chile to Argentina and Uruguay are taken into account. Because of the distressing financial situation of the enterprises and the lack of internal credits, however, the industry has no orders on its books and its yield in the majority of cases is therefore low.

Yet, in spite of all these difficulties, there seems to be a possibility that Brazil may begin to export limited amounts of rolling stock to other countries, thereby increasing the employment rate in its factories and helping to improve the importer countries' railway equipment parks.

The first step to be taken would be to give larger orders to certain enterprises which build goods wagons; such enterprises, which are very common in the United States and Western Europe but are under-developed in Latin America, do not sell wagons to railway companies but lease them to private enterprises which thereafter operate them at their own cost. The leases take into account not only the provision of the wagon but also its maintenance and repair. In the area under review, only one enterprise of this kind is to be found in Sao Paulo. It has its main factory there and a number of workshops scattered in different parts of Brazil (Rio de Janeiro, Matto Grosso, Goias, Minas Gerais, Paraná) where equipment can be maintained and repaired without having to be sent to Sao Paulo. This enterprise has recently been building an annual average of 100 to 200 wagons as well as undertaking maintenance, repair and reconstruction work.

/With regard

With regard to the other Brazilian companies that manufacture goods wagons to order, some credit organizations headed by the Banco Nacional do Desenvolvimento Economico have been prompted by the projected establishment of the Latin American common market to study the possibility of granting five-year credits to producer firms, which would enable them to export to Argentina and Uruguay against deferred payments similar to those offered by United States and European firms. Credit organizations in Chile are likewise studying ways and means of making similar facilities available to Chilean industrialists.

2. Ordinary passenger coaches

The four countries' annual technical requirements and production capacities as regards ordinary passenger coaches are indicated in the following table.

ORDINARY PASSENGER COACHES: ANNUAL TECHNICAL REQUIREMENTS AND PRODUCTION CAPACITY

(Units)

Country	Annual requirements	Production capacity
Argentina	170	-
Brazil ^{a/}	250	400
Chile	50	100
Uruguay	<u>10</u>	<u>-</u>
Total	480	500

a/ Including rail motor cars and trailers which are mainly used on suburban lines.

This table shows that the capacity of the above-mentioned countries is sufficient to cover their requirements. This does not follow, however, if, with respect to the last few years, the following circumstances are also taken into account:

/(a) Effective

(a) Effective purchases made by the Argentine and Uruguayan railways were very few owing to the state of their finances;

(b) For the same reason, the Chilean railways' effective purchases, of only 22 units in 1956 and eight in 1957, fell far below requirements. Furthermore, no new orders are expected in the near future and most of the production capacity is standing idle.

(c) In Brazil, the railways also purchased less than they required. Moreover, a certain proportion was bought abroad on instalment payments, which means that part of Brazil's production capacity was unutilized. At present, some 200 coaches are being manufactured but there is some anxiety among industrialists as to the likelihood of new orders.

It appears therefore that Brazilian and Chilean industrialists would be interested in exporting ordinary passenger coaches to Argentina and Uruguay. The Chileans, in particular, would like to supply Argentina with unfinished coaches in which the latter could then install electrical equipment, brakes, heat insulation material, locks, etc. in order to boost local industries. However, it is clear that, in the case of goods wagons, such exports would primarily depend on the amount of credit that the Banco Nacional do Desenvolvimento Econômico might be able to give to Brazil, and similar Chilean banking agencies to Chile.

In four or five years Argentina could satisfy its ordinary passenger coach requirements with the help of the new factory under construction in Córdoba for the production of rail cars and which could also manufacture 100 to 200 ordinary coaches if it had enough orders. More details will be given about this plant when rail cars and traction equipment are discussed.

3. Trade in parts and spares

In the foregoing paragraphs, an examination was made of the trade possibilities as regards goods wagons and complete passenger coaches.

/Trade in

Trade in these items will mainly depend on the loans which Brazilian and Chilean industries can obtain from their respective national credit organizations for the purpose of financing exports to Argentina and Uruguay. Prospects for trade in railway equipment would not, however, be restricted to complete goods wagons payable in instalments, since it is assumed that large-scale trade in parts and accessories against cash payment might be established among the four countries without delay.

Argentina produces few railway bogies and therefore has to import them for new equipment and repairs, either complete or as parts and accessories (axles, tyres, wheels, other welded or forged pieces, springs, and rods). Uruguay also has to import bogies for wagon repairs. Both countries, in addition, have to import couplings, buggers and brake and signalling equipment. In Argentina, domestic production of big diesel engines has begun, but for this in its turn a number of items has to be imported (pistons with rings, crank shafts and large forged pieces).

At present, virtually the whole of this equipment is purchased in the United States or Europe at a considerable outlay of foreign exchange. For some time, however, Brazil, whose railway equipment industry is in full process of development, has been exporting small amounts of axles, bogies, buggers and welded and forged pieces of all kinds to Argentina, which are paid without difficulty, thanks to Argentina's favourable trade balance with Brazil. A new plant for producing axles and forged wheels is also being set up in Brazil. Its production, which is expected to be 30 000 tons as from 1960 on the basis of a single daily shift to supply the domestic market, could easily be doubled by adding other shifts if export markets were found. Chile could also export up to 5 000 tons of tyres to Argentina and Uruguay, and 1 000 tons of axles from its newly-finished plant. If a regional market were established, South America could and should rapidly satisfy its requirements of all the above-mentioned items, thereby freeing itself from its dependence on United States and European imports. With respect to compressed-air
/brake equipment,

brake equipment, Brazil would be in a position to export within ten months. It should also be able to export signalling equipment, of which it already manufactures more than 50 per cent in value.

4. Traction equipment: locomotives and rail cars

The possibilities of exporting goods wagons, passenger coaches and accessories from Brazil and Chile to Argentina and Uruguay have already been examined. The most important of these trade flows would be that from Brazil to Argentina. The latter country in its turn will have to expand its own exports to other Latin American countries. From the study of traction equipment which was made in the previous chapter, it appears that steam traction is being gradually replaced in South America by diesel, and in some cases, electric equipment. This might act as an incentive to Argentine industry, as will be seen later on.

Up to the present, all the traction equipment used by the Argentine railways has been imported from Europe and the United States, more than 500 diesel locomotives having been purchased by Argentina between 1947 and 1957. In the preceding chapter, Argentine requirements during the next 10 to 20 years were estimated at 150 rail cars and 50 diesel locomotives annually. This equipment could be manufactured domestically within a relatively short time.

A plant for the manufacture of diesel engines of 250 to 3,000 HP already exists in Córdoba. In November 1958, the foundation stone of another plant was laid, also in Córdoba; this will manufacture diesel rail cars and trailers, using engines produced by the first plant. From 1960-61 onwards, the new plant should be able to satisfy total Argentine requirements as regards this item. ^{1/} A project is under study for a third plant at Campana to manufacture diesel locomotives with engines from the Córdoba factory. According to this project, domestic requirements of diesel locomotives could be met by internal production in the space of five to eight years. In brief, the Argentine railways' rail car and locomotive requirements could be satisfied almost entirely by domestic production in the near future.

^{1/} This plant could also supply the Argentine railways with ordinary passenger coaches.

What is the situation as regards this item in the other countries dealt with in the report?

In the last chapter, it was pointed out that the Brazilian railways have a park of approximately 800 electric and diesel locomotives, half of which were purchased abroad during the last five years. During the next few years, it is estimated that Brazil will need 50 locomotives and 25 rail cars annually. Some Brazilian enterprises already manufacturing passenger coaches and rail cars are studying the possibility of extending their production to locomotives as well, for which they would import the necessary engines.

Since Brazil has no plants that manufacture big diesel engines and no plans for construction any, it seems likely that Argentina could export such engines to Brazil where they would be used in the assembly of Brazilian rail cars and locomotives.

A project of this type cannot be properly prepared without a more far-reaching study and careful programming of Argentine and Brazilian requirements in the next decade or two. Chilean requirements should also be taken into account; in the foregoing chapter, these were estimated at 20 rail cars and 130 locomotives during the next 5 to 10 years. Uruguayan requirements were placed at 60 rail cars and 22 diesel locomotives, but no specific date was fixed for their purchase. In view of these facts, close co-ordination would be necessary as regards:

(a) The indispensable expansion of the big diesel engine factory at Córdoba to enable it to supply both the Argentina market and that of neighbouring countries;

(b) Brazilian plans for adapting certain plants manufacturing passenger coaches for the production of rail cars and locomotives using imported engines;

(c) Long-term re-equipment programmes for traction material in the four countries as a whole.

Since the type of close co-ordination envisaged would prevent duplication and provide the advantages that are attendant upon international complementarity, it would become fully effective if a Latin American regional market were to be established.

Chapter III

CONCLUSIONS AND RECOMMENDATIONS

In the past, the economy of the Latin American countries was linked to that of Europe and the United States through the traditional trade in raw materials for manufactured and capital goods. At that time, it was impossible to think of railway rolling stock as originating from any but an overseas source.

In the last 10 to 20 years, Latin America has made great efforts to bring its own industries up to the level of the world's most advanced. These efforts have been most successful as regards railway rolling stock, and Latin America is already able to supply a substantial amount of its requirements in this branch. The main conclusions to be drawn from the present report are the following:

1. The statistics quoted show that Argentina, Brazil and Chile, taken as a whole, can satisfy their requirements as regards goods wagons, passenger coaches and certain spare parts, such as axles, tyres, wheels springs, cast and welded bogies, couplings, cast and forged pieces and, over the short term, brake and signalling equipment. Brazil and Chile could also have surpluses for export to other Latin American countries. The most important inter-Latin American trade flows that might result from this situation would be those of Brazil and Chile to Argentina - where production capacity is below the level of requirements - and to other Latin American countries which have no railway equipment industry.

Furthermore, the report indicates that Argentina is developing an important industry for the manufacture of traction equipment - big diesel engines, rail cars and locomotives - which is expected to cover domestic requirements in the next five to ten years.

In view of this, and of the scope of the projected regional market, it would be advisable to promote industrial co-ordination among the countries in question, in order to prevent duplication and enable them to enjoy the advantages to be derived from complementarity.

2. In order to give an initial impetus to such trade transactions, it is highly important that credits should be opened for industrialists in order to place them on a satisfactory competitive basis with suppliers in other regions, who are in a position to grant deferred payment facilities to the Latin American railways, thanks to credits from the Eximbank and other banks. Up to the present, the only bank which has indicated its willingness to grant such credit is the Banco Nacional do Desenvolvimento Económico (to Brazilian industrialists exporting railway equipment). It would be necessary to ascertain whether banks in other countries would also be ready to do so.

3. Lastly, the railway networks in South America all have extremely antiquated equipment and large financial deficits. These circumstances create a vicious circle, since equipment cannot be renewed for lack of funds, and the extreme age of the rolling stock leads the companies into ever-greater financial losses.

From the information given in the preceding paragraphs, inter-Latin American trade is likely to increase if a regional market is established and the railway services may improve, although not enough to bring them completely up-to-date. Special measures are required to deal with a situation such as this. In this respect, the Córdoba Meeting might explore the possibilities of drawing up a co-ordinated programme for the over-all modernization of Latin American railways and for the future development of the railway equipment industry in the region, due attention being paid to the standardization of equipment as a means of facilitating mass production.

Annex I

THE COLOMBIAN RAILWAYS

A. Break-down by age groups of rolling stock in operation, 1957

(Units)

	Total	0-5 years	5-15 years	15-25 years	25-35 years
Goods wagons	1 656	153	552	468	483
Passenger coaches	475	9	67	256	143
Luggage vans	57	-	10	4	43
Electric rail cars	1	-	1	-	-
Diesel rail cars	48	6	10	30	2
Steam locomotives	255	-	61	86	108
Electric locomotives	-	-	-	-	-
Diesel locomotives	27	27	-	-	-

B. Purchases of rolling stock, 1950-57 a/

(Units)

	1950-53 ^{b/} (as a whole)	1954 ^{c/}	1955	1956 ^{d/}	1957 ^{e/}
Goods wagons	335	264	60	210	50
Passenger coaches	-	-	-	-	-
Luggage vans	-	-	-	-	-
Electric rail cars	-	-	-	-	-
Diesel rail cars	-	-	-	28 ^{f/}	-
Steam locomotives	26	-	-	-	-
Electric locomotives	-	-	-	-	-
Diesel locomotives	5	-	-	2	18

a/ All payments were made in United States dollars.

b/ From Belgium and the United States.

c/ From Belgium.

d/ From the Federal Republic of Germany, France and Sweden.

e/ From the Federal Republic of Germany and the United States.

f/ For delivery in instalments up to 1960.

/C. Purchases of

C. Purchases of rolling stock anticipated for 1958 and technical requirements during the next decade

(Units)

	Purchases in 1958	Technical requirements in the next decade	
		Maintenance	Expansion
Goods wagons	200 ^{a/}	67	-
Passenger coaches	-	19	-
Luggage vans	-	3	-
Electric rail cars	-	0	-
Diesel rail cars	6 ^{b/}	2	-
Steam locomotives	-	0	-
Electric locomotives	-	0	-
Diesel locomotives	18 ^{c/}	1	80

a/ Fruit wagons from the Federal Republic of Germany.

b/ From Sweden

c/ From the United States.

Annex II

THE MEXICAN RAILWAYS

A. Break-down by age groups of rolling stock in use, 1957

(Units)

	Total	0-5 years	5-15 years	15-25 years	25-35 years	35-45 years	45-55 years
Goods wagons	23 303	3 531	600	5 710	9 050	3 010	1 400
Passenger coaches	982	30	200	-	220	70	69
Luggage vans	545	68	37	-	200	200	40
Electric rail cars	40	-	-	-	-	-	-
Diesel rail cars	7	7	-	-	-	-	-
Steam locomotives	917	-	60	11	19	169	658
Electric locomotives	12	-	-	12	-	-	-
Diesel locomotives	462	209	253	-	-	-	-

B. Purchases of rolling stock, 1939-57

(Units)

	1939-53 (as a whole)	1954	1955	1956	1957
Goods wagons	-	16	865	1 133	1 517
Passenger coaches	71	37	-	32	59
Luggage vans	6	18	-	-	50
Electric rail cars	-	-	-	-	-
Diesel rail cars	1	6	-	-	-
Steam locomotives	-	-	-	-	-
Electric locomotives	-	-	-	-	-
Diesel locomotives	253	50	41	92	26

/C. Purchases

C. Technical requirements of rolling stock for the next ten years

(Units)

	To maintain present park	To increase present park
Goods wagons	3 500	15 960
Passenger coaches	147	189
Luggage vans	82	99
Electric rail cars	-	-
Diesel rail cars	-	-
Steam locomotives	-	-
Electric locomotives	2	2
Diesel locomotives	70	239

D. Estimated purchases of rolling stock for period 1958-60^{a/}

(Units)

	1958	1959	1960
Goods wagons	2 299	1 470	1 470
Passenger coaches	128	50	50
Luggage vans	-	-	-
Electric rail cars	-	-	-
Diesel rail cars	-	-	-
Steam locomotives	-	-	-
Electric locomotives	-	-	-
Diesel locomotives	48	45	45

a/ For Mexican national railways only.

/E. Production

E. Production of rolling stock in Mexico

Mexico has an enterprise which manufactures goods wagons and passenger coaches. Construction of the plant at Ciudad Sahagún, Hidalgo, was begun in December 1952 and was finished in March 1954.

On 10 December 1954, the first wagon manufactured in Mexico was ready. Production amounted to 881 units in 1955, 1,133 in 1956, 1,517 in 1957 and 1,787 in 1958.

Eighteen per cent of the material utilized for the first wagon was of domestic origin. Four years later, this proportion had become 60 per cent and the enterprise believes it will reach 75 per cent by 1959.

With one shift per day and the utilization of only one of the two assembly plants available, one wagon is turned out every 72 minutes, which is equivalent to an annual output of 1,780 units. This production volume could be greatly increased if both assembly plants were used and a second shift worked.

The type of wagon manufactured is known as an AAR standard box car (capacity-50 tons and tare-21 tons). Wagons of this kind are used only in Canada, the United States and Mexico.

The enterprise can produce all kinds of rolling stock from flat cars to passenger coaches and goods wagons of any specification, including those used in other Latin American countries. An important part of its machinery consists of a hydraulic press of 2,500 tons for the manufacture of roofs, front partitions and doors for wagons, and a study is being undertaken of models that could be adapted to railway conditions in Latin America. Up to the present, two models of this kind have been submitted: a box car, to the Colombian national railways; and a flat car, to the Honduran national railways.

In December 1957, the national Pakistan railways invited the enterprise to take part in a competition for the provision of 3,129 goods wagons, in which, among others Australian, Canadian, Japanese and United Kingdom companies would be competing. Because of its prices, the Mexican enterprise was ranked second among those which quoted fixed prices, a United Kingdom company being the only one to offer a better price.

The principal reason for establishing a factory for the manufacture
/of rolling

of rolling stock in Mexico was to produce enough to meet the requirements of the Mexican railways. For this reason, and because of its short life, its market includes the replacement, during the next ten years, of virtually all the rolling stock in circulation in 1954, as well as the provision of any equipment that might be needed for Mexico's economic and industrial development.

Mexico also has a few enterprises that manufacture wheels, springs, bogies and couplings.

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