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ECONOMIC CO-OPERATION AMONG LATIN AMERICAN AND CARIBBEAN COUNTRIES IN THE ESTABLISHMENT OF CONTAINER REPAIR AND MAINTENANCE ENTERPRISES: PROJECT PREPARED BY CEPAL

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/SUMMARY

SUMMARY

The growing utilization of containers in the Latin American and Caribbean trades has clearly shown the savings possible to exporters and importers alike through reductions in, for example, freight, stevedoring and insurance costs as well as those costs related to the time break-bulk cargoes normally wait for on-carriage services. Moreover, many shipping lines and port authorities have begun to incorporate multipurpose and cellular tonnage into their fleets and to modernize the physical and institutional infrastructure of their ports, respectively, in order to take further advantage of such cost reductions.

While the construction and leasing of containers are international in scope, container repair is something of an anomaly within containerization in that it is limited to a specific trade area usually near a port. As a result, the domestic container repair industry reflects domestic container needs, flows and export usages. If the export container usage for any given country is dynamic, stagnant or depressed, then so will be the container repair industry.

In recognition of the local nature of container repair and maintenance and in an effort to create an environment in which appropriate sectors of Latin American and Caribbean countries can assist each other in the establishment of container repair and maintenance enterprises, CEPAL's Transport and Communications Division, with financing from the Government of the Netherlands, undertook in May 1980 a two-year project entitled "Economic Co-operation Among Latin American and Caribbean Countries in the Establishment of Container Repair and Maintenance Enterprises". This project is divided into three stages: the collection of information, its analysis and publication, and the convening of three on-site workshops.

THE IMPORTANCE OF CONTAINER TRANSPORT SYSTEMS FOR LATIN AMERICAN AND CARIBBEAN COUNTRIES

Cargo unitization consists of grouping various small and medium-sized packages of different forms and sizes into larger homogeneous units so as to facilitate their handling by mechanical means and make the transport of goods quicker, safer and efficient, eliminate the risks of breakages, theft or loss, and reduce the cost to the owner of the cargo and the carriers. Instead of handling innumerable boxes, crates, bales, or loose sacks of varying dimensions and weights, the system makes it possible to handle a small number of standard-size units, which results in a substantial increase in productivity not only of the labour force involved but also of the vessels, trucks, trains and airplanes used, while at the same time providing an opportunity to considerably reduce, simplify and harmonize trade documentation and consequent formalities.1/

The container might appear to be merely another means of unitizing cargo, but such is not the case. Other transport units such as pallets and pre-slinging, even though extensively used, have not had as profound an effect on the entire transport chain as the container. The extensive use of containers has resulted, inter alia, in the modification of docks and attendant cargo storage areas, shoreside cargo cranes, cargo handling equipment, ships, trucks, trains, transport documentation and customs procedures in order to facilitate the rapid and uninterrupted movement of this new type of cargo unit.

1/ Tomás Sepúlveda Whittle, International Maritime Transport in South America (E/CEPAL/R.213/Rev.1). December 1979, Santiago, p. 33.

/It should

It should be understood that cargo had been loaded into special boxes for ocean transport long before Sea-Land Services, Inc. introduced large-scale containerization in the Atlantic in 1956 and Matson Navigation Company did the same in the Pacific in 1958. However, these firms were the first to put this idea into the framework of a system in which cargo would be loaded into a container at the shipper's place of business and move all the way to the consignee without being removed from the box en route. As the rising costs of transport operations at that time were forcing freight rates upward, and since carriers had to make major changes to control such upward movement of freight rates in order to maintain shipper demand, containerization was an idea for which the time was ripe. While the intermodal or through carriage aspects of containerization were comparatively limited in the early growth period, containerization nevertheless worked well. The effect of container transport on freight rates in the West Coast-Hawaii trade 2/ is a good example, for by 1964 freight rates had been reduced to their 1961 level and there were no more increases until 1971, when inflation finally overtook container operations.3/

While there was a growing recognition during the early 1960s of the advantages of transporting cargo in containers, it was not until 1965, when the International Organization for Standardization (ISO) approved the standard dimensions, which allow the transport of cargo units by any mode, that the use of containers spread. Since the container facilitates door-to-door instead of port-to-port transport, its use found rapid acceptance among shippers and carriers from developed regions, and by 1970 one could speak of "containerization" as not only an established state of transport art but also the predominant transport unit used on line trade routes. No longer an innovation, containerization has become the essential lubricant that allows the gears of world trade to function more effectively. According to Mr. H. Graf, president of Cast North America Ltd., "Basically, we believe that the ship is just another vehicle in the transport system. It's immaterial. What's material is the container".4/

Containerization has proven repeatedly that it can be, by its cost efficiency, the single most significant factor enabling trading nations to sell more and compete better in world markets. It is interesting to note that whereas a general cargo ship of 10 000 dwt would remain in port at least 5 days discharging all cargo, a cellular container ship of similar tonnage usually discharges the same amount of cargo in less than one day, and while the aforementioned break-bulk vessel would require up to 125 stevedores to discharge cargo, the cellular container ship requires only 15. Since the major markets for Latin American and Caribbean exports are those of Europe, North America and Japan, and as stevedoring costs at the ports for those markets greatly exceed similar costs in their own region, Latin American and Caribbean exporters must either absorb such costs themselves, thereby reducing their income, or utilize containers.

The advantages derived by shippers, carriers, consignees and others in the transport chain from the use of containers are now generally acknowledged. While the experience with containers has largely involved those trades between industrialized countries, many developing countries are rapidly industrializing and

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2/ Ocean transport between any two or more United States ports must be in ships constructed in that country, as well as owned and crewed by its citizens (Title 46 USC section 883).

3/ Transport 2000, November/December 1980, p. 48.

4/ Transport 2000, January/February 1981, p. 24.

can obtain the same benefits. Instead of import substitution, many such countries are pursuing an active export-oriented form of industrialization, and the shift from the export of basic commodities to more processed and finished goods lowers relative cargo density and thus boosts demand for container volume.5/ Furthermore, many developing country liner cargoes are suited to container transport. Some developing country export products such as canned fruit, for example, have been particularly successful as container cargo, with a very marked reduction in breakage. Indeed, with the passage of time many more cargoes will be found suitable for containerization than were originally thought to be the case.

The rapid spread of containerization is largely due to its semi-bulk nature, faster overall transit times and enhanced cargo protection. As bulk and semi-bulk cargoes present only one type of cargo unit to a port, their handling is easily mechanized. Likewise, ISO standard containers present port authorities with a uniform cargo unit and an opportunity to change from labour-intensive break-bulk operations to a capital-intensive container handling system. This is accomplished by utilizing specialized equipment such as container cranes, straddle-carriers, fork-lift trucks, etc., which ensure the rapid and efficient loading and discharge of container ships as well as container movements to and from storage areas.

The movement of goods in containers permits faster door-to-door transit times, not because ships travel faster -there is no fundamental reason why containerships should travel faster than break-bulk liners- but because port operations and inland transport services can be rationalized to reduce the time goods spend waiting for on-carriage. For example, Cast North America Ltd. operate their ships in the highly competitive North Atlantic container trade at 14 knots, which is not an outstandingly high speed. According to Cast president, Mr. H. Graf, "In the final analysis, it's the total transit time from inland origin to inland destination which is of concern to shippers and consignees".6/ It is interesting to note that greater in-movement speed is cost-increasing while a reduction in the time goods spend waiting for on-carriage is cost-reducing. Furthermore, faster overall transit times reduce the disadvantage of distance from the market, since there are fewer goods-in-transit at an "average" moment and so less capital is committed.7/

The number of cargo damage and loss claims presented to ocean carriers has decreased dramatically since the advent of container services, so much so that large reductions in insurance premium costs have been possible. This is, of course, due to the physical protection containers provide cargoes from damage by crushing, negligent handling, scuffing, etc. Moreover, as the number of occasions on which containerized cargo is handled is normally reduced to the operations of stuffing and stripping the containers this has in turn reduced the opportunities for damage, delay, errors in sorting and pilferage.8/

No industry has obtained more benefits from a technological innovation than ocean transport has from containerization. Cellular container ships are loaded or discharged in one-sixth of the time formerly required, and containers can be moved off the piers in minutes compared with the hours and even days required for break-bulk cargoes. Overall productivity in major ports has trebled with the advent of

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5/ Container News, October 1980, p. 17.
6/ Transport 2000, January/February 1981, p. 24.
7/ International Chamber of Commerce, The Development of International Container Transport: Its Application in Developing Countries, 1977, p. 6.
8/ Ibid.

containers.9/ Despite the extra capital costs for container docks, storage areas, cranes and other handling equipment, these berths can handle each ton of cargo at 60% below the capital costs per ton for a conventional general-cargo berth.10/

According to a survey prepared in May 1979 by the OAS-CEPAL Maritime Transport Programme,11/ the tendency to use cargo containers is generalized throughout Latin America and is increasing, in some cases at a spectacular rate compared with the situation described in a similar study prepared by LAFTA in 1970.12/ As may be seen from table 1, ten of the eleven ports evaluated in the two periods have increased their volumes of containerized cargoes and in only one -Cartagena- has this volume decreased slightly. Among the most spectacular increases, mention should be made of Buenos Aires, from 3 000 to 335 000 tons; Santos, from 13 000 to 507 000; Rio de Janeiro, from less than 3 000 to 116 000; Valparaíso, from 6 000 to 78 000; Guayaquil, from 23 000 to 64 000; and Callao, from 15 000 to 52 000. As the Latin American and Caribbean countries cannot afford to neglect potential developments in the containerization of their trades and the profound changes in transport planning, management and operations which this technology requires, the question now seems not to be whether to containerize but rather how to adapt to the inevitable containerization.

REGIONAL CONTAINER TRANSPORT ACTIVITIES

While those involved in Latin American and Caribbean ocean transport may have different opinions as to how quickly containers will be utilized in each country's trades, there is agreement that the experience of other regions, such as the Middle East and South Africa, indicates that the process could be quite rapid. The degree of container penetration and its timing will differ from country to country, but the process of containerization is inevitable. Naturally, the current excess container carrier tonnage will play a part in this, as these vessels will be looking for employment.13/ There still are some major areas of the world that have barely been touched by containerization. As certain Latin American and Caribbean countries, as well as numerous nations in Asia and Africa, are just starting to utilize containers, one should see great changes during the 1980s in these areas.14/

Although the ocean transport of containers has not yet made a heavy impact within the total tonnage of goods carried in Latin American and Caribbean trades, many countries have recognized the inherent advantages of this technology and begun to utilize cellular vessels in appropriate trade flows. For example, during February 1981 the Argentine national line placed a cellular container vessel in its trade between Buenos Aires and Santos, Brazil.15/ Furthermore, Latin American national lines are investigating the feasibility of joint ventures with extra-regional companies. For instance, Nippon Yusen Kaisha (NYK), Kawasaki Kisen Kaisha ('K' Line)

9/ Transport 2000, September/October 1980, p. 18.

10/ United Nations, Department of International Economic and Social Affairs, Office for Programme Planning and Co-ordination, Transport Newsletter, Volume 3, No. 1, September 1980, p. 6.

11/ E/CEPAL/R.213/Rev.1, op.cit., p. 30.

12/ Tomás Sepúlveda Whittle, Bases para el estudio sobre transporte en contenedores. Plan de acción de ALALC (ALALC SEC/PA.44), Montevideo, June 1973, pp. 19 to 21.

13/ Container News, October 1980, p. 17.

14/ Container News, May 1980, p. 2.

15/ ALAMAR Informativo No. 293, 16-22 February 1981.

/Table 1

Table 1

CONTAINER TRAFFIC IN THE MAIN PORTS, 1969-1978

(Units and metric tons of cargo)

Port	Year	Total movements		Containers shipped			Containers unshipped		
		Number	Tons	Full	Empty	Tons	Full	Empty	Tons
				Number			Number		
Argentina									
Buenos Aires	1969	...	3 040	421	...	1 390	415	...	1 650
	1978	21 427	334 761	9 809	467	126 577	7 721	3 400	146 230
Brazil									
Santos	1969	2 605	13 294	568	772	4 194	1 049	266	9 100
	1978	56 322	506 501	17 907	9 020	226 322	20 124	9 271	280 159
Rio de Janeiro	1969	928	2 809	217	...	760	585	126	2 048
	1978	9 725	115 991	5 051	3 183	58 630	662	49	57 361
Manaus	1978	7 252	43 660	289	3 376	9 195	3 535	22	34 465
Salvador	1978	2 299	43 205	1 857	97	35 897	269	76	9 508
Rio Grande	1978	8 433	38 100	3 917	184	28 942	320	4 012	9 158
São Sebastião	1978	1 655	30 906	1 618	5	30 570	30	16	426
Paranagua	1969	463	3 737	310	25	2 637	128	...	1 100
	1978	4 690	8 803	2 167	232	4 683	392	1 909	4 120
Vitoria	1978	1 273	6 587	562	...	4 670	49	662	1 917
Malhado	1978	809	6 391	254	113	5 319	12	430	1 072
Recife	1978	609	4 659	88	156	1 550	289	76	3 329
Other ports	1978	2 957	11 256	408	912	5 640	312	1 235	5 618
Chile									
Valparaiso	1969	3 827	6 683	588	811	1 710	1 700	728	4 973
	1978	12 932	77 946	2 428	2 868	24 854	6 540	1 096	53 092
Antofagasta	1969	930	2 870	30	512	110	302	286	2 760
	1978	1 377	5 236	101	191	3 344	50	550	1 894
Arica	1969	804	1 454	...	310	...	406	...	1 454
	1978	930	3 385	95	654	2 013	158	28	1 372
Iquique	1978	2 784	13 960	8	1 087	3 050	1 689	...	10 910
San Antonio	1978	556	2 943	126	32	1 383	344	34	1 560
Talcahuano/ San Vicente	1978	401	4 352	280	32	3 551	79	60	801
Punta Arenas	1978	260	2 710	34	...	450	226	...	2 260
Colombia									
Buenaventura	1969	...	86 200	...	...	22 900	...	...	15 300
	1978	5 406	42 182	1 557	1 040	20 898	1 600	1 209	21 264
Cartagena	1969	...	20 800	...	...	1 400	...	...	19 400
	1978	2 614	13 747	86	515	6 984	749	464	6 765
Barranquilla	1978	888a/	6 218	296a/	...	1 950	592a/	...	4 268
Santa Marta	1978	2 767	2 334	1 170	1 019	250	122	456	2 104
Ecuador									
Guayaquil	1969	4 620	23 025a/	1 075	1 025	6 525a/	2 460	60	16 500a/
	1978	9 566	63 900a/	1 495	3 251	18 500a/	4 475	345	35 400a/
Manta	1978	4 991	38 600a/	1 892	999	14 000a/	2 451	59	24 600a/
Mexico									
Veracruz, Veracruz	1978	5 330	52 016	1 762	340	19 426	2 956	280	32 590
Tuxpan, Veracruz	1978	5 457	50 906	2 486	...	15 143	2 971	...	35 763
Tampico, Tampico	1978	2 242	18 619	994	407	12 251	520	319	6 368
Manzanillo, Col.	1978	622	3 309	241	69	2 471	7	305	838
Mazatlan, Sin.	1978	108	1 537	108	...	1 537	...	...	...
Peru									
Callao	1969	...	15 500	...	...	8 500	...	...	7 000
	1977	5 403	52 115	1 924	1 077	25 329	2 472	...	26 246
Uruguay									
Montevideo	1977	2 446	...b/	1 100	76	...b/	1 130	140	...b/

Source: Tomás Sepúlveda Whittle, El empleo de contenedores en América Latina, CEPAL, November 1978, prepared for the Fifteenth General Assembly of ALAMAR (Viña del Mar, November 1978).

a/ Estimate.

b/ No record of tonnage of containers.

/and Compañía

and Compañía Chilena de Navegación Interoceánica S.A. have signed an agreement to start a joint full container service from the Far East to South America during 1981. Each line is to contribute one vessel in the 500 to 600 TEU class to provide an initial service of one sailing a month.16/

There has been a marked growth in the use of multipurpose tonnage suitable for containers in the Latin American and Caribbean trades. For example, it was recently noted in a specialized maritime transport magazine that 'K' Line is to introduce such tonnage with TEU capacity up to 500 units on the run from Japan and the Far East to the West Coast of South America; Líneas Euroflot is utilizing four vessels of 200-300 TEU capacity from North European ports to Santos, Rio de Janeiro, Buenos Aires and Montevideo; and Current Marine, Inc. is to offer multipurpose tonnage from the US Gulf Coast to the Eastern Caribbean and North Coast of South America.17/ During 1979 Lloyd Brasileiro began services with the 12 000 dwt multipurpose Calandrini and Cantuaria, both offering spaces for 390 TEU, of which 72 can be refrigerated.18/ Furthermore, Lloyd Brasileiro has announced that six of its "Ita" class -fast and heavily geared vessels constructed between 1969 and 1972- are to be converted into fully cellular geared containerships during 1982.19/

In response to increasing shipper demand for more sophisticated tonnage, most of the major liner companies serving South America are switching to more modern, container-oriented tonnage. For example, during March 1980 Hamburg Sud introduced the first fully cellularized container vessels, the Monte Sarmiento and Monte Olivia, both having 530 TEU capacity, of which 300 can be refrigerated. These vessels are to maintain a monthly sailing schedule between Hamburg, Bremen, Rotterdam, Antwerp and Santos, Montevideo and Buenos Aires.20/ Similarly, Nedlloyd has switched two of its 1978-built multipurpose vessels, which offer 676 TEU capacity and are able to operate independent of shore-based cargo handling facilities, onto its trades from the Far East to Central and South American ports.21/ The remaining two vessels of this class will also be switched to the South American run during 1981.

All the indications are that Mexico will be the point of concentration for the next stage of containerization in the Caribbean. Although containerized cargo on Mexico's Gulf Coast is running at encouraging levels, the liner trade between Europe and the Caribbean area as a whole retains its traditionally unbalanced character. However, this imbalance is perhaps not so marked as it once was, and there is now somewhat more cargo for the eastbound trip. This has partly been fostered by the introduction of containerization -opening up as it has a wider market for agricultural products for certain areas- and partly by the initiative taken by the Association of West Indian Trans-Atlantic Steam Ship Lines (WITASS) in establishing promotional rates for "non-traditional exports". The latter has had a positive effect in attracting "new" exports of manufactures and agricultural products from Jamaica, Central America and Colombia.22/

Many Latin American and Caribbean countries, such as Argentina and Uruguay, have planned large investments in their transport infrastructure, with special

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16/ Sea Trade, March 1981, p. 32, and El Mercurio, 22 April 1981.
17/ Fairplay International Shipping Weekly, 24 July 1980, p. 11.
18/ Fairplay International Shipping Weekly, 27 March 1980, p. 8.
19/ Fairplay International Shipping Weekly, 9 April 1981, p. 11.
20/ Fairplay International Shipping Weekly, 27 March 1980, p. 8.
21/ Fairplay International Shipping Weekly, 18/25 December 1980, p. 11.
22/ Ibid., p. 29-31.

emphasis on containerization. For example. the Government of Argentina recently decided to upgrade its container facilities at Buenos Aires, and in line with this decision the authorities of that port plan to lease a major pier to private interests for operation as a container facility. A study by the General Administration of Ports (AGP) has determined that Pier One can be extended and equipped to handle general cargo vessels with containerized freight. The study suggests that with the installation of two automated container cranes, four straddle carriers and an improved dock structure, the pier could handle up to 80 000 containers a year, working three or four ships simultaneously. This project is expected to cost more than US$ 30 million.23/

In view of the formation of container consortia such as CAROL providing services to Caribbean countries and the dramatic annual increases in the number of containers handled in Latin American ports, it is evident that the use of containers and their repair and maintenance will be major growth industries in the region during the 1980s and even beyond.

THE CHALLENGE FOR THE 1980s

One of the more important challenges faced by CEPAL's Transport and Communications Division in the 1980s is that of assisting Latin American and Caribbean countries in their efforts to create a "critical mass" of skills, equipment and supporting institutions which will permit growing participation in new transport technologies and systems such as containerization.

Within a transport system as vast as containerization, countries of this region desiring to participate must carefully select an entry level for which (a) the supportive infrastructures either exist or can be easily established, (b) the undertaking is local in nature, i.e., not subject to international competition, and (c) is labour-intensive. While these criteria for evaluating an appropriate entry level into any technology might seem to preclude participation by Latin American and Caribbean countries in containerization, such is not the case.

For those countries with an export container demand, the construction of containers would seem to be a viable entry level into this transport technology. Nonetheless, the construction of containers on a cost-efficient basis would require a wide range of manufacturers in diverse areas such as steel and aluminium for plating, corner posts, corner fittings and other structural members, as well as wood floors, container markings and paints. If these components cannot be manufactured nationally, they must be imported, with a corresponding increase in prices due to transport costs and customs duties. Therefore, as the construction of containers must be supported, either directly or indirectly, by the entire manufacturing, transport and export sectors, the establishment of such enterprises should depend on the verification that they do not substantially exceed infrastructural capabilities.

As an ISO standard container will be utilized all over the world during its 12-15 year economic life, both container construction and leasing are international in scope. Thus, if a Latin American importer of goods from Japan wishes to utilize containers, he will normally purchase or lease such equipment as close as possible to the Japanese exporter, thereby reducing any empty container transport costs. For this importer to purchase a container constructed in Argentina, for

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23/ Container News, May 1980, p. 8.

example, he would require not only containerizable Argentine exports destined for Japan, in order to eliminate empty transport costs to the latter country, but also a competitive sales price for Argentine containers when compared with those of Japan.

Container leasing, for its part, provides shipowners and other commercial operators with a means of financing their container needs as well as a means by which trade imbalances might be corrected. It should be understood that very few trades are totally balanced when considered individually -i.e., the number of containers entering a port loaded equals those leaving loaded- but when viewed on an international scale such trades can be closely harmonized and even balanced. For example, while Paraguay has a container trade flow imbalance, the effects of this imbalance can be reduced by relocating empty containers not at the point of origin for import cargoes but rather at nearby São Paulo or Rio de Janeiro, Brazil, as these areas have an export demand for empty containers.

While construction and leasing are international in scope, container repair is rather different in that it is limited to a specific trade area, usually near a port. This local nature of the container repair industry is a result of owners and repairers seeking to avoid empty container transport costs. Since leasing companies apply the policy of repairing containers as near as possible, to the place where they are found to be damaged, repairers must either locate their facilities close to major export trade flows which utilize containers, or else absorb empty transport costs. As a result, the domestic container repair industry reflects domestic container needs, flows and export usages. If the export container usage for any given country is dynamic, stagnant or depressed, then so will be the container repair industry. Due to the local nature of the container repair and maintenance industry, competition exists only between those facilities offering services in the same trade area, and not between enterprises in diverse locations such as Europe, the Far East and North America.

As repair work on a particular container depends on the damage, the type of container, its construction material, standards of repair and the customer, each task must be tailored to fit the situation. Due to the unique nature of each repair and the consequent need for flexibility, repair work is very labour-intensive. Moreover, the work force must be quite skilled and versatile. While some mechanization is possible with the use of hydraulic rams for straightening, automatic welding and painting, and some jigs and fixtures, it must be understood that these devices are merely used as aids to an otherwise manual operation. Automation or assembly line techniques have little application in container repair. Only rarely will a task be repeated in exactly the same manner more than a few times. The design, construction, and condition of containers vary so much that jigs, fixtures, and special tools cannot be utilized to make repairs under assembly line conditions. Even containers of the same design and from the same manufacturers become unique after repeated damage and repair.

While Latin America at present satisfies the technological criteria for entry in the container repair and maintenance industry, it must be highlighted that since containers continue to be modified to enhance their strength and handling features, they are the subject of ever-increasing levels of technological sophistication. It should be understood that as a transport technology becomes increasingly sophisticated, it will be found more and more expensive, its life span will be shorter, and operational, construction and repair skills will take longer to learn. For developed countries with sufficient financial resources to invest in the necessary facilities and equipment, and qualified personnel to perform repair and

/maintenance tasks,

maintenance tasks, these ever-increasing levels of technology have not created any insurmountable problem. On the other hand, due to a scarcity of financial resources, skilled personnel and supportive infrastructure, the Latin American and Caribbean countries face the very real risk of being so overtaken by such technological changes that they might be unable to effectively participate in this growing industry. Thus, while repair technology yet remains within the reach of all Latin America and Caribbean countries, the appropriate sectors of each country must evaluate not only the feasibility of establishing container repair and maintenance enterprises but also the usefulness of such enterprises as a technological base from which other areas of containerization might be entered.

THE CEPAL PROJECT

As the container repair and maintenance industry satisfies the region's technology entry-level criteria, and in an effort to create an environment in which appropriate sectors of Latin American and Caribbean countries might help each other to participate in that industry, CEPAL's Transport and Communications Division, with financing from the Government of the Netherlands, embarked in May 1980 on a two-year project entitled "Economic Co-operation Among Latin American and Caribbean Countries in the Establishment of Container Repair and Maintenance Enterprises".

This project encompasses the following three stages. First, the collection of information from container repair facilities, their major customers and suppliers of spare parts and paint in Europe, North America and the region served by CEPAL concerning the economic, industrial and operational circumstances under which it would be feasible to establish such facilities.

Second, analysis and publication of the information collected. The study prepared for the purpose of such publication is entitled "An Evaluation of the circumstances under which it would be feasible to establish container repair and maintenance enterprises" and is divided into the following sections:

I. Economic environment:
   (a) national economic policies and trade flows;
   (b) the cost structure of and demand for container repair services;
   (c) criteria for establishment of and investment in container repair enterprises; and
   (d) regional container transport activities.

II. Industry analysis:
   (a) principal characteristics of the world container industry,
      (i) size and growth potential,
      (ii) age,
      (iii) scrappage rates;
      (iv) type and material of construction,
      (v) ownership,
   (b) major customer groups;
   (c) customer relations;
   (d) repair standards; and
   (e) sources of container damage.

III. Operational environment:
   (a) location;
   (b) physical plant;
   (c) equipment and spare parts;
   (d) personal skills;

/(e) work

(e) work procedures,
  (i) nature of container repairs,
  (ii) container inspection,
  (iii) documentation,
  (iv) surface preparation and painting,
  (v) container markings,
  (vi) worker productivity programmes, and
  (vii) cost control and profitability.

Further, this document is supplemented with the following annexes: (a) "Refurbishment", prepared by CEPAL; (b) "Mobile repair units", prepared by REPCON, Liverpool, United Kingdom; (c) "Container repair standards", prepared by the United Nations Intergovernmental Maritime Consultative Organization (IMCO), London, United Kingdom; (d) "Special needs of container lessors", prepared by the Institute of International Container Lessors (IICL), New York, United States of America; (e) "Surface preparation and painting", prepared by Hempel's Marine Paints A/S, Copenhagen, Denmark; (f) "Establishment and operation of a container repair enterprise: a case study", prepared by Multimodal, S.A., Buenos Aires, Argentina; (g) "Modules for the establishment of container repair enterprises", prepared by Container Com. e Ind. S.A., Rio de Janeiro, Brazil; (h) "Container markings", prepared by Selecto Flash, West Orange, New Jersey, United States of America, and (i) "Repair enterprise documentation", prepared by CEPAL.

Third, the convening of three two-day on-site workshops, currently planned for April 1982, for participants from Latin American and Caribbean countries as well as those from other regions who wish to evaluate the feasibility of establishing such enterprises. At these workshops the aforementioned document will be distributed and presentations will be made concerning: (a) containerization and its importance for Latin American and Caribbean countries, and the economic aspects of the establishment of container repair and maintenance enterprises, by CEPAL; (b) establishment and operation of a repair facility, by Multimodal, S.A., Buenos Aires, Argentina; (c) special needs of container lessors, with slide shows concerning container inspection and repair, by the Institute of International Container Lessors, New York, United States of America; (d) container repair standards, by the United Nations Intergovernmental Maritime Consultative Organization (IMCO), London, United Kingdom; (e) surface preparation and painting, by Hempel's Marine Paints A/S, Copenhagen, Denmark; and (f) container markings, by Selecto Flash, West Orange, New Jersey, United States of America.