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LINKS OF THE TRANSNATIONAL CORPORATIONS WITH THE TIN INDUSTRY IN BOLIVIA

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CONTENTS

/Introduction

Introduction

In their desire to take better advantage of their non-renewable natural resources, the governments of Latin America have made substantial changes in the productive structure of the mining industry by extending State participation in mining activities, pursuing active policies and negotiating with the transnational corporations that had traditionally monopolized the sector.

In the absence of a domestic private sector having the necessary financial, technological and administrative capabilities, the State has been obliged, in some countries, to assume entrepreneurial functions and to set up public enterprises for the exploitation, processing and marketing of minerals. These significant changes in Latin American mining were not sufficient, however, to overcome its dependency on foreign capital and the transnational corporations continued to maintain their supremacy, particularly in the areas of technology and marketing on the world markets.

Nevertheless, this situation changed the bargaining positions of both sides and, as a result, brought about new types of relationships and contracts with the foreign corporations, thus making it possible for some countries in the region to gain considerable experience in policy design and implementation and in negotiations regarding specific problems.

Through its Joint Unit with the United Nations Centre on Transnational Corporations, CEPAL has been concerned with this subject over the last few years. Along with the Regional Commissions for Africa and for Asia and the Pacific, as well as the United Nations Centre on Transnational Corporations (CTC), it has developed an interregional project on bargaining power and distribution of gains among developing countries and transnational corporations in export-oriented primary commodities.

Under this project, studies are being made of seven commodities in the different countries of the region (bauxite in Jamaica, copper in Chile and Peru, tin in Bolivia, cotton in Mexico, bananas in Honduras and Panama, coffee in Colombia and sugar cane in Brazil), applying a common methodology in order to carry out integrated sectoral studies that will summarize the complex and multifaceted experiences of the countries that produce export commodities in

/the three

the three developing regions.1/ In addition, at each of its last three regular sessions (1975, 1977 and 1979), CEPAL approved a resolution on co-operation among developing countries and among developing regions of different geographical areas.2/

The purpose of this paper is to examine and evaluate the links between the transnational corporations and the tin industry of Bolivia since its nationalization in 1952 and the creation that year of the public enterprise Corporación Minera de Bolivia (COMIBOL) and, particularly, during the 1970s when the Empresa Nacional de Fundiciones (ENAF) began processing all the tin ore produced in the country.

The first part of the study deals with selected aspects of the international tin industry and particularly of the bargaining power of the transnational corporations and of the governments of developing countries during the successive stages of extraction, smelting and marketing of tin. The second part contains an analysis of the bargaining capacity of Bolivia after nationalization of the large mines in 1952, establishing a difference between the 1950s and 1960s, when Bolivian mining still relied on the transnational corporations for the smelting and marketing of tin (chapters 1-3), and the 1970s, when ENAF gradually strengthened its position in the production of tin metal and its marketing on the world markets, causing negative reactions on the part of the transnational corporations (chapters 4-6). Finally, some ideas regarding the limits and possibilities for industrialization based on tin are discussed and an attempt is made to draw conclusions from the Bolivian experience (chapters 7 and 8).

This paper, particularly the first part, is based on a study made by the Unit consultant, Roberto Arce, on a report by the Economist Intelligence Unit prepared at the request of CEPAL, on a synthesis made by Mr. B. Widyono (at the time a staff member of the CEPAL/CTC Joint Unit) and, finally, on the

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1/ For more detail, see UNDP, Proyecto de los Gobiernos de Bolivia, Brazil, Colombia, Chile, Honduras, Jamaica, México, Panamá and Perú sobre el "Fortalecimiento del poder de negociación de los Gobiernos Huéspedes en sus tratos con las empresas transnacionales dedicadas a la exportación de productos básicos" (RLA/80/016/A/01/02), "Transnational Corporations in Export Oriented Primary Commodities: A General Conceptual Framework for Case Studies" (CTC/ESCAP/PEC/1) and "Report of the Interregional Expert Group Meeting on Transnational Corporations in Primary Export Commodities", Bangkok, 8-15 October 1979 (CTC/ESCAP/PEC/2).

2/ See CEPAL resolutions 363 (XVII), adopted at Guatemala, and 387 (XVIII), adopted at La Paz.

/paper presented

paper presented by the Unit to the Meeting of the Interregional Expert Group on Transnational Enterprises in Export Commodities (Bangkok, 8-13 October 1979).3/

The author of this study, Jan Kňakal, is a regional expert of the CEPAL/CTC Joint Unit. When carrying out its research in Bolivia, the Unit received the valuable co-operation of the Government agencies responsible for the mining-metallurgical sector, the Ministry of Mines and Metallurgy, COMIBOL, ENAF,4/ and the Asociación Nacional de Mineros Medianos. The study was discussed and revised within the CEPAL/CTC Joint Unit, in co-operation with the CEPAL Division of Natural Resources, and presented to the seminar on Alternative Approaches to Negotiating with Foreign Investors and Transnational Corporations in the Copper and Tin Industry, organized by CEPAL in Santiago, Chile, 9-12 December 1981, with the participation of high level officials of the public and private sectors and representatives of foreign enterprises from Bolivia, Brazil, Chile and Peru.

Despite the heterogeneous situations and experiences of the four countries and the different interests involved, various common positions were identified with regard to the importance of mining for the future economic development of the region and a need to count on the contributions of the technology, capital and administrative and commercial management of the transnational corporations. In this framework, there are four critical areas:

(a) Focus of mining policies and negotiating with transnational corporations in the framework of global socio-economic development strategies and plans and the use of adequate planning and information to assess the alternatives of mining and metallurgical expansion and the respective ways and means of international marketing and financing.

3/ See Roberto Arce, Influencia de las empresas transnacionales en la minería del estaño: el caso de Bolivia, Working Paper No. 4, CEPAL/CTC Joint Unit, July 1977; The Economist Intelligence Unit, "A selective assessment of the world tin market", London, January 1977 and B. Widyono, Case Study No. 1: The Tin Industry in Bolivia, CEPAL/CTC Joint Unit, Working Paper No. 6, August 1977; and Transnational Corporations Linkages with the Tin Industry in Bolivia, CEPAL, Limited (E/CEPAL/L.202, August 1979).

4/ See, for example, A. Vrsalovic, Commercial Manager of ENAF, Tin: Bolivian Experience in Smelting and Marketing, a paper presented to the aforementioned meeting of experts in Bangkok.

/(b) Strengthening

(b) Strengthening of the existing public sector as a conductor and supervisor of negotiations with foreign investors.

(c) New technological, commercial, administrative, financial and patrimonial relations between the public sector and transnational corporations and foreign investors, and policies and agreements leading to mutual benefits, clarity and stability in the rules of the game between both parties.

(d) Horizontal co-operation among the mining countries of the region and especially in the systematic exchange of important information and common positions with respect to foreign consumer and investor countries.

On this last point the suggestion was made to organize a data bank for the mining countries of the region on important areas of bargaining alternatives with transnational corporations and foreign investors (for example, investment agreements, marketing systems and discounts on metal refining /"maquilas"/, characteristics of the transnational mining corporations, taxation and incentives, national mining codes, etc.). In addition, it was requested that a specialized workshop should be organized for the negotiators of the mining countries of the region. The Secretariat of the Economic Commission for Latin America and the Centre for Transnational Corporations of the United Nations will consider these initiatives in their programmes of work. Finally, another seminar of this type will be organized during the first half of 1982 in La Paz, Bolivia, at the request of the Ministry of Mines and Metallurgy of that country.

/Part One

Part One

THE INTERNATIONAL TIN INDUSTRY

1. Characteristics of the product

(a) Tin resources

Tin mines of commercial value are confined to a few areas in the world: Southeast Asia (Malaysia, Indonesia, Thailand, People's Republic of China, Burma), the Bolivian Andes, some regions of Africa (Nigeria, Zaire), Australia, and, recently, Rondonia in Brazil.

By comparison with other basic metals, tin has a low production level and a high price. In 1973, the world consumed 64 times more aluminium, 41 times more copper, 21 times more zinc and 18 times more lead. On average, one ton of tin costs 3, 6, 9 and 12 times more than one ton of copper, zinc, aluminium and lead respectively.

The rate of growth of tin comsumption and production is lower than that of other metals. For the last 18 years average annual cumulative growth was: tin, 1.7%; lead, 3.5% and copper, 4.3%.

The main reason for the relatively slow growth of tin consumption is the limited number of tin mines in the world, which increases its price; thus, the use of tin in manufacturing is minimal and substitutes are usually used (aluminium, chromium and plastic).

Up to the 1870s, the main producer of tin in the world since the Roman Empire was England, with its now depleted tin mines in Corwall. From 1890 onwards, Southeast Asia, particularly Malaysia and Indonesia, were the foremost producers of this metal. Bolivia only began to be important as a producer early in this century.

Most of the production in Southeast Asia is obtained from alluvial tin which is mainly mined by means of modern dredging techniques or hydraulic methods (monitors for extraction and lanchutes for concentration of the tin). In Bolivia, however, the mines are located in inhospitable regions of the Andes mountain range, at altitudes of over 3 000 metres. Costly tunnels must be drilled for the extraction of the ore. For example, in the Siglo XX mine, there are over 200 km of underground tunnels and the ore is extracted with electrical machinery.

/Moreover, the

Moreover, the tin obtained from these veins contains a large amount of impurities. The concentration process is much more expensive than that of alluvial tin and requires heavy investments in concentration plants. Despite the progress of technology, for every ton of tin concentrate produced, nearly another ton is lost in the form of residues (colas) that remain in the concentration plants.5/ For these reasons, Bolivia is a country where production costs are high in comparison with the countries where alluvial tin is mined.

(b) Tin consumption

Tinplating and soldering are the more important applications for tin metal and account for 47% and 23% of all tin consumed in developed countries. The slow increase in tin consumption may be due in part to the fact that tin-free steel, aluminium and plastic have to a large extent replaced tinplating in the production of cans. In the second place, advances in the technology of tin production brought about as a result of heavy investments in research and development have reduced the amount of tin required for tinplating. The major tin can manufacturers have not integrated backwards as the aluminium and copper companies have. Consequently, meanwhile the aluminium companies are continually advancing the uses of aluminium, the tin can companies have no direct stake in tin production; this probably reflects their concern over the sensitiveness of supplies.6/

As far as the other uses of the metal are concerned, the demand for tin for soldering has grown quite slowly, while the uses of tin in brass and bronze have declined in absolute terms. The fastest rising component of demand for tin is for industrial chemicals. But only a small share (less than 10%) of total

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5/ Beginning in 1980, a new smelter had been installed for the treatment of low-grade tin (see Part Two, section 3).

6/ Major tin can producers ranked by capacity are: (1) American Can (United States); (2) Continental Can (United States); (3) Metal Box (United Kingdom); (4) Toyo Seikan (Japan); (5) National Can (United States); (6) Campbell's (United States); (7) Schmallach (Federal Republic of Germany); (8) Thomassen-Origzer-Verblisa (Netherlands); (9) Carnaud (France). The last three are subsidiaries of American Can or Metal Box. Major tinplate producers ranked by production are: (1) U.S. Steel (United States); (2) British Steel (United Kingdom); (3) National Steel (United States); (4) Bethlehem Steel (United States); (5) Nippon Steel (Japan); (6) Rasselstem A.G. (Federal Republic of Germany); (7) Soc. Lorraine de Laminage Continu (France). (Source: Economist Intelligence Unit, Report to CEPAL on "A Selective Assessment of the World Tin Market", January 1977, unpublished.)

/consumption is

consumption is used for this purpose. The aforementioned circumstances are reflected in a low income elasticity of demand for tin in industrialized countries. Estimates are that it is between 0.1 and 0.3. The increase in world demand for tin has been projected at only 1.5% per year between 1972-1974 and 1985.7/

As is the case with most primary commodities, particularly minerals and fuels, the major consumers of tin are the developed countries, whereas the producers are the developing ones. Tin is in fact an extreme example of this general pattern in that all the main exporters are developing countries -concentrated in this case in Southeast Asia and Bolivia, with other large producers in Africa (Zaire and Nigeria). Brazil is also a potentially large producer. These countries all together account for only 3% of world consumption. Only Australia and the socialist countries are both major producers and major consumers. The bulk of tin metal produced is consumed by the United States, Western Europe and Japan (see table 1).

Taking the developing countries as a whole, their combined production of primary tin in 1977 was 170 600 tons, or 76% of total world production, as compared with 15 100 tons or 7% for the developed market economy countries and 38 900 tons or 17% for the centrally planned economy countries. In 1973-1975, consumption of tin metal was distributed as follows: developed countries, 143 800 tons, or 68% of world production; developing countries, 15 200 tons or 7%; and centrally planned economy countries, 52 000 tons or 24% (see tables 1 and 2).

2. Tin mining and reserves

As was mentioned above, the production of primary tin is concentrated in the developing countries of Asia, Latin America and Africa. During the period between the beginning of the 1950s and the second half of the 1970s, the participation of Asia in world production of primary tin declined from 58% to 52% and African production declined from 13% to 6%. Asia nevertheless retained its position as the main producing region. During the same three decades, Australia increased its share from 1% to 4% and the socialist countries,

7/ International Bank for Reconstruction and Development, Price Prospects for Major Primary Commodities, Report No. 814/77, June 1977.

/Table 1

Table 1

WORLD PRODUCTION OF TIN CONCENTRATES AND TIN METAL AND CONSUMPTION OF TIN METAL

(Averages 1973-1975)

	Production of tin in concentrates		Production of tin metal		Consumption of tin metal	
	Thousands of tons	Percentage of world total	Thousands of tons	Percentage of world total	Thousands of tons	Percentage of world total
Major producers of tin in concentrates						
Australia	10.3	4.8	6.8	3.0	4.3	1.8
Bolivia	28.5	13.2	7.1	3.1	-	-
China, People's Republic	22.9	10.6	22.9	10.1	14.0	5.8
Indonesia	24.0	11.2	15.8	6.9	0.4	0.2
Malaysia	68.3	31.7	83.3	36.6	-	-
Nigeria	5.3	2.5	5.4	2.4	-	-
Thailand	19.2	8.9	19.8	8.7	-	-
Zaire	4.8	2.2	0.7	0.3	-	-
Major tin consumers						
France	-	-	-	-	11.0	4.6
Germany	-	-	-	-	15.2	6.3
Italy	-	-	-	-	8.6	3.6
Japan	0.7	0.3	1.3	0.6	33.5	13.9
United Kingdom	3.6	1.7	18.4	8.1	16.5	6.8
United States of America	-	-	6.8	3.0	56.7	23.5
Soviet Union	13.7	6.4	14.0	6.2	19.3	8.0
Other market economies	13.0	6.0	23.6	10.4	44.9	18.6
Other socialist countries	1.1	0.5	1.3	0.6	16.7	6.9
World total	215.4	100.0	227.2	100.0	241.1	100.0

Source: World Metal Statistics, May 1977.

/Table 2

Table 2

PRODUCTION OF PRIMARY TIN BY REGIONS, 1950-1977

(Thousands of tons, percentage of world total and accumulated average annual rate of growth)

	Africa	Asia	Australia and Oceania	Western Europe	Latin America	CPE a/	World total
1950	23.3	103.5	1.9	2.7	33.1	12.4	176.9
Percentage share	13.2	58.5	1.1	1.5	18.7	7.0	100.0
1960	20.7	90.4	2.2	2.2	22.1	31.2	168.8
Percentage share	12.3	53.5	1.3	1.3	13.1	18.5	100.0
Growth rate, 1950-1960	-1.2	-1.3	1.5	-2.0	-4.0	9.7	-0.5
1970	19.6	116.5	8.8	2.8	36.4	33.1	217.2
Percentage share	9.0	53.6	4.1	1.3	16.8	15.2	100.0
Growth rate, 1960-1970	-0.5	2.6	14.9	2.4	5.1	0.6	2.6
1975	14.7	113.8	9.6	4.5	38.5	38.6	219.7
Percentage share	6.7	51.8	4.4	2.0	17.5	17.6	100.0
Growth rate, 1950-1975	-1.8	0.4	6.7	2.1	0.6	4.6	0.9
1977	12.9	117.7	10.0	5.1	40.0	38.9	224.6
Percentage share	5.7	52.4	4.5	2.3	17.8	17.3	100.0
Growth rate, 1970-1977	-5.8	0.1	1.8	8.9	1.4	2.3	0.5

Source: Metal Statistics, 1950-1959, 1957-1966, 1965-1975, Metallgesellschaft, A.G., Frankfurt am Main.

a/ Centrally planned economies (particulary People's Republic of China and Soviet Union).

/particularly the

particularly the Soviet Union and the People's Republic of China, more than doubled their share (from 7% to 17%). During the 1960s and the 1970s, Latin America recovered its production losses with respect to the 1950s, and in 1977, when it produced 18% of the world total, it was the second most important tin-producing zone in the world (see table 2). In 1977, Bolivia's share was 81% and Brazil's share was 16% of total Latin American production (see table 3).

With regard to the distribution of world reserves of tin, Indonesia has 24%; the People's Republic of China, 15%; Thailand, 12%; Bolivia, 10%; Malaysia, 8%; and the Soviet Union and Brazil, 6% each (see table 4). The difference in ranking between reserves and current annual production is explained by the different rates of exploitation of reserves which are above the world average of 2.3% in the cases of Malaysia (7.9%), the Soviet Union (4.8%), Australia (3.1%) and Bolivia (2.8%). The relatively high rates of reserve exploitation also illustrate the above stated scarcity of world tin resources: the producing countries will exhaust their reserves within a period of 13 to 36 years unless new deposits are discovered for future exploitation.8/

3. Sovereignty of the developing countries over their tin resources

In the tin industry, ownership and control over resources and production are increasingly being transferred to the governments of developing countries. The nationalization of the mines in Bolivia in 1952 9/ was accompanied or actually preceded by similar events in virtually all the other major producer countries.

Indeed, prior to the nationalization of the Bolivian mines in 1952, the large tin mines of China had been nationalized with the establishment of the People's Republic in 1949. Furthermore, in 1957 Indonesia nationalized the tin enterprises owned by the Dutch transnational corporation Billiton Maatschappij (currently a subsidiary of Royal Dutch Schell) and established a State tin monopoly (P.T. Timah, a fully integrated company that sells its refined tin directly to consumer countries or through the London Metal Exchange). The State

8/ The total volume of "other resources" is considered to be almost three times greater than that of industrial reserves, particularly in the cases of Brazil, Zaire, Indonesia and Malaysia. The use of these resources obviously depends on the cost of access and thus on the price of tin.

9/ See Part Two, section 1.

/Table 3

Table 3

LATIN AMERICA: TIN PRODUCTION BY COUNTRIES, 1951-1977

(Thousands of tons, percentage of regional total and accumulated average annual growth rates)

	Argentina	Bolivia	Brazil	Latin America
1950	0.3	31.7	0.1	33.1
Percentage share	0.9	95.8	0.3	100.0
1960	0.1	19.7	1.3	22.1
Percentage share	0.5	89.1	5.9	100.0
Growth rate, 1950-1960	-10.4	-4.6	29.2	-4.0
1970	1.2	30.1	4.3	36.4
Percentage share	3.3	82.7	11.8	100.0
Growth rate, 1960-1970	28.2	4.3	12.7	5.1
1975	0.5	32.0	5.0	38.5
Percentage share	1.3	83.1	13.0	100.0
Growth rate, 1970-1975	-11.8	1.1	5.8	1.4
1950-1975	1.9	0.1	16.7	0.7
1977	0.5	32.6	6.4	40.0
Percentage share	1.2	81.5	16.1	100.0

Source: Metal Statistics, 1959-1960, 1957-1966, 1965-1975, Metallgesellschaft, A.G., Frankfurt.

/Table 4

Table 4

PRODUCTION OF TIN IN RELATION TO RESERVES

(1975-1976 averages)

Major producing countries	Production (000 metric tons) (A)	Reserves (000 metric tons) (B)	Rate of production (percentage) (A)/(B)
Australia	10.34	330	3.1
Bolivia	27.87	1 000	2.8
Brazil a/	5.45	610	0.9
China	22.00	1 500	1.5
Indonesia	24.19	2 400	1.0
Malaysia	65.18	830	7.9
Nigeria	4.32	280	1.5
Thailand	18.70	1 200	1.6
Soviet Union	30.00	620	4.8
Zaire	4.08	200	2.0
World total b/	227.90	10 160	2.3

Source: United States Department of the Interior, Bureau of Mines "Commodity Data Summaries 1977".

a/ From: United States Bureau of Mines, "Tin", in Mineral Facts and Problems, 1975.
b/ Including other producers.

/Table 5

Table 5

CONTROL OVER THE WORLD'S TIN PRODUCTION: RANKING OF THE WORLD'S LARGEST COMPANIES, 1976

Ultimate owners a/	Name of company a/	Recent production figures b/ (1975)				Remarks
		Country of production	In metric tons	Percentage of country's production	Percentage of world production	
1. Government of Indonesia	P.T. Timah	Indonesia	24 400	100.0	11.7	Vertically integrated state monopoly although three foreign companies received exploration rights under contracts
2. Government of the people's Republic of China	State Tin Enterprise	P.R. China	23 000	100.0	11.1	Vertically integrated state monopoly
3. Government of Bolivia	Corporación Minera de Bolivia (COMIBOL)	Bolivia	21 225c/	75.0c/	10.2c/	Horizontally integrated state enterprise. Other minerals produced: Zinc, antimony, tungsten, copper, lead, silver, etc.
4. Pernas (Holding company owned by Government of Malaysia: 71.35%, and Charter Consolidated: 28.65%)	New Tradewinds Holding Company	Malaysia Nigeria Thailand	15 456d/ 2 502 e/	24.0d/ 45.8 c/	7.4d/ 1.1 c/	Controls production of 14 companies in London tin group and 6 charter consolidated companies. In addition to its own subsidiaries in Nigeria and Thailand own sizeable shares of production in these two countries. See Diagram 3 on Pernas control over tin companies

a/ Sources used for the recent ownership details of companies were:
Far Eastern Economic Review, April 1, 1977.
Asian Finance, April/May 1977.
International Tin Council, Notes on Tin, several issues.
United States Bureau of Mines, "Tin", Chapter from Mineral Facts and Problems 1975, Bulletin 667, Washington, 1976.
Mineral Yearbook, 1974, Volume I, Washington, 1976.
Walter Skinner, Mining International Yearbook, The Financial Times, London, 1976 and 1977 editions.

b/ Production data taken from World Metal Statistics, May 1977. World production of tin concentrates, including the socialist countries, is estimated at 207 500 metric tons.

c/ COMIBOL's production is estimated at 75% of production figure from World Metal Statistics. The 75% is taken from COMIBOL statistics for 1973 and 1974.

d/ Malysia's tin dredges accounted for 31.6% of total production. The Pernas Group, consisting of 14 London tin group companies and 6 Charter Consolidated companies accounted for 76% of this total, or 24% of total Malaysian production. The Wall Street Journal, November 9, 1976. See also International Tin Council, Monthly Statistical Bulletin, which shows that the bulk of Malaysian production comes from small Malaysian Chinese firms operating hydraulic gravel pumps and open cast mines, accounting for more than 60% of total Malaysian production in recent years.

e/ 1974.

f/ Quantities produced by two subsidiaries of the London tin group in Thailand not known.

/monopoly of

monopoly of ownership of the tin industry has been maintained despite the fact that the new government in 1967 invited three transnational corporations to explore tin deposits under working contracts with the State enterprise.

Even in countries that have traditionally encouraged private enterprise, such as Malaysia and Thailand, the governments have recently shown an active interest in controlling the tin industry. Malaysia, which is the major tin producer, gained control over the largest transnational tin corporation of the world -London Tin Corporation (LTC)- through the government holding company, PERNAS Securities. This company controls many tin companies in Malaysia, Thailand and Nigeria. Finally, in 1975 the Government of Thailand nationalized the large offshore concessions owned jointly by a United States company, Union Carbide, and a Dutch company, Billiton Maatschappij. The new Government of Thailand, which came to power in October 1976, upheld the nationalization, but invited Billiton to operate the concession on behalf of the Offshore Mining Organization owned by the Government of Thailand.

In Zaire, the government participates in tin mining through joint ownership with Belgian interests. This leaves Australia as the only major producer where private producers have control over tin production.

Table 5 shows that the four major tin enterprises in the world are under government control. In both China and Indonesia, the State controls 100% of production. In Bolivia, COMIBOL, the State enterprise, controls 75% of production. Finally, the Government of Malaysia, through its holding company, PERNAS, of which it is a majority shareholder (71%), controls nearly 24% of the country's tin production and 46% of the tin production of Nigeria.

As is the case with other primary commodities, government control over tin resources and their mining should be viewed as only a first step in the efforts of developing countries to increase their share in the gains of industrial industrial activities. The most important barriers to entry are to be found in the subsequent stages of the process, namely, smelting, marketing and transport. These issues are discussed in the following sections.

/4. Tin

4. Tin smelting and position of the main transnational corporations

Six developing countries (Bolivia, Indonesia, Malaysia, Nigeria, Thailand and Zaire) accounted for 84% of world production of tin concentrates and almost 70% of world production of tin metal for the period 1971-1975, compared with 91% and 41%, respectively, for the first half of the 1950s (see table 6).

The growing proportion of tin smelted in producing countries reflects the improved bargaining capacity of the governments of developing countries. Up to 1939, the movement of concentrates to the smelters reflected the colonial links and dependency of the industry. All concentrates from Nigeria and Bolivia and most of those from Indonesia and Zaire (Belgian Congo) were shipped to smelters in Great Britain and other industrialized countries. The only exception was Malaysia, where a smelter had been established by British interests quite early.

This pattern has changed over the last 25 years. In 1967, the Government of Indonesia (P.T. Timah) built a tin smelter which now has a capacity of 25 000 tons (see table 7). In Nigeria, government pressure forced Consolidated Tin (Patiño) to build a tin smelter in 1961 (currently with a capacity of 12 000 tons), and in Thailand, a smelter was built in 1966 with financing by foreign interests (with a present capacity of 40 000 tons). In Bolivia, the high-grade tin smelter built by the public enterprise ENAF in Vinto began operations in the early 1970s (with an ultimate capacity of 20 000 tons) and a new plant has been completed at the same site for the treatment of low-grade tin (with a capacity of 10 000 tons). Thus, by the 1980s Bolivia will be able to process domestically all of its tin production. Also in Latin America, Brazil has a tin smelter, partly controlled by the Patiño group, with a capacity of 16 000 tons.10/

These data on tin smelting indicate that the governments of the tin-producing countries have been very successful in their efforts to increase forward linkage, despite the fact that the Patiño group still controls nearly 26% of the world's smelting capacity, followed by the Singapore Banking Group and the Royal Dutch Shell's Billiton Company (with 16% and 11% respectively of world capacity).

10/ For further details, see Part Two, section 3, below.

/Table 6

Table 6

TIN MINING AND SMELTING BY PRINCIPAL PRODUCER COUNTRIES

(Thousands of tons of tin metal content and percentage of world total, annual averages, 1951-1955 and 1971-1975)

	1951-1955				1971-1975			
	Mining	Percentage	Smelting	Percentage	Mining	Percentage	Smelting	Percentage
Malaysia	59.5	34.4	67.7	38.6	71.4	38.4	85.6	44.2
Indonesia	34.4	19.9	0.9	0.5	23.0	12.4	13.7	7.1
Bolivia	31.9	18.4	0.2	0.1	29.8	16.1	7.0	3.6
Zaire	12.8	7.4	2.9	1.7	5.4	2.9	1.0	0.5
Thailand	10.1	5.8	-	-	20.3	10.9	20.7	10.7
Nigeria	8.4	4.9	-	-	6.0	3.2	6.1	3.2
Australia	1.8	1.0	1.8	1.0	10.5	5.7	6.9	3.6
Subtotal main producers	158.9	91.8	73.5	41.9	166.4	89.6	141.0	72.9
World total a/	173.1	100.0	175.3	100.0	185.8	100.0	193.5	100.0

Source: International Tin Council, Statistical Yearbook, several issues and Tin Statistics, several issues.

a/ Excluding centrally planned economics.

/Table 7

Table 7

CONTROL OVER THE WORLD'S TIN REFINING AND SMELTING CAPACITIES: RANKING OF THE WORLD'S LARGEST COMPANIES, 1976

Ultimate, owners a/	Parent company a/	Company a/	Plant location	Production capacity b/		Production in 1975 c/			Remarks
				In tons	As percentage of world	In thousand tons	As percentage of country	As percentage of world	
1. Patiño NV, (Holding Company)	Amalgamated Metal Corporation (53.2% owned by Patiño NV, in 1977) b/	Datuk keramat Smelting Sendirian Berhad (50.9% owned by AMC) b/	Penang, Malaysia	70 000	19.0	d/	d/	d/	See Chart. № 1 on Patiño tin activities, 1977. Amalgamated Metal Corporation is a merger between Amalgamated Metal Corporation, active in tin marketing, and Consolidated Tin Smelters, both subsidiaries of Patiño, NV.
		Makery Smelting Company (62.5% owned by AMC) c/	JOS, Nigeria	12 000	3.3	4.7	100.0	2.1	
		Associated Tin Smelters c/	Alexandria, N.S.W.	9 000	2.4	5.7	100.0	2.5	
	Companhia Estenifera do Brasil (Cesbra) c/ (90.8% owned by Patiño NV, in 1977)	Cesbra	Volta Redonda, Brazil	6 800	1.8	3.6e/	64.3e/	1.6e/	
		Total Patiño Group		97 800	26.5				
2. Overseas Chinese Banking Group of Singapore	Straits Trading Company	Straits Trading Company	Butterworth, Malaysia	60 000	16.3	d/	d/	d/	
3. Royal Dutch Shell	Billiton Maatschappj	Thailand Smelting and Refining Company (Thaisarco)	Phuket, Thailand	40 000	10.8f/	16.6	100.0	8.3	
4. Government of the U.S.S.R.	Same	Same	Novosibirsk, Podolsk, Pjtkyarante E Gekhaya, U.S.S.R.	39 000	10.5	15.0	100.0	6.6	
5. Government of PR China	Same	Yunan Tin Corporation b/	Kochiu, Yunan, China	25 000	6.7	23.0	100.0	10.1	
		Pingkwei Mining Association c/	Papu, Ho-Hsien, Kwangsi	10 000	2.7				
			Total China	35 000	9.4				
6. Government of Indonesia	P.T. Timah	Peltim	Muntok, Bangka Island, Indonesia	25 000g/	6.8	17.8	100.0	4.8	
7. Government of Bolivia	Same	ENAF	Vinto, Bolivia	16 000h/	4.5	15.5	53.5	6.8	

a/ Information on ownership of companies, most of it reflecting the latest developments, up to 1977, are from: Walter Skinner, Mining International Yearbook, 1977 edition. Trevor Tarring, ed., Non Ferrous Metal Works of the World, 1974, London, Metal Bulletin Books. United States Bureau of Mines Publications (see notes 5 and 6 above). International Tin Council (see note 1 above). b/ Capacities of tin smelters are for 1974, taken from: International Tin Council, 1976, Trade in Tin, 1964-1974, London. Total world capacity is estimated at 368 400 metric tons. c/ From: World Metal Statistics, May 1977. d/ Malaysia's tin metal production at the two smelters, Datuk Keramat and Straits Trading Company, was 83 100 tons in 1975 or 36.6% of the world's total, Breakdown by smelters is not available. e/ Production figure for Brazil from Walter Skinner, Mining International Yearbook, 1975 edition. f/ Thailand's capacity is taken from United States Bureau of Mines, Mineral Facts and Problems, 1975, Chapter on tin. g/ Indonesia's capacity is taken from Metal Bulletin, 28 November 1975. h/ In 1978, expanded to 20 000 tons.

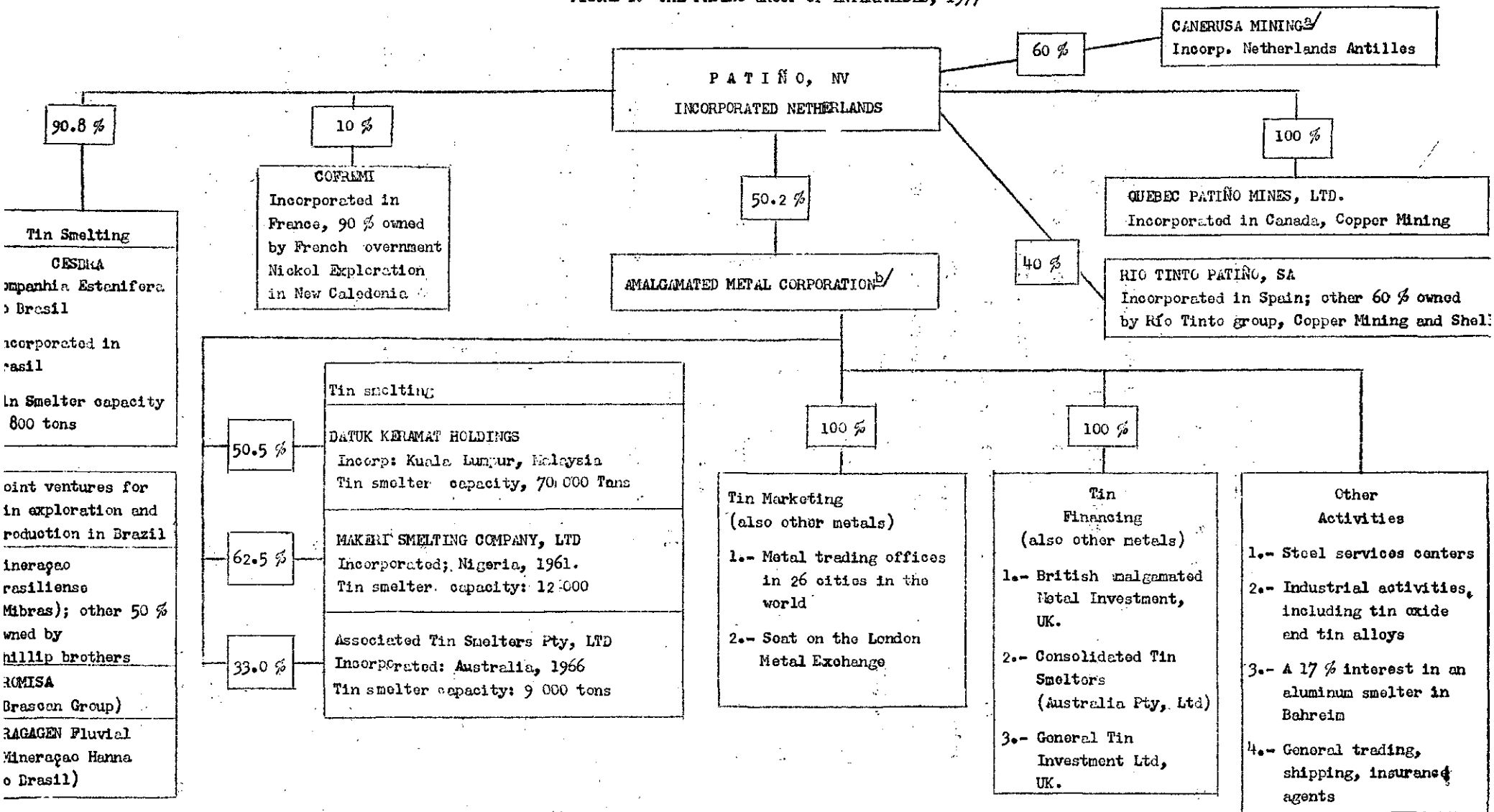
/The Patiño

The Patiño group is still very important in the tin industry, particularly in its downstream stages, i.e., smelting, marketing and financing (see figure 1). Consolidations and mergers continue to occur in this group. For example, the CANBRUSA mining company was formed by members of the board of directors, incorporated in the Netherlands Antilles, and recently acquired more than 60% of the stock owned by Patiño N.V., which is the holding company for the group of companies. An important merger took place in 1975, when Consolidated Tin Smelters (CTS), set up in 1929 to concentrate the Patiño holdings in tin smelters, merged with Amalgamated Metal Corporation (AMC, also established in 1929) as a holding company for two leading metal marketing companies, British Metal Corporation and Henry Gardner Company. These two companies in turn continued to operate separately until 1972, when their trading activities were merged within AMC, which since then has become the main trading company. Before the AMC-CTS merger, the two companies had already been associated for a long time. Patiño N.V. owned 76% of CTS and CTS owned 61% of AMC. Nevertheless, AMC became the controlling company after the merger because it was better known in tin marketing. The companies benefited from common services, including a shared office in London and a common director.

The "decolonization" process in tin smelting is reflected in the difficulties experienced by smelters in consumer countries. In Arnhem, the Netherlands, tin smelting was discontinued in 1971 when the Indonesian smelter came on stream and concentrates stopped arriving. The Williams Harvey smelter in the United Kingdom, owned by the Patiño group, which formerly smelted all the high-grade tin from Bolivia, went into voluntary liquidation in 1973, and the Hoboken smelter in Belgium, with a capacity of 18 000 tons, is also experiencing difficulties with the supply of concentrates; in 1976, it only produced 4 000 tons. The loss of tin-concentrate markets in the producer countries has brought about negative reactions on the part of the smelters operated by transnational enterprises in the industrialized countries, as we shall see later on in the case of Bolivia.

/Figure 1

FIGURE 1: THE PATIÑO GROUP OF ENTERPRISES, 1977



ources: Walter Skinner, Mining International Yearbook, London 1977

Annual reports of Consolidated Tin Smelters and Amalgamated Metal Corporation, US Bureau of Mines, Mineral Yearbook, several issues

a/ This company was formed by the members of management of Patiño N.V. to consolidate control. (The Financial Times, June 24, 1977)

b/ Merger between Consolidated Tin Smelters and Amalgamated Metal Corporation; merger took place in 1976.

5. Control over the world tin market

Control over marketing is an important element in a government's bargaining power. The establishment of tin smelters in producer countries, mentioned above, not only increases the value-added and foreign exchange earned from tin-related activities, but it also allows for greater control over the marketing of tin, as tin metal may be sold directly to final consumers.

This is not so in the case of concentrates, individual sales contracts for which vary greatly depending on the quality of the ore, the few foreign smelters involved, the form of shipping chosen, the duration of the contract, etc. Nevertheless, smelting contracts have certain basic characteristics: in the first place, prices for the metal are based on quotations at the London Metal Exchange or the New York markets and are adjusted by smelting and refining fees. These fees depend on metal content, cost escalation clauses and penalties. for impurities. Secondly, the smelter chooses a quotation period, normally following discharge at port of destination. Thirdly, a provisional payment, 80% to 90% of estimated value, is made against shipping documents, the rest being paid after finally establishing volume and grade. In many cases, trading firms act as agents or principals in the transaction between producers and the smelter.

It may be said, in light of the above, that the actual distribution of gains at the market level depends primarily on two factors: one is the process by which prices are determined on the international markets and the bargaining power of the governments of producer countries in those markets, and the other consists of the negotiations regarding discount clauses which can increase or reduce actual gains, given international prices. It is therefore important to understand the workings of the international tin markets and how prices are formed in the principal markets.

There are three important international markets for tin: the London Metal Exchange, the Penang Malaysia tin market and the New York tin market. Before entering into a detailed discussion of the organization and operation of the international tin markets, we will briefly examine other factors which also affect these markets.

/(a) Factors

(a) Factors affecting the tin market: reserves held by the United States and by the International Tin Council

Apart from regular tin supplies, stocks held in market economy countries are determined by two additional factors: the General Services Administration (GSA), which is the United States Government agency responsible for strategic stockpile disposal and stocks held by the International Tin Council (ITC). United States sales from its strategic reserves have been a powerful force in the market in comparison with the ITC leverage.

Its military requirements led the United States, during the Cold War, to build up a strategic stockpile of tin and other metals, in view of its fear of again losing the strategic tin area of Southeast Asia. This stock, built up mainly in the late 1940s and the 1950s, was to be large enough to maintain United States consumption at normal levels over a period of four years during which all foreign sources of the metal might be cut off. Although this initial objective was later abandoned, the volume of the tin reserves continued to exceed the total annual production of tin of the market economies between 1952 and 1973 (from more than two times until the second half of the 1960s to 1.2 times in 1973, see table 8). The near absurd size of the stockpile was recognized by the United States during the 1960s. Since then the goal was to reduce stocks in periods of high prices on the international tin markets. As a result, net sales amounted to approximately 120 000 tons between 1956 and 1975 and this often had a disruptive effect on the tin prices. In fact, sales from the United States stockpile had a much greater impact on world tin prices than the bufferstock operations of the International Tin Council, the second largest force in the world tin economy.11/

The main goal of the International Tin Agreement, the executive arm of which is the International Tin Council (ITC) has been to impart greater stability to world tin markets. Both consumer and producer countries are members of the five successive agreements which have been in force since 1956. Bufferstock operations and export controls have been the two main tools used by the ITC in its efforts to reduce price fluctuations and keep them within stated floor and ceiling levels.

11/ See the study cited in table 8, on which most of this analysis is based.

/Table 8

Table 8

ANNUAL WESTERN WORLD PRIMARY TIN CONSUMPTION AND STOCK SALES (+) OR PURCHASES (-) BY THE INTERNATIONAL TIN COUNCIL (ITC) AND UNITED STATES GENERAL SERVICES ADMINISTRATION (GSA)

(Thousands of metric tons)

Year	ITC	Consumption	GSA	Total GSA stock (end of year)
1956	0.0	153.7	-19.5	347.0
1957	-15.5	150.4	-4.0	351.0
1958	-8.2	143.1	0.0	351.0
1959	13.5	149.9	-1.8	352.8
1960	0.0	159.7	-5.2	357.8
1961	10.2	158.8	2.8	355.1
1962	-3.3	163.3	2.2	352.9
1963	3.3	166.9	10.0	342.8
1964	0.0	172.3	29.1	313.7
1965	0.0	171.5	24.4	289.3
1966	0.0	172.7	16.4	272.9
1967	-4.8	172.2	7.4	265.5
1968	-6.6	175.5	3.6	261.9
1969	6.8	183.5	1.7	260.2
1970	3.5	183.4	3.5	256.7
1971	-5.4	185.7	1.8	254.9
1972	-5.8	186.4	0.2	254.7
1973	11.5	202.4	19.6	235.1
1974	...	...	27.7	207.4

Source: Gordon W. Smith and George R. Schink, "The International Tin Agreement: A Reassement", Economic Journal, December, 1976, based on Metallgesellschaft A.G., Metal Statistics; International Tin Council; GSA; Bureau of Mines, "Mineral Industry Surveys: Tin".

/In relation

In relation to the United States stockpile, which has always been greater than annual world consumption, the authorized size of the bufferstock (20 000 tons) has been fairly small, ranging between one and two months' consumption over the four successive tin agreements. During the 1956-1973 period, the total ITC bufferstock purchases, aimed at stabilizing or raising the price of tin, amounted to 60 000 tons, compared with sales of 150 000 tons by the United States General Services Administration (GSA) during the same period, which had opposite effects on the international tin markets than the ITC sales (see table 8).

The fifth Tin Agreement, which entered into force in mid-1977, should double the ITC bufferstock (up to 40 000 tons) through voluntary contributions by consumer countries (during the four previous agreements, only producer countries financed the bufferstock).

To counteract the geopolitical sensitivity relating to the concentration of tin resources, the developing countries are also promoting the use of tin substitutes by the can industry and are also increasing the recovery of secondary tin from scrap. For example, United States production of this type of tin amounted to 15 600 and 18 900 long tons in 1974 and 1975, which is approximately one-third of the total tin consumption of that country.12/

The overview given above shows that the international tin market is still dominated by industrialized consumer countries, particularly through United States strategic stockpile operations. The International Tin Agreement has only marginally reduced the instability of tin prices and producer incomes. It has endured while other agreements have failed, partly because it has lacked effective power, in the face of the United States strategic stockpile, to make critical price desisions which otherwise would have intensified conflicts between producers and consumers. The predominance of industrialized countries and of their transnational corporations is also reflected in the organization and working of the three major world tin markets.

(b) International tin markets

Since most of the world's tin is produced in Southeast Asia, one would expect that the marketing of tin produced in that region would be the base of the world's tin markets. To a certain extent, this is true, as the Penang market

12/ See, Mineral Industry Survey, United States Department of the Interior, Bureau of Mines, 1975.

/in Malaysia

in Malaysia is the most important in terms of physical volumes passing through it. Nevertheless, as will be seen below, despite the fact that the London Metal Exchange has as its physical basis the relatively small amount of tin smelted in the United Kingdom (10 000 tons in 1976), its influence reaches far beyond this, partly because of the existence of hedging operations which substantially increase the amount of "paper" tin transactions 13/ and partly because of colonial tradition.

The factors determining changes in tin prices in London are hedging operations relating to production, marketing, consumption and investment for speculative purposes. The latter is influenced by the relatively high unit price of tin as compared with other metals, and by the prospects of world political conflicts and economic problems, particularly inflationary pressures.

The developing producer countries are quite anxious to move the marketing centre from London to Penang, where part of tin production is located. It will probably be years before this campaign succeeds, but at present, an important step has already been taken, inasmuch as since the floating of the pound sterling in early 1970, the ITC has recognized the Penang price quoted in Malaysian ringgit rather than British currency as the basis for its floor and ceiling prices.

Although normally not as important as the London Metal Exchange in determining tin prices, the New York market is important as the purchasing point for the world's largest tin consumer. The New York market is not a separate entity; rather, the term is used to refer to all tin transactions carried out in New York rather than to a specific organization or place of business.

New York prices are quoted in papers such as American Metal Market and the Engineering and Mining Journal, on the basis of the average of actual physical sales of tin for prompt or forward delivery. The New York Commodity Exchange deals in futures, but the quantities involved are smaller than the

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13/ For example, in 1972, the physical basis for transactions on the London Metal Exchange was tin smelted in the United Kingdom (22 000 tons). The volume of "paper" transactions during the same year was 143 765 metric tons, official, plus 26 415 metric tons, unofficial ("Kerb"-transactions). See ITC, "The International Implications of United States Disposal of Stockpiled Tin", London, 1973.

/physical tonnage

physical tonnage of the New York market and thus cannot be compared with the futures market of the London Metal Exchange. In the United States, almost all tin physically sold is disposed of by brokers or agents for foreign commercial firms; only a few consumers purchase tin directly from the smelters in foreign countries. Consequently, the brokers play a very important role in the marketing of tin. More detailed descriptions of the world's two most important markets, the London Metal Exchange and Penang, are given below.

(i) The London Metal Exchange 14/

The London Metal Exchange (LME), established in 1882, has been located in the same premises in the City of London ever since. The Exchange is owned by the Metal Market and Exchange Company and its shareholders are the members (subscribers) of the Exchange.

The committee of subscribers acts as the executive arm of the market and has the following duties:

- Maintenance of correct discipline and protocol in the Ring (the Ring is where the official trading of the LME is conducted);
- Assessment of daily prices;
- Formulation of new contracts;
- Registration of brands of metal for delivery against an LME contract;
- Approval of official LME warehouses.

Membership: There are three categories of membership:

- Ring-dealing membership;
- Associate membership (i.e., non-Ring-dealing);
- Individual membership (this is a small group of people, among whom is the Bufferstock Manager of the International Tin Council).

There are 28 Ring-dealing members, about 70 associate members, and 22 individual subscribers.

The qualification common to all classes of membership is the possession of not less than two shares in the Metal Market and Exchange Company. Companies represented in the Ring must meet certain financial requirements; for example, they must have a substantial margin of solvency. The company represented may

14/ This information is based on the aforementioned report prepared by the Economist Intelligence Unit.

/nominate one

nominate one or more "authorized clerks" to trade in the Ring on its behalf. The committee must approve these clerks.

Of the present Ring-dealing members, about half represent interests owned or controlled outside the United Kingdom. The companies represented in the Ring are typically specialized branches of metal corporations, particularly of the transnational type.

LME brokers/members fall into three categories:

- Members who deal primarily for one particular client (usually representing the parent company);
- Members who are general dealers and have many clients;
- Members who deal minly for one client, but are also general traders.

Several major traders in non-ferrous metals (e.g., Delta Metals, BICC, Pirelli and Chloride Group) do not trade on the LME through subsidiaries but rather through Ring-dealing members, who may change from time to time.

The four largest and most influential members of the London Metal Exchange are:

Member	Parent company
Rudolf Wolff and Co., Ltd.	Noranda (Canada)
Metallgesellschaft Ltd.	Metallgesellschaft (Federal Republic of Germany)
Billiton-Enthoven Metals Ltd.	Royal Dutch Shell (United Kingdom/ Netherlands)
Amalgamated Metal Trading Ltd.	Patiño N.V. (Netherlands)

With respect to the merger of CTS and AMC described earlier, it is interesting to note that, in 1971, AMC was reconstituted by the merger of two companies -British Metal Corporation (BMC) and Henry Gardner. Both BMC and Henry Gardner were Ring-dealing members of the London Metal Exchange. After the merger, both gave up their seats and Amalgamated Metal Trading, a subsidiary wholly owned by AMC, gained a seat on the "Ring".

A standard LME contract states:

- Geographical location of the commodity (usually LME-approved and registered warehouses);
- Date of delivery;
- Quality of the commodity (e.g., 98% tin);
- Quantity to be delivered.

/There are

There are two main types of dealing associated with the LME:

- Ring dealing;
- Kerb dealing and premarket dealing.

The entire price structure of the London Metal Exchange is based on the comparatively brief Ring dealing. Between noon and 1:05 p.m., there are brief sessions of official trading in copper, silver, tin, lead and zinc, in the Ring. Between 3:35 p.m. and 4:35 p.m., there are further unofficial short sessions of trading in the same metals. LME prices are determined in the first official tradings in the Ring.

The restricted times allowed for official dealings led naturally to members remaining in the Ring after the final bell and continuing to do business amongst themselves. The authorities bowed to the inevitable and set aside a limited period after each official Ring session for "Kerb" trading. Thus, a "premarket" is conducted before noon which enables the authorized clerks to come to the Ring each day with a far more concise and calculated programme before them than would otherwise have been possible.

Since the London Metal Exchange does not have a clearing house or any centralized system for recording all trades done, it is not easy to estimate what proportion of each member's daily turnover is transacted by way of premarket and Kerb dealings, but it is safe to say that it represents a considerable proportion.

The London Metal Exchange also provides scope for trading in futures, and consequently opportunities for hedging and speculative activities which are common to all other similar markets. Less common is the LME practice whereby future prices may be quoted for specific days rather than specific months.

Looking towards the future, it now seems likely that the LME will move away from being a "principals" market, and become more of a "clearing-house" market. This is to be accomplished by a monitoring system. The LME would establish a credit controller whose duty would be to look for possible difficulties in the extent of any one member's overnight open position on the market vis-à-vis his funding, and to report these to a control committee. It is widely accepted that this monitoring system would perhaps hinder speculative activities and be conducive to a more secure market.

/(ii) The

(ii) The Penang tin market

The Penang tin market operates like a "tender system" of marketing, whereby the smelters undertake the smelting, sale and pricing of tin metal on behalf of the miners. However, as stated earlier, it is the world's eminent physical market of tin where tin production from the two Malaysian smelters, Datuk Keramat and Straits Trading is marketed. This amounts to about 40% of world sales of this commodity.

The sellers in the market are the numerous tin miners and the buyers are traders and consumers of tin metal and their agents. Thus, the Penang market is a one-way market and successful bidders cannot resell the metal in the market. In practice, however, tin warrants can be, and often are, transferred to private purchasers outside the formal market structure.

Another feature of the Penang market is the total lack of information about the prices and tonnages offered by miners, the prices and tonnages of the bids, and the amount of stock held by the smelters. The Penang tin market is not a terminal market and it has no facilities for forward transactions or for futures trading. However, moves are underway to set up a Kuala Lumpur Exchange to deal in tin futures.

In the case that the Kuala Lumpur futures market became a reality, the bargaining position of the producing developing countries would be tremendously enhanced. The Malaysian smelters would play the role of the liquidated William Harvey smelter in the United Kingdom and the still operating U.S. Capper Pass smelter with respect to the LME, i.e., they would hedge all their concentrate purchases. With flexible exchange controls and more specific delivery dates afforded by a futures market, western consumers would have the option of hedging on the Kuala Lumpur market. This would diminish the international trader's role and the LME turnover, as a proportionate amount of consumer hedging could also logically be carried out on Kuala Lumpur. This would automatically increase the bargaining power of Malaysia and other producing countries. Of course, this would not prevent international traders from operating in the Kuala Lumpur market as well.15/

15/ Syed Hasan Bin Ali and Ahamd Zubeir Bin Haji Noordin, "The Penang Tin Market", in Bank Negara Bulletin, Malaysia, vol. 8, No. 3, September 1975. "Workings of Penang", Metal Bulletin Monthly, September 1976.

Part Two

THE BOLIVIAN TIN INDUSTRY AND ITS LINKS WITH TRANSNATIONAL CORPORATIONS

1. The importance of mining and tin in the Bolivian economy

Mining in general and tin in particular continue to play a leading role in the Bolivian economy. From an examination of the main indicators shown in table 9, one may infer that during the second half of 1970, the share of mining (70% of the production of which was tin) played a decisive role in domestic revenues collected by the government and in the balance of payments. On the other hand, it played a lesser role in generating the gross domestic product and employment.

In 1979, the share of mining in the gross domestic product and total employment was only 6% and 3%, whereas the same sector accounted for 25% and 71% of overall government revenues and of the balance of payments. At the same time, the public sector constituted the base of tin mining; thus, during that year, COMIBOL accounted for 69% of total tin production, 32% of total employment in the sector and 62% of royalties paid to the State.

The contribution of mining to foreign exchange resources and to the treasury increased during the latter part of the 1970s, despite the fact that tin production had dropped between 1977 and 1979 from 33.9 to 27.8 thousand metric tons of fine metal (TMF) because of the considerable increase in world prices of tin as well as of other minerals. The unit value of 1 TMF of Bolivian tin rose from US$ 10 514 in 1977 to US$ 14 802 in 1979 (see table 9). It thus seems obvious that improved utilization of the country's mining resources and, particularly, a strong position for minerals on the world scene, provide the best way out of the economic stagnation in which the country now finds itself.16/

16/ The annual growth rates of the per capita gross domestic product in 1977-1979 were 1.4%, 0.7% and -1.1% (see Economic Survey of Latin America, 1979, E/CEPAL/G.1144).

/Table 9

Table 9

IMPORTANCE OF MINING AND TIN IN THE BOLIVIAN ECONOMY

Indicator	Unit	1977	1979
1. Percentage share of GDP			
Agriculture	Percentage	15.7	15.1
Industry	Percentage	15.2	16.0
Energy and transport	Percentage	11.9	12.4
Mining	Percentage	7.2	6.2
2. Share of mining in total employment	Percentage	3.5	3.4
3. Contribution of the mining sector to total government revenues a/	Percentage	20.9	25.4
4. Tax burden as a percentage of the price of one pound of tin metal b/	Percentage	36.1	36.8
5. Net contribution of productive sectors to the balance of payments (exports minus external expenditures)			
Mining	Percentage	66.8	71.5
Petroleum	Percentage	16.2	7.0
Other sectors	Percentage	17.0	21.5
6. Composition of the value of mining production		(1978)	
Tin	Percentage	71.4	67.6
Tungsten	Percentage	8.1	6.8
Zinc	Percentage	6.6	5.7
Silver	Percentage	6.3	9.4
7. Public sector (COMIBOL) share in tin mining			
(a) Production		70	69
(b) Employment		32	32
(c) Royalties		67	62
8. Total tin production		(1977)	
Volume	TMF c/	33 890.0	27 753.0
Total value	Millions of dollars	356.4	410.8
Unit value	TMF c/	10 514.0	14 802.0

Source: CEPAL/CTC Joint Unit, on the basis of data from the Central Bank of Bolivia, Ministry of Labour, Ministry of Mining and Metallurgy, and Asociación Nacional de Mineros Medianos.

a/ Royalties and export taxes.
b/ Based on average quotations on the London Metal Exchange in 1978 and 1979.
c/ Metric tons of fine metal (content of tin more than 99%).

/2. Early

2. Early stage of the industry and its nationalization in 1952

(a) Pre-nationalization stage

A study of the early stage of Bolivian mining leads to the conclusion that during the first quarter of this century transnational corporations did not seek to expand in Bolivian tin mining as they did in other mineral-producing countries of the region. The salient fact of the starting tin boom in Bolivia is the appropriation of many mines by Chilean, and on a lesser scale, British entrepreneurs who had no direct relationship with transnational corporations in mining.

A Bolivian national, Simón I. Patiño, subsequently bought out most of the foreign capital invested in tin mining, thus succeeding in "Bolivianizing" it. He later merged his company with a United States transnational corporation (National Lead Company) and in 1924 organized Patiño Mines and Enterprises Consolidated Inc., under the laws of the State of Delaware, United States. Patiño subsequently transferred to the United Kingdom the base of his business transactions and organized a large-scale transnational tin mining corporation, which was integrated from the operation of mines to the smelting and refining of tin. The corporation owned mines not only in Bolivia but also in Malaysia and Nigeria, as well as the most important tin smelters of the world, specifically, in Germany, the United Kingdom, Malaysia, Nigeria and Australia. Moreover, in order to ensure the transport of the ore extracted in Bolivia to smelters in the United Kingdom, he assumed control of the Compañía Sudamericana de Vapores.17/

During the first two decades of this century, tax revenue from mining was very small, which allowed for the building up of large personal fortunes while the State did not receive the proper income. It was in the interest of the mining entrepreneurs to maintain this state of affairs; hence, their gradually increasing participation in the country's politics. It was not until the early 1920s that a tax was levied on mining profits, invested capital and exports.

The Supreme Decree of June 1939, which provided that foreign exchange obtained from mineral exports were to be turned over to the Central Bank, was derogated that same year by the subsequent government.

17/ See Part One, section 4.

/(b) Nationalization

(b) Nationalization in 1952

The low price of tin during the Second World War 18/ and in the early post-war years, social struggles and the transnational expansion of the Patiño group on the basis of Bolivia's mining wealth continued increasingly to mobilize public opinion against Patiño and the other two "tin barons" (Hochschild and Aramayo). It should be pointed out that the tin mining entrepreneurs even tried to impose their own presidental candidate in the 1951 elections. The new government of the Movimiento Revolucionario Nacionalista, which assumed power in April 1952, nationalized large-scale mining by a decree issued in October of that year.

The economic importance of the three large mining groups nationalized in 1952 may be appreciated by comparing their production of metallic tin in 1941 and 1951 with the medium-scale mining of the many individual entrepreneurs:

18/ The United States monopsonistic power in Bolivian mining, supported by Patiño's transnational interests, and its implications for the country's economy, were severely criticized by several authors, as for example: "During the Second World War, Bolivia remained tied to a contract covering the sale of tin for five years, undertaking to sell at 42 US cents per fine pound of tin to the United States and the United Kingdom. During the same period, copper, lead and zinc produced in the United States experienced increases of 39%, 74% and 67%, respectively. Tin increased by 55%... It would have sufficed for tin prices to come fairly close to the increases in the United States for the country to be able to capitalize... The United States Government was against monopolies; nevertheless, the Reconstruction Finance Corporation, a government agency, was a monopoly which possessed exclusive rights over purchases and price-fixing" (Sergio Almaraz, El poder y la caída, La Paz, 1969). Furthermore, William Fox, former Secretary of the International Tin Council, in his study "Tin, the Working of a Commodity Agreement" (London, 1974) said: "The fact that the United States should have suddenly suspended its tin purchases in 1951 and then reinitiated them at low prices imposed unilaterally with the objective of establishing its strategic reserve was in the worst hard-handed tradition and came close to actual blackmail". Finally, the Bolivian delegation at the United Nations General Assembly in 1951 protested in the following terms: "The price of tin, which is the backbone of the Bolivian economy, has for many months been subject to the criterion of a single buyer, the United States, against which a weak country like Bolivia is unable to defend itself. This buyer has imposed on Bolivia these exceptionally low prices, using the methods of the strong against the weak, which go beyond the bounds of correct behaviour and the inter-American co-operation which one has a right to expect".

	1941		1951	
	Metric tons	Percentage	Metric tons	Percentage
Patiño	20 013	46.8	14 998	44.5
Hochschild	10 829	25.2	6 812	20.0
Aramayo	2 647	6.0	2 692	8.0
Total large-scale mining	33 489	78.0	24 502	72.5
Medium-scale mining	5 707	13.5	3 598	11.0
Small-scale mining	3 544	8.5	5 564	16.5
Total Bolivia	42 740	100.0	33 664	100.0

In 1951, the three large-scale mining groups represented 72.5% of production and of these, the Patiño group represented 44.5% of the total production of the country.

The nationalized mining groups that had failed in their legal attempt to embargo Bolivia's mining exports cunningly took advantage of the fact that almost all tin concentrates would be arriving at the British Williams Harvey and Co. smelter, controlled by the Patiño group. They imposed on the Bolivian Government a compulsory discount of 10% on the gross value of the ore smelted in Patiño's own smelters. This discount was being retained as an advance on the compensation which the Bolivian Government was to pay for the value of the nationalized mines. Between April 1953 and August 1961, the following payments were made on these accounts:

	Dollars
To the Patiño group	9 164 897
To the Hochschild group	7 431 190
To the Aramayo group	3 260 058
	19 856 145

The total amount of compensation to be paid by the Bolivian Government to these three groups was never established. The discounts made by the Williams Harvey smelter ended with the introduction of the Triangular Plan for reconditioning the nationalized mines.

/3. Establishment

3. Establishment of the Corporación Minera de Bolivia and the postnationalization period

In 1952, after nationalizing the three largest mining enterprises in the country, the Bolivian Government created the Corporación Minera de Bolivia (COMIBOL) to run the mines taken over by the State.19/ Under the Supreme Decree by which it was created,20/ COMIBOL is to explore, exploit and process such mineral deposits as the Government may assign to it for purposes of marketing and exporting mineral products. A complementary decree assigns to COMIBOL the administration and exploitation of the nationalized mines.21/ A law of 29 October 1956 confers on these decrees the status of laws.

After having experienced an initial decline in production during its first ten years of operation, COMIBOL began in 1961 to increase production and labour productivity. Tin production dropped from 31 700 tons in 1950 to 19 700 tons in 1960, i.e., an average of 4.6% per year, but then recovered in 1970 and in 1977 it rose to 32 600 tons, surpassing the prenationalization level. Bolivia thus retained its leading position in the region (81.5% of the total), despite the fact that tin production in Brazil (Rondonia) had risen from 1 300 tons in 1960 to 6 400 tons in 1977, a figure which represents 16% of Latin American tin production (see table 3 above).

The number of employees of COMIBOL rose from 29 000 in 1952 to a high of 37 000 in 1956, after which it declined steadily to 25 000 in 1975. With the increase in total production, tin production per employee, which had dropped from 944 kg in 1952 to 526 kg in early 1960, rose substantially and reached 841 kg in 1975.

The drop in tin production after nationalization may be attributed to several main factors. In the first place, it was a continuation of the declining trend from the alltime peak Bolivian production reached during the Second World War, aggravated furthermore by the contraction in tin consumption during the 1950s. During the war, Bolivia's mines were exploited almost beyond capacity in order to supply tin for the Western defence industry in substitution for the

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19/ In addition to tin, COMIBOL mines bismuth, silver, lead and other minerals.

20/ No. 3196 of 2 October 1952.

21/ No. 3223 of 31 October 1952.

/resources of

resources of Southeast Asia. Thus, in 1945 Bolivian tin production reached 42 000 tons and dropped sharply to 31 700 tons in 1950.

In the second place, partly because of a lack of exploration activities before nationalization and partly because of over-exploitation during the war, the quality of tin deposits deteriorated, causing a decline in the tin content of the ore. In the third place, 170 of the 200 foreign engineers left the country after nationalization. The serious management problems that are common to all newly nationalizaed enterprises were aggravated by the fact that COMIBOL took over some 17 plants belonging to the three nationalized enterprises; these plants varied widely as regards size, quality of ore, age of infrastructure equipment, profitability, etc. Finally, among the external factors contributing to the decline in production were marketing problems linked with the transnational corporations' control of the market, the termination of United States stockpile purchases around 1958, and the export controls imposed by the International Tin Council in 1958-1960.

The recovery of the Bolivian tin industry during the 1960s was facilitated by the improvement of the international situation which became more favourable to developing countries. Once the international community had accepted the idea that nationalization was not a radical move to be punished but rather a reflection of a country's desire to gain sovereignty over its natural resources and to maximize the gains from those resources, it was possible to establish a new working relationship whereby industrialized countries and transnational corporations would still play a major role in several new forms of association with State enterprises.

This new international climate and the change in attitudes towards the nationalized tin industry of Bolivia was reflected in a Triangular Plan introduced in 1961, involving the Governments of Bolivia, the United States and the Federal Republic of Germany, and the Inter-American Development Bank. This plan, worth US$ 31 million and covering the 1961-1971 period, provided for the recapitalization of COMIBOL through external loans, the strengthening of management and a substantial reduction of surplus labour. The steady increase in productivity after 1961 was partly due to this plan, which made it possible to repay the loans that had been granted. At the same time, this plan contributed to the final settlement with the nationalized transnational corporations and put an end to compensation payments in 1961.

/4. Continued

4. Continued dependence on foreign smelters

At the time of nationalization in 1952, the bulk of Bolivian tin concentrates went to the Williams Harvey smelters in the United Kingdom, owned by the Patiño group (Consolidated Tin Smelters). Williams Harvey was established by Patiño in 1929 as a holding company to consolidate his smelting interests in the United Kingdom and Malaysia. Patiño had no interest in building a smelter in Bolivia and preferred to use the country only as a source of mineral resources for his integrated transnational activities. This may be illustrated by the following statement contained in the annual report of Patiño Mines and Enterprises Consolidated Inc. for 1938:

"Our Bolivian concentrates, and practically all minerals of high metal content, are smelted and refined in the United Kingdom purely for economic reasons. Our experience, and recent studies made by our technical experts, show that it is cheaper to smelt and refine tin in the plants of Williams Harvey & Co. in Bootle, near Liverpool, than anywhere else. In addition to the local conditions at Bootle, a determining factor is the long and unequalled experience of Williams Harvey in the treatment of the complex Bolivian ores in which they have specialized for over 25 years. Thus our Company, and in general all enterprises in Bolivia, are able to obtain the lowest possible rate for smelting and refining our tin concentrates. This represents valuable co-operation in the development of tin mining in Bolivia, which, as is well-known, is affected by some adverse factors".

Although according to the short-term commercial criterion of transnational corporations, Patiño's position was justified, the fact is that not even the successive governments of Bolivia have had the long-term vision to exert pressure for the establishment of a tin smelter in the country. As noted earlier,22/ Malaysian's experience was different, since the establishment of tin smelters at the beginning of the century was stimulated by an additional tax on exports of concentrates. Bolivia failed to take effective steps towards the installation of a tin smelter until the mid-1960s. After nationalization, however, it did break the monopoly of the Williams Harvey smelter, concluding a contract in 1962 for the smelting of part of its tin output in the Texas plant then controlled by the Wah-Chang Corporation.

22/ See Part One.

/In the

In the mid-1960s, the Government of Bolivia came to the conclusion that the country should build its own tin smelters, not only to earn additional foreign exchange from forward linkage operations and the increased value-added of the minerals, but also to be less dependent on foreign smelters and their power in the world markets. In 1965, negotiations started with a German engineering group and in 1966 the Empresa Nacional de Fundiciones (ENAF) was established and obtained a monopoly in the production and export of refined metal. Construction of a tin smelter began in that year, and in January 1971 ENAF put on stream the refinery at Vinto, with an initial capacity of 7 500 tons, which was subsequently expanded to 20 000 tons. The plant was constructed with German suppliers' credits by Koekner Humbolt Deutsch, a metal and engineering group which also built the refinery for the Indonesian Peltim smelter at Muntok.

During the 1970s, Bolivia was still highly dependent on foreign smelters for refining its tin concentrates, although that dependence was gradually declining. In 1970, only 8% of total sales of COMIBOL concentrates were processed at the ENAF State smelter in Vinto. This share increased to 65% in 1979 (see table 10). The remainder was exported to different foreign smelters, particularly those owned by Gulf Chemical, Long Horn, Capper Pass and Metallgesellschaft, which are large integrated transnational corporations having worldwide metal marketing services.

The Long Horn smelter established by the United States Government through Billiton Company during the Second World War was subsequently purchased by Wah-Chang Corporation and then sold to the Gulf Resources and Chemical Corporation. Gulf Resources also controlled Bunker Hill Co., which owns important silver, lead and zinc mines in Idaho. Its principal office is in Kellog, Idaho. This smelter's share in COMIBOL sales declined from 31% in 1975 to 6% in 1979.

The major smelter in the United Kingdom is that of Capper Pass and Son Limited, in North Humberside, Yorkshire, which mainly processes low-grade ores. It is controlled by the Rio Tinto Zinc Corporation Limited, a holding company with interests in Australia, Canada, the Netherlands, the Netherlands Antilles, Papua, New Guinea, South Africa, the United Kingdom and the United States. In 1979, the Capper Pass smelter processed 20% of the tin output of COMIBOL, compared with 24% in 1975.

/Table 10

Table 10

LATIN AMERICA: PRODUCTION OF TIN BY COUNTRIES, 1950-1977

(Thousands of tons, percentage of regional total and acumulated average annual rates of growth)

	Argentina	Bolivia	Brasil	Latin America
1950	0.3	31.7	0.1	33.1
Participation in percentage	0.9	95.8	0.3	100.0
1960	0.1	19.7	1.3	22.1
Participation in percentage	0.5	89.1	5.9	100.0
Growth rate, 1950-1960	-10.4	-4.6	29.2	-4.0
1970	1.2	30.1	4.3	36.4
Participation in percentage	3.3	82.7	11.8	100.0
Growth rate, 1960-1970	28.2	4.3	12.7	5.1
1975	0.5	32.0	5.0	38.5
Participation	1.3	83.1	13.0	100.0
Growth rates: 1970-1975	-11.8	1.1	5.8	1.4
1950-1975	1.9	0.1	16.7	0.7
1977	0.5	32.6	6.4	40.0
Participation in percentage	1.2	81.5	16.1	100.0

Source: Metal Statistics, 1959-1960, 1957-1966, 1965-1975, Metallgesellschaft, A.G., Frankfurt am Main.

/The Barzelius

The Barzelius Metallhuten Gesellschaft smelter is at Duisburg, Federal Republic of Germany. This smelter is owned by Metallgesellschaft A.G., an important firm with a long tradition in the field of non-ferrous minerals and metals, covering the production, smelting, refining and marketing stages. A number of medium-scale miners in Bolivia send their concentrates to this smelter, which in 1978 smelted 3% of total COMIBOL sales.

The small-scale tin mining enterprises sell most of their output to the State-owned Banco Minero (BAMIN), which was established as the principal institution for credit, marketing and technical assistance, including provision of equipment and current inputs for the private and especially the small mines. This Bank also grants working capital loans and loans for investment. As a marketing entity, it buys tin concentrates from small mines and co-operatives (except those producing for COMIBOL). BAMIN mainly undertakes spot sales for relatively individual shipments. Apart from its shipments to low-grade smelters in Europe, other shipments by BAMIN are almost entirely taken up by international metal traders. These firms act as principals, thus excluding mineral suppliers from decisions regarding timing and destination of sales. In 1979, 10% of total tin production in Bolivia was accounted for by small mines, with medium-scale mines having a share of 21% and COMIBOL of 69% (see table 11).

While the first ENAF smelter in Vinto was designed for the treatment of high-grade tin, in 1980 a new plant for the treatment of low-grade ore was put on stream at the same site; this has a capacity of approximately 10 000 tons and should be able to put an end to the uninterrupted dependence on the foreign smelters which monopolized the processing of low-grade Bolivian tin (Capper Pass and Metallgesellschaft). The construction of the new low-grade smelter -as well as of the high-grade smelter- was carried out by the German firm Kloeckner Industries in conjunction with Paul Bergsoe of Denmark. Thus, as of 1980, Bolivia has a smelting capacity of approximately 30 000 tons and is capable of smelting domestically its entire output of tin concentrates.

The expansion of tin smelting capacity throughout the 1970s made it possible to increase the exports of tin metal from 7 600 tons in 1975 to 15 300 tons in 1979, a figure which represents 57.5% of the total output of tin concentrates (see table 12). About three-fourths of the tin refined by ENAF is supplied by COMIBOL and the rest by medium-sized mines.

/Table 11

Table 11

COMIBOL: SALES OF TIN ORE TO FOREIGN SMELTERS AND TO ENAF

(Tons of tin metal content and percentage of total)

Smelter	1970		1975		1978		1979	
	Tons	Percentage	Tons	Percentage	Tons	Percentage	Tons	Percentage
Williams Harvey	8 052	42.9	-	-	-	-	-	-
Gulf Chemical	5 062	27.0	5 925	31.4	3 573	16.9	1 103	6.0
Capper Pass	2 820	15.0	4 493	23.6	4 330	20.4	3 682	19.9
Metallgesellschaft	508	2.0	979	5.1	627	3.0	649	3.5
Other foreign smelters	999	5.3	2 879	15.1	826	3.9	1 004 a/	5.4
Subtotal	17 441	92.2	14 310	75.2	9 356	44.2	6 438	34.8
ENAF	1 314	7.8	4 690	24.8	11 813	55.8	12 013	65.1
Total	18 755	100.0	19 000	100.0	21 169	100.0	18 451	100.0

Source: Prepared on the basis of ENAF data.

a/ Includes deliveries to the Marc Rich marketing firm (994 tons).

/Table 12

Table 12

BOLIVIA: OUTPUT OF TIN BY SOCIAL SECTORS IN 1979

(Thousands of tons of tin metal content and percentage of national total)

Year	COMIBOL		Medium-scale mines		Small-scale mines	
	Tons	Percentage	Tons	Percentage	Tons	Percentage
1970	18.8	64	6.6	22	3.8	13
1975	20.3	64	6.7	21	4.5	14
1977	23.3	69	7.0	21	2.6	7
1979	19.0	69	5.9	21	2.7	10

Source: "Minería Mediana", Memoria 1979, Asociación Nacional de Mineros Medianos, La Paz, Bolivia, 1980.

Table 13

BOLIVIA: EXPANSION OF TIN SMELTING, 1960-1978

(Thousands of tons of tin metal content and percentage of smelting)

Year	Volume			Percentage smelted
	Concentrates	Smelted	Total	
1960	18.6	1.1	19.7	5.6
1970	29.4	0.7	30.1	2.3
1975	24.4	7.6	32.0	23.8
1977	19.3	13.3	32.6	40.8
1978 a/	13.8	15.9	29.7	53.5
1979 a/	11.3	15.3	26.6	57.5

Source: Metal Statistics, 1950-1959, 1957-1966, 1965-1975, Metallgesellschaft A.G., Frankfurt am Main, and Boletín Estadístico, No. 232, Banco Central de Bolivia, December 1978.

a/ Exports.

/In spite

In spite of these encouraging developments, ENAF experienced accounting losses and management problems during the initial years of its operation. This was due, among other reasons, to the fact that the infrastructure had been built for a final capacity of 20 000 tons and was not put to full use from the beginning; thus, although the smelting of high-grade ore did increase, overhead and fixed costs were very high during this period. Also, the inflationary process since 1972 and the maintenance of a fixed rate of exchange for the dollar had negative effects on the firm's costs and this was also true in the case of COMIBOL.

At any rate, the establishment of a national smelter capable of smelting all the tin produced in the country was a significant development the main aspects of which are analysed below.

5. Importance of the public enterprise in tin smelting

The nationalization in 1952 of the three large mining corporations which led to the establishment of the Corporación Minera de Bolivia and the subsequent creation, in 1966, of the Empresa Nacional de Fundiciones, with which the industrialization of mining and metallurgy was initiated, have fundamentally changed the traditional relations between the Bolivian State and the international system of marketing and transnational corporations.

ENAF was established to smelt and refine minerals and market the metals and other products of its smelters and refineries; it has performed these functions primarily with respect to tin. The legal framework of ENAF is provided inter alia by Decree Law No. 7595 of 15 July 1966, which created it, and Decree Regulation No. 8017 of 21 July 1967.

ENAF was created with the intention that it should become a profitable enterprise, since its earning must unfailingly cover all obligations undertaken in the contracts for the expansion of its facilities. To ensure its profitability, COMIBOL, the Banco Minero de Bolivia and the medium-scale and small-scale private miners are required to supply the volume of concentrates required by the smelter for its industrial activities, in such a manner as to ensure the regular and uninterrupted operation of ENAF.

According to the same decree, ENAF is responsible for running the State smelters and refineries, centralizing and co-ordinating new investment projects in this area, developing and diversifying the metallurgical industry in the

/country with

country with the option of participating in the implementation of industrial integration projects, marketing the metals and other products produced by its smelters and refineries and financing any increases in its capital and the expansion of its facilities.

The importance of the public enterprise in regard to smelting activities may be summarized as follows: (a) Whereas the mining enterprise depends on a few smelters to which it delivers its ore, the smelting enterprise has customers throughout the world and its sales of a large volume of metal can be distributed to those regions which are most advantageous from the commercial and political standpoints. It can thus obtain for the mining industry better prices and financing, lower transport and handling costs, and control over weighing, grading and other factors previously managed by foreign smelters. (b) The State smelter can regulate the quality of the metal according to the needs of buyers and the versatility of the plant. (c) ENAF also ensures the delivery of foreign exchange to the State and obtains from marketing the metal earning which otherwise would increase the refining fees (maquila),23/ paid by the mines. (d) Finally, the State smelter not only serves mining, it is the starting point for industrialization and the creation of a store of technological knowledge in the country; its role as a complement to mining should be projected in terms of a national development policy.

The comparative advantages of the country with respect to non-ferrous metallurgy are already being utilized as ENAF participates with PERRA, Sociedad Anónima, enterprise in the production of alloys, solders, etc., which also encourages crafts based on the use of tin.

The opening up of non-traditional markets for metal tin, such as those of Latin America and particularly of the Andean Group, makes it possible to develop a policy oriented towards maximizing advantages by means of reciprocal agreements, common external tariffs, an equilibrated balance of trade, direct negotiations and joint programmes with State enterprises and, finally, advantages with regard to transport, handling, insurance and other matters in the direct negotiations with non-traditional clients.

Finally, if tin mining and processing are approached from a global standpoint, it may be said that the final integration of mining and metallurgy

23/ For an explanation of this concept, see section 6 (b).

/puts the

puts the nationalization of mines on firm ground and constitutes one of the foundations for the subsequent industrialization of the country. In this regard, it is also an important factor of regional development, as smelters and refineries in the mining areas serve as poles of development promoting economic activity in depressed regions. That is why the metallurgical complex of Vinto in the departamento of Oruro is so important. We shall now discuss some specific aspects of the integration of the two public enterprises, COMIBOL and ENAF, and of co-operation between them.

6. Domestic integration of the mining and metallurgical sector (COMIBOL and ENAF) and reaction of the foreign smelters

(a) General aspects

The country's bargaining power vis-à-vis the foreign corporations depends to a large extent on the operation of and effective co-operation between the public enterprises, COMIBOL and ENAF, which are the basis for the vertical integration of the tin industry. As has already been shown, the role of the transnational corporations in export-oriented primary commodities is due mainly to the fact that they control the entire vertical chain from prospecting and mining up to the different stages of processing and, especially, marketing on the world market.

With the nationalization of mining and the smelting of ores in Bolivia, the transnational corporations lost control over the first two productive links in the mining cycle, retaining only their oligopolistic control over world markets of both minerals and refined products. Obviously, the transnationals wish to continue influencing the development of mining in the country even after nationalization by taking advantage of the remaining links both in the mining sector and in the processing and marketing of tin. These relations reach the crisis point when the process of integrating mining and metallurgy culminates with the growth of refining and the country becomes fully capable of processing domestically all the output of its mines.

This prospect runs counter to the interests of the foreign smelters for two reasons: firstly, because they lose their usual supply of mineral concentrates, to which the technology and organization of the smelting corporation has often been adapted; secondly, because they are now faced with a new competitor on the metals market, namely, the public smelting enterprise which now sells on the same world markets all the metal produced in the country.

/The conflict

The conflict between national and foreign interests occurs both with respect to bargaining power and with respect to the distribution of gains between the two parties. In the first case, there is a break in the oligopolistic linkage which the foreign sector formerly had with domestic mining (except as regards technology, inputs and new investments, etc., which present different problems). In the second case, the gains of the industry are redistributed in favour of the producing country, which retains all the value added to the minerals as a result of their processing and marketing. It is easy to understand why the foreign corporations wish to prevent or at least hinder this process of domestic integration of mining.

To complete the picture described above of the conflict of interests which arises between the mineral-producing country and the foreign corporations as a result of the integration of the domestic mining industry, we must also take a look at some of the problems associated with this transition within the mineral-producing country which affect its bargaining power vis-à-vis external agents. In this regard, it would appear that the strength or weakness of the national bargaining capacity will depend to a large extent on the relations and co-operation which exist between the domestic mining and industrial, or processing, sectors. The problems and possible conflicts arise once more, mainly in connexion with the issues of bargaining power and distribution of gains.

The public mining enterprise obtains a series of advantages from the simple fact that its former foreign customer is replaced by the national public smelting enterprise. On the other hand, it no longer represents the country, protecting its interests vis-à-vis the foreign corporations, as it is replaced in this activity by the domestic metallurgical sector, which sells abroad all the domestic output of metals (domestic consumption remaining marginal).

Even more important as a source of problems and frictions is the change -at least the apparent change- which occurs in the distribution of gains. Naturally, the public mining enterprise and its management tend to measure the actions and behaviour of its new and only domestic customer according to the high standards that governed its relations with the foreign corporation; the latter naturally has several advantages over its competitor in the periphery, at least as regards technology, management and its long-standing tradition of power on the world markets. Thus, from a short-term and strictly business-like point of view,

/the domestic

the domestic mining sector may interpret the change towards increasing domestic integration of mining as being detrimental to its own interests, inasmuch as its own gains have declined by comparison with the previous period.

On the other hand, during its initial phase, the domestic metallurgical sector will obviously experience a series of problems as regards the implementation of its new investments, its organization, management, financial arrangements, external marketing, etc. These internal problems have a negative influence on co-ordination and joint programming with the public mining sector (which also has problems of the same type, although of a more long-term nature), on its bargaining power vis-à-vis foreign agents, and hence on the ability of the mining and metallurgical sector to contribute to the economy of the country. In turn, they give the foreign corporations an opportunity to take advantage, for their own benefit, of these gaps in the domestic integration of the industry.

To conclude this section on general aspects, we might add that the gradual solutions of the existing problems relating to the integration of the mining and metallurgical sectors of Bolivia would not only increase their immediate contribution to the economy of the country but would also contribute to its self-sustained development and to increasing its bargaining power vis-à-vis the foreign agents.

The next topic is examined within the framework of the putting on stream in Vinto of the two smelters (for high-grade and low-grade ore) owned by ENAF, which during the 1980s will give Bolivia a tin smelting capacity of approximately 30 000 tons; in other words, it will have enough capacity to process all tin output inside the country. On the basis of these important facts, we will look at the current problems of vertical integration and distribution of gains in the mining and metallurgical industry, the problems of linkages between COMIBOL and ENAF, and the reactions of the foreign smelters to the loss of the Bolivian market.

(b) Vertical integration and distribution of gains between COMIBOL and ENAF

In the previous chapter, we stressed the importance of the public enterprise in tin smelting and the benefits to be gained from its integration with mining. Some problems still remain with regard to the linkage between the two public enterprises, COMIBOL and ENAF, particularly in connexion with the difficulties experienced during the transition to full operation of the two smelters -for high-grade and low-grade ore- in Vinto. These problems seem to be reflected in

/the distribution

the distribution of gains between the two public enterprises and in the co-ordination and joint programming of their activities.

The distribution of gains between the two public enterprises is channelled mainly through the processing costs, or smelting fees (maquilas), which represent the discount on the price of the metal granted to the smelting enterprise in exchange for its services in processing and marketing the metal. The smelting fee in force in the buying and selling relations between COMIBOL and ENAF had always been set on the basis of the smelting fees paid by COMIBOL to the foreign smelters. In 1978, for example, the fee of US$ 630 charged by ENAF (for one net metric ton of dry ore) was practically equivalent to the weighted average of the fees agreed on by COMIBOL and the foreign smelters, Capper Pass, Gulf Chemical and Metallgesellschaft, which that year absorbed 40% of total COMIBOL sales. (See table 13.) Thus, Bolivia's dependence on the transnational corporations in respect of the processing and marketing of tin was projected even to relations between the public enterprises of the country's mining-metallurgical industry. The impact of the transnational corporations on the public sector was particularly significant during the 1979-1980 period, which we shall analyse in greater detail in the next section.

Let us now take a look at the importance of the smelting fee (maquila) in mining revenues. Since the smelting fee represents a fixed price for processing a unit of volume of the mineral, its share in the quoted price of metal tin drops when the price goes up while the share of royalties paid to the State and the income for the mining producer go up. Naturally, the reverse is true when prices go down. Table 14 shows that when the quotation for a pound of refined tin goes up from US$ 6.50 to US$ 8.00, the State's share in royalties rises from 34.7% to 36.7%; the direct share of the producer rises only marginally, from 53.0% to 53.2%; and the share represented by the smelting fee (maquila) paid to the smelter goes down from 12.3% to 10.1%. Obviously, this latter difference is almost entirely absorbed by the increased State revenues from the aforementioned increase in royalties.

As regards the distribution of gains between the mining and metallurgical sectors and the royalties coming into the Treasury to finance the country's economic and social objectives, table 14 shows that around 53% of revenues from the marketing of metal tin go to mining, from 10 to 12% to the metallurgical sector and from 35 to 37% to the State.

/Table 14

Table 14

SMELTING FEES (MAQUILAS) OF FOREIGN SMELTERS AND OF ENAF, 1978

Smelter	Percentage of total COMIBOL sales	Smelting fee (dollars per ton) a/
Gulf Chemical	16.9	628.6
Capper Pass	20.4	646.4
Metallgesellschaft	3.0	522.0 b/
Subtotal	40.3	629.7 c/
ENAF	44.2	630.0

Source: CEPAL/CTC Joint Unit on Transnational Corporations, on the basis of ENAF data.

a/ Net metric ton of dry ore.
b/ 1979.
c/ Weighted average of the smelters' share in total COMIBOL sales.

/Table 15

Table 15

PERCENTAGE OF ROYALTIES, SMELTING FEES AND PRODUCER INCOME OBTAINED FROM DIFFERENT TIN PRICES

Price in dollars (pounds of refined tin)	Percentage of price		
	Royalties a/	Smelting fees	Producer income
6.50	34.69	12.33	52.98
6.75	35.09	11.89	53.02
7.00	35.46	11.47	53.07
7.25	35.81	11.08	53.11
7.50	36.13	10.72	53.15
7.75	36.43	10.39	53.18
8.00	36.71	10.07	53.22
Difference between marginal quotations (6.5 and 8.0)	2.02	-2.26	0.24

Source: Information supplied by ENAF.

a/ Not including 7.5% export tax, which was eliminated in March 1980.

/Some additional

Some additional comments are in line with regard to the distribution of the gains of the tin industry: the progressive tax policy applied to the mining sector guarantees that the State retains virtually all the increases in tin prices but, on the other hand, it makes the budget vulnerable in the same way to the ups and downs of circumstances on the world market. The mining sector has only a marginal participation in these changes and the relative participation of the metallurgical sector goes down when prices go up. Consequently, it appears that there is not much incentive for the public enterprises COMIBOL and ENAF to increase the real prices received for the metal on the world markets by improving the quality of the concentrates and the metal and its marketing on the world market.

Obviously, the Bolivian Government recognized the excessive tax burden on mining and, under Decree No. 17248 of 5 March 1980, eliminated the 7.5% export tax which had been in force since 1972 while at the same time it raised the presumed cost of COMIBOL in calculating the mining royalty by US$ 3.8 per pound of refined tin. In addition, the Government is preparing fiscal reforms and incentives for mining.

The vertical integration between the mining and metallurgical sectors and the distribution of gains between COMIBOL and ENAF are also influenced by co-ordination and joint programming of the productive activities of the two enterprises. The reduction of costs to ENAF, and hence of the smelting fee (maquila) paid by COMIBOL, depends to a large extent on the optimum utilization of the ENAF facilities, in other words, on having a larger volume of ore processed in its plants. In order to ensure the supply of the raw material to the smelting plants, joint programming plans must be made which fully integrate the different stages of mining and metallurgical operations.

During the current transitional stage, i.e., while the second low-grade smelter is being put on stream at Vinto, there must be strict co-ordination of the operations carried out by ENAF and by COMIBOL, particularly as regards the exporting of tin concentrates in order to guarantee supplies to the new smelting plant. In addition, links between COMIBOL and ENAF are complemented by those with the Central Bank of Bolivia, which provides financing for the materials at the stage when mineral concentrates are purchased, for the stocks required and for the smelting process and finally, for the stocks of metal products

/corresponding to

corresponding to each of these stages, i.e., of approximately 400 metric tons of refined tin per month, which is equivalent to approximately 25 days production at the current rate.

Finally, another important aspect of the integration of the mining and metallurgical industries is that relating to the quality of the materials delivered to the smelter. In this respect, special mention should be made of low-grade ores containing impurities, which are recovered from tailings and treated at the COMIBOL volatilization plant before the smelting at the ENAF low-grade smelter.

In this section we have tried to describe the most important aspects of vertical integration and the distribution of gains between the two existing public enterprises in the tin mining and smelting sectors. As has been stressed above, deficiencies in the linkage between the two not only cause immediate losses to the Bolivian economy but also have a negative effect on the country's bargaining capacity vis-à-vis the foreign corporations, which are trying to maintain their traditional position of control in the industry. In the following section, we will look at a specific case of interference by the foreign smelters in the vertical integration of the tin industry in Bolivia.

(c) Reaction of the foreign smelters to the loss of the Bolivian market

Faced with the imminent threat of losing their supply of Bolivian tin ore and with a strong new competitor on the world markets for tin metal, the three major foreign smelters involved in processing Bolivian tin responded in 1979 with a "dumping" of the smelting fee (maquila), by offering terms substantially better than those offered by ENAF. Table 16 shows that Capper Pass, Gulf Chemical and Metallgesellschaft reduced their smelting fees in 1980 by 26%, 31% and 21%, respectively, in relation with the previous year. Thus, the smelting fee of US$ 630 per net metric ton of dry ore, which was in force for purchases and sales between ENAF and COMIBOL, was higher than the amounts agreed on with the foreign smelters by 27%, 31% and 35%.24/ COMIBOL could increase its income from

24/ Table 15 shows smelting fee data based on COMIBOL and ENAF estimates. Although the figures differ -according to the methodology used- both show that foreign smelting fees had a downward trend during the 1979-1980 period. In the analysis, ENAF data were used because they cover a more complete historical series and provide greater comparability (assuming the same metal content in the ore processed). Moreover, the political and economic implications of these data were published by the Government of Bolivia (see the statement by the General Manager of ENAF, Major E. Quiroga, Presencia, La Paz, Bolivia, 6 September 1980, p.9).

/Table 16

Table 16

FOREIGN SMELTERS: SMELTING FEES (MAQUILA) FOR TIN CONCENTRATES

(Dollars per net dry ton and percentage growth rate)

	1974	1975	1976	1977	1978	1979	1980
Capper Pass							
COMIBOL estimate a/	...	318.3	424.7	535.7	626.8	622.3	546.0
Annual rate	...	...	33.4	25.2	17.0	-0.7	-12.0
Cumulative rate	...	100.0	133.0	169.0	197.0	195.0	171.0
ENAF estimate b/	330.7	403.7	458.0	564.4	646.4	633.0	461.4c/
Annual rate	...	22.1	13.4	23.2	14.5	-2.1	-26.1
Cumulative rate	100.0	122.0	138.0	171.0	195.0	191.0	139.0
Gulf Chemical							
COMIBOL estimate a/	...	370.5	484.3	451.7	534.1	432.0	...
Annual rate	...	...	30.7	-6.7	18.2	-19.1	...
Cumulative rate	...	100.0	131.0	122.0	144.0	117.0	...
ENAF estimate b/	317.3	375.5	486.0	544.2	628.6	...	434.0c/
Annual rate	...	18.3	29.4	12.0	15.5	...	-31.0d/
Cumulative rate	100.0	118.0	153.0	171.0	198.0	...	137.0
Metallgesellschaft							
ENAF estimate b/	...	...	...	...	...	522.0	410.8c/
Annual rate	...	...	...	...	...	...	-21.3

Source: COMIBOL and ENAF.

a/ Estimated on the basis of yearly average grade of concentrate, which ranged in the case of Capper Pass from 22.3 to 26.8% (of Sn) and in the case of Gulf Chemical between 42.3 and 47.0%.

b/ Estimated on the basis of comparative average grade of 42.0%.

c/ Actual value for the first semester of 1980 for low-grade ore (see Sales Contract between COMIBOL and ENAF, 11 March 1980).

d/ Based on 1978.

/its mining

its mining production if it maintained and expanded its links with the foreign smelters to the detriment of the more expensive services provided by ENAF.

There was no precedent in the previous relations between these corporations and COMIBOL for the sharp drop in the smelting fees charged by the foreign smelters. In fact, the smelting fees paid by the mining enterprise to Capper Pass and to Gulf Chemical almost doubled between 1974 and 1978, rising each year by between 12 and 29% (see table 16). It should be noted that the main justification for the record increases was the rise in the cost of energy, the share of which in total treatment costs increased 2.5 times for the Capper Pass smelter (see table 17). It is obvious that this situation could hardly have changed in 1979-1980.

We may thus reach the conclusion that the rebates granted by the foreign smelters were designed to prevent all the tin ore from being smelted by ENAF by capitalizing on the comparative advantages held by the foreign smelters, particularly as regards the depreciation of assets (in view of the fact that their industrial plants were old, having been in service, on average, for 40 to 50 years, and that they were making very few new investments) and the utilization, at a low cost, of secondary tin.

In addition, Gulf Chemical proposed to COMIBOL and ENAF the establishment of a joint venture, "to carry out joint activities including contracts for the lease of smelting capacity ("toll"), marketing and financing", and offered them an opportunity for dealing directly with consumers in the United States and benefiting from the special position enjoyed by Gulf Chemical as a United States industry protected from strategic stockpile sales by the Government. Both COMIBOL and ENAF rejected this offer by Gulf Chemical because of their conviction that should this strategy of the transnational corporation succeed, the State smelter would disappear, as it would be unable to compete with the transnational, and that the foreign smelters would eventually resume their policy of raising the smelting fees (maquilas).25/

The above analysis would appear to confirm the view expressed at the beginning of this chapter that the transnational corporations, faced with the prospect of losing the Bolivian tin concentrates market and with the emerging competition of ENAF on the world metal tin market, are trying to obstruct the integration of the State mining and metallurgical enterprises.

25/ According to information supplied by ENAF and COMIBOL.

/Table 17

Table 17

CAPPER PASS: IMPORTANCE OF THE COST OF ENERGY IN TOTAL TREATMENT COSTS (SMELTING FEES)

Year	Dollars	Percentage of total cost
1974	34.9	10.5
1975	53.0	11.6
1976	103.8	22.7
1977	168.7	29.9
1978	167.0	25.8

Source: ENAF.

It should also be stressed that the transnationals' proposal that the existing contracts should be renegotiated, while appearing to be favourable to Bolivian mining, occurred at a time when Bolivian tin mining and smelting were being integrated and the two public enterprises were negotiating with each other in connexion with the long-term contract on which their relations over the next few years would be based. Furthermore, the attempt to maintain Bolivia's dependence on the tin transnationals affected not only the State sector but also medium-scale mining, since the terms and conditions agreed on by COMIBOL and the smelters serve as a frame of reference for medium-scale mining.

The developments described above also have effects that go boyond foreign interference in the domestic affairs of a country of the periphery. They reflect a conflict between two types of positions and actions that are based on different approaches to Latin American development. According to the "neoliberal" approach, the public enterprise COMIBOL should have acted according to the rules of the market and accepted the "advantageous" proposals of the foreign smelters, which would have reduced its costs and its operating losses. In the previous paragraph, we discuss the possible long-term implications of such an approach, bearing in mind the experience of many Latin American countries whose domestic industries were displaced by the transnationals, and not only in the mining sector.

/On the

On the other hand, according to the development approach based on collective self-sufficiency that is advocated by a large number of developing countries, the short-term costs and benefits to the enterprise (particularly if it is a public enterprise) should be viewed from the broader standpoint of improving the utilization of national resources and reducing vulnerability and dependence on external factors.26/ Taking into account the fact that smelting fees (maquila) account for approximately one-tenth of the income from sales of metal tin, while the share received by the State through royalties represents around one-third (see table 15), it becomes obvious that the Government has enough manoeuvring space to promote and encourage the domestic integration of mining and metallurgy.

The above remarks do not mean, of course, that it is not necessary to overcome the serious problems currently facing the public sector in regard to tin mining and metallurgy, such as the lack of exploration and prospecting and the slow or non-existent assimilation of new mining technologies and metallurgical processes which could hurt the future production and productivity of the sector; the high operating and overhead costs which aggravate the deficit situation (US$ 211 million for COMIBOL in the 1980 budget and a drop in ENAF profits of almost 50% between 1978 and 1979) and indebtedness, both internal and external; delays in the full implementation of new investments (the COMIBOL volatilization plant and the ENAF low-grade tin plant) and in the delivery of concentrates for smelting; inadequate fiscal policies and incentives, etc. To overcome these deficiencies, the Bolivian Government and the private enterprises and organizations in the sector have embarked on the preparation of short-term plans and measures as well as of a national mining-metallurgical development plan beginning in 1981.27/

To overcome the existing problems and fully comply with development plans for the mining-metallurgical sector, co-ordination and planning must be strengthened both within and between the organizations responsible for carrying out the plan. This process has in fact been initiated with the creation of inter-institutional councils and commissions and the reorganization of the management of the enterprises and institutions in the sector.28/

26/ See, for example, J. Medina Echavarría, "Las propuestas de un nuevo orden económico internacional en perspectiva", CEPAL, November 1976.

27/ See, Presencia, La Paz, Bolivia, several issues of September and October 1980, and the author's interviews with ENAF and COMIBOL officials.

28/ See the previous note.

/With regard

With regard to the strengthening of vertical integration of the mining-metallurgical sector and its bargaining power vis-à-vis external agents, the problems of which have been dealt with in this chapter, there is the alternative -widely discussed among experts in the sector- of complementing the existing technical-economic integration of COMIBOL and ENAF in the institutional framework by merging the two public enterprises into a single unit for the production, processing and marketing of minerals and metals. Naturally, before applying such a far-reaching measure, which would have a decisive influence on the development of this sector, which is vital to the Bolivian economy, it would be necessary to make an in-depth analysis of its potential benefits and costs, a task which goes beyond the scope and purpose of this study. It should be noted, however, that such a measure could help strengthen the country's bargaining power by facilitating the proper concentration and better use of past experiences and of the most qualified personnel, the unification and improved flexibility of planning and operational decisions and hence the creation of economic and financial power which, in worldwide terms, would compare favourably with that of the major transnational enterprises.29/ On the other hand, the institutional integration of the two large public enterprises in the mining-metallurgical sector would also allow for regionalization and decentralization of responsibilities in the major mining-metallurgical centres of the country, thus providing for greater flexibility and effectiveness in their operations.

The analysis made in this chapter of the national integration of the mining-metallurgical sector of Bolivia shows that even after nationalizing the major tin mines and establishing full processing capacity in a public enterprise, there is still -at least during the initial transition period- interference from the transnational corporations who are trying to maintain their positions in the industry. On the other hand, as the transnationals no longer have a share in the ownership of the mining resources or in the metallurgy of the country, their bargaining power vis-à-vis the Bolivian mining industry is reduced to the extent

29/ Aggregate sales of COMIBOL and ENAF in 1979 amounted to around US$ 650 million, while those of a United States transnational corporation, Gulf Chemical, amounted in the same year to US$ 496 million. The transnational was one of the 500 major corporations listed by Fortune magazine and smelted almost one-fifth of Bolivian tin.

/that the

that the public sector manages to overcome the power of the transnationals as regards the vertical integration of the industry, organization, effectiveness and operating costs. Consequently, the main battleground in the eventual conflict between the national interests and those of the transnationals in the tin industry is no longer that of negotiations on the redistribution of gains from the industry (as is the case in many other mineral-producing countries) but rather within the country and in connexion with the adequate operation of the national mining-metallurgical sector (including full utilization of the capacity of small-scale and medium-scale mines).

7. Marketing of metal tin by ENAF

In 1979, exports of tin by ENAF amounted to 15 300 metric tons of refined metal (see section 4, table 13) and its direct sales, particularly to the new markets of Latin America and the socialist countries continued to grow. In this chapter, we describe the features of the marketing systems and of the main export markets.

(a) Marketing systems

ENAF has used the following marketing systems to sell its output:

(i) Sales through agents 30/

Although ENAF began its commercial activities in 1970, it did not have its own sales infrastructure and had to resort to the services of transnational corporations specializing in the marketing of tin concentrates. These corporations, which had been in the country for over half a century, also offered an expeditious system with financing for commercial transactions and a staffing structure made up of subagents in the major world marketing centres. These corporations operated essentially under two arrangements. Under one arrangement, they acted exclusively as agents, carrying out on behalf of ENAF all marketing operations, such as shipping, contracting for freight, insurance, storage, transport to the consumers' plants, and collections. For this service, they receive a commission, stipulated in the contract, which amounts to around 0.4-0.6% of sales and is covered by a bank guarantee.

30/ See annexes 2 and 3.

/The other

The other arrangement that is frequently used when there are stocks of the metal accumulated in the ports, consists of receiving at the port direct offers from firms acting occasionally as agents; this makes it possible to take advantage of market conditions at a given moment while saving on the operating costs described above, which are assumed by the agents. This type of transaction is carried out mainly on the United States and Western European markets and has the additional advantage of making it possible to avoid storage costs at the port of destination.

The agent system is used with the major trading companies such as Metal Chemie, Phillip Brothers and Berisford Metal, who have the facilities mentioned above and control the market to a large extent. Their services include not only placing the commodity on the market at a good price, but also supplying information on the behaviour of the market, making payments on time, sending documents, checking lots and supplying detailed information on transactions carried out, etc.

For example, Metal Chemie, a German corporation based in Amsterdam which makes sales in Western Europe, has a quota of 1 500 tons per year assigned by ENAF and carries out successful sales, providing daily information on all details relating to prices, quotations, competition, etc., and average sales at the highest price of the four quotations on the London Metal Exchange, plus bonuses.

Derby and Co., a subsidiary of Phillip Brothers of New York, is considered the largest marketing firm in the world and has experts and agencies in all important markets, as well as its own bank and industrial facilities. Because of its thorough knowledge of the ore and metals market and its great oligopolistic influence, both in countries supplying raw materials and in consumer countries, this corporation obtains relatively high benefits which are not always shared by the users of the service. Its great financial capacity and the speed with which it grants credit enables it to obtain contracts for the purchase of concentrates and metals on a permanent basis. It has been operating in Bolivia since the major tin mines began operations and because of its influence and power it is difficult to negotiate better terms for ENAF. Nevertheless, because of the considerable competition that has arisen in recent years, some additional advantages have been obtained which are equivalent to those granted by similar corporations.

/Berisford Metal,

Berisford Metal, based in London and having subsidiaries in New York and other centres, specializes more in agricultural commodities such as sugar, cacao, cereals, etc., and only began marketing minerals and metals five years ago, with great impetus at the beginning. It provides services to ENAF as an international agent able to make sales in any country, although in one year and a half of operations it has placed 90% of sales in the United States. Compared with other corporations, it offers advantageous terms as regards financing. It has recently improved its services, having opened its own offices in La Paz.

(ii) Sales through corresponding agents

Sales of this type are carried out by a correspondent on behalf of ENAF, usually with medium-sized enterprises which in some cases have contacts with large marketing firms. This system is applied mainly on markets where imports are strictly regulated, storage and free market transactions are not allowed and each transaction involves compliance with a series of formalities both on the part of the consumer country and of the trading representatives and ENAF.

One of ENAF's corresponding agents, for example, is the firm Amerea, which promoted sales in Colombia on better terms than the traditional agents. It also facilitates sales for Sider-Perú and other State and private enterprises in this country.

(iii) Benefits and costs of selling through agents

The advantages to the public smelting enterprise of marketing through agents, particularly during the initial period of its operation, may be summarized as follows: the agent, who is usually established in the metal consumer centres in the industrialized countries, has a specialized staff with wide knowledge and experience, many contacts and well-established distribution and marketing channels which give it immediate access to the consumer market. It has the financial capacity necessary to take on any risk of a buyer becoming insolvent. In addition, such a firm can promptly provide the national smelting enterprise with any information it may need regarding changes that have occurred or are expected on the world market (production, consumption, stocks, prices, etc.).

On the other hand, in using such a system, the national enterprise is deprived of direct access to the market and cannot establish direct contacts with consumers. Being dependent on agents also means that the national enterprise does not always share in the additional benefits of marketing, such as barter transactions that minimize the risk and cost of selling in diversified markets.

/The experience

The experience of ENAF shows that the agent system was indispensable during the initial stage of its operation when it did not have an adequate infrastructure or a qualified staff familiar with the world tin markets. In order gradually to reduce its dependence on the agent system, ENAF included in its contracts with agents clauses which stipulated that the agents would train ENAF staff members and allow them to take part in the marketing of Bolivian tin.31/

This process of learning by experience and the State's trading policy of opening up access to the non-traditional markets of the Latin American and socialist countries has enabled the public enterprise to develop its system of direct sales to foreign consumers, which represented 64% of total sales in 1978, compared with 40% in 1977. Following is a description of this sales system.

(iv) Direct sales

A direct sale may be defined as the provision of a service by the producer enterprise itself, which delivers the goods that are the object of the transaction directly to the consumer, without the participation of intermediaries. This type of marketing facilitates total control of the transaction from the purchase of concentrates from the mining sector to the sale of ingots on the consumer markets. With the necessary infrastructure, facilities and human resources, ENAF is able to take advantage of favourable situations when prices rise on the world market and benefit from the daily fluctuations when the market is bullish. This system allows ENAF to supply metal tin both to large industry and to small consumers (for example, large industry in the USSR, small radiator, solder and alloy plants in Argentina, Chile, Peru and Venezuela, which buy small quantities of 1 to 1 000 tons). Direct sales also allow for access to markets in countries to which tin concentrates had never been exported before.

Direct personal contacts with corporations that are tin consumers also give the national smelting enterprise guidance with regard to the quality and features required of the product, means of transport and forms of payment, technological adjustments, etc. As far as the internal organization of ENAF is concerned, this means that decisions and responsibility for sales do not fall only on the marketing department, but also on the general management, finance, technical and other departments, thus calling for effective co-ordination.

31/ See the relevant clauses in annexes 2 and 3.

/It may

It may be said in general that direct sales enabled ENAF to expand its exports of metal tin to new non-traditional markets, thus diversifying the destination of its exports and obtaining additional advantages, and, in brief, increasing the benefits of marketing as compared with the agent system. The diversification of sales on the world metal tin market is discussed in greater detail in the following section.

(b) Diversification of world markets

During the triennium 1976-1979, more than half of Bolivia's exports of metal tin went to the markets of the industrialized countries; of these, the United States continued to be the main client, as it accounted for a growing share of ENAF's total external sales, rising from 28% in 1976 to 45% in 1979 (see table 18). The Western European market was much less important, with the major buyer being the Netherlands, whose total purchases amounted to between 12 and 19% of total exports.

Among the non-traditional markets for Bolivian tin, the main buyers were the three socialist countries of Eastern Europe, with the greatest share going to the Soviet Union (between 19% and 28% of total exports), which thus became the second largest customer after the United States.

Finally, during the period in question, four Latin American countries -Argentina, Chile, Colombia and Peru- bought between 9% and 14% of total exports, with Argentina being the main purchaser (3-5%). Bolivian exports filled more than half the needs of this group of countries; this was not the case with other markets, where the supply of Bolivian metal tin played a much lesser or even a marginal role, e.g., in the case of the United States, it met between 6 and 13% of the import demand; of the Soviet Union, 24%; of the Netherlands, 37-41%; and at the other end of the scale, the Federal Republic of Germany, 1-3% and the United Kingdom, 1-5% (see table 18). We shall now look at some of the main features of the major metal tin markets.

The United States market could easily absorb all Bolivian tin production; this would offer certain advantages, such as guaranteed payments and lower freight and insurance costs compared with other markets. However, the fact that United States strategic stockpiles amount to some 200 000 short tons, they become a market factor which contributes to lowering prices and increasing the dependence of consumers on foreign marketing companies. In order to increase its direct

/Table 18

Table 18

BOLIVIA: EXPORTS OF METAL TIN BY COUNTRY OF DESTINATION
(Thousands of tons of metal content and percentage of total exports)

Country	Exports						Bolivia's share as a percentage of total imports		
	1976		1978		1979a/				
	Tons	Percentage	Tons	Percentage	Tons	Percentage	1976	1978	1979a/
United States	2 751	27.9	5 125	33.1	6 144	45.3	6.1	10.9	12.7
Federal Republic of Germany	-	-	396	2.6	191	1.4		2.7	1.2
Netherlands	1 913	19.4	1 887	12.2	1 844	13.6	37.1	40.9	39.0
United Kingdom	220	2.2	378	2.4	88	0.6	3.3	4.8	1.1
Subtotal	4 884	49.5	7 786	50.3	8 267	61.0	...	...	...
Argentina	512	5.2	411	2.6	528	3.9	51.9	61.4	...
Colombia	314	3.2	361	2.3	292	2.1	...	55.5b/	...
Chile	196	2.0	154	1.0	134	1.0	...	52.7c/	...
Peru	326	3.3	430	2.8	447	3.3	...	68.2b/	...
Subtotal	1 348	13.7	1 356	8.8	1 401	10.3	...	...	...
Soviet Union	1 916	19.4	4 373	28.3	2 873	21.2	24.1d/	...	...
Czechoslovaquia	797	8.1	393	2.5	779	5.7	20.6	...	...
Poland	749	7.6	1 067	6.9	-	-	14.7	23.1	...
Subtotal	3 462	35.1	5 883	37.7	3 652	26.9	...	...	...
Others	174	1.8	487	3.1	236	1.7	...	...	...
Total	9 868	100.0	15 462	100.0	13 556	100.0	...	...	...

Source: CEPAL, on the basis of International Tin Council, Statistical Bulletin, May 1980, and ENAF data.

a/ January to November
b/ Share of the country's total consumption.
c/ On total imports from January to July.
d/ On total imports from January to September.

/sales to

sales to the United States, ENAF would have to open an office of its own in New York, so as to take advantage of certain market situations, particularly those of steadily rising prices, or the payment of backwardation bonuses.

The Western European countries belonging to the European Economic Community rely fundamentally on the influence of the London Metal Exchange (LME) and are supplied mainly by the tin-producing countries of Southeast Asia, with only a minor portion of their supplies coming from Bolivia. The expansion of Bolivian sales on the European market depends to a large extent on agents who are well established in this sophisticated market and on the direct participation of ENAF in the London Metal Exchange (LME).

In the socialist countries of Eastern Europe, direct transactions are carried out between ENAF and the State enterprises such as Raznoimport in the USSR, METALIMEX in Czechoslovaquia and others. Bolivian tin has been sold on this market for over five years and it is estimated that around 10 000 metric tons of refined tin can be placed yearly in these countries (including Hungary and Yugoslavia).

The Latin American market, which because of its proximity is the natural market for Bolivian tin, offers the most benefits in comparison with other markets, particularly as regards potential capacity and prospects. During 1978-1979, around 1 400 metric tons of refined tin were sold and it is expected that this volume will be doubled during the 1980s, taking into account the expansion of the steel and metal-mechanical industry in Latin America.32/ The advantages of this market lie mainly in the savings on freight, insurance, financial costs and others. Agreements have also been entered into among the Andean Pact countries whereby a common external tariff protects Bolivian tin from competition from third countries.

The potential competitor in this market is Brazil, with the following volume of production and consumption (in metric tons of refined tin):

	1974	1978	1979
Production	4 850	8 354	9 939
Consumption	3 502	5 800	6 000
Exportable surplus	1 348	2 554	3 939

32/ See section 8 below.

/Another fundamental

Another fundamental feature of the Latin American market is that the main consumers are the public steel enterprises with which ENAF is able to establish direct trading relations (Somisa in Argentina, Siderperú in Peru, CAP in Chile, and SIDOR in Venezuela).

8. Industrialization based on tin: its limits and possibilities for increased regional co-operation

With the Bolivian tin mining and metallurgical industries integrated, the question arises whether the country should continue with this policy and tie the mining-metallurgical complex in with other links of the manufacturing industry, in other words, encourage the industrialization of the country largely on the basis of its tin resources. Some initial steps have already been taken in this direction, inasmuch as there is a production capacity of around 1 000 tons per year of tin alloys; ENAF has held consultations with two corporations on the possibility of manufacturing bearings using babbit metal; a crafts school has been set up in Oruro to increase the use of tin in manufacturing pewter and consideration is also being given to the possibility of manufacturing tin foil and of using tin in the manufacture of fertilizers and insecticides.

As was pointed out in the first part of this study (see chapter 1 (b)), the major portion of the world's consumption of tin is accounted for by the tin-plate industry (45% of the total), followed by the solder industry (24% of the total) and the rest is used in several different tin-based products, such as the aforementioned bearing metals (babbit), bronze, liquid metal polishers, tinplated products and different types of tin coatings, special pipes, foils and sheets and chemical products. Evidently, the production of these goods in a country of the periphery could provide a basis for expanding exports with a greater value-added, for increasing local consumption of tin in its various forms and, finally, for promoting exports of other manufactured goods where tin is used as an input (for example, canned foods).

In the next section, we discuss the main arguments on the limits of industrialization based on tin.33/

33/ For greater details, particularly as regards the countries of Southeast Asia, see: David Lim, Industrial Processing and Location: Study of Tin, World Development, Vol. 8, No. 3, pp. 212-225. In this part of the study, we have used this author's arguments against industrialization based on tin, without fully agreeing with them, as will be seen below.

/(a) Limits

(a) Limits of industrialization

If the tinplate industry, which uses most of the world production of tin, is to be developed economically and profitably, certain requirements must be met. These are discussed in this part of our study.

In the first place, tin constitutes only a very small proportion of the inputs used in the manufacture of tinplate -in the case of electrolytically produced tinplate, the share of tin, by weight, is only 0.25%, and if the older hot-dipped method is used, the share is 1.5%. Considering that the ratio of world steel prices to tin prices is approximately 1:40, the share of tin, measured in terms of value, would increase to 10% and 60% respectively. At any rate, the main raw material in the production of tinplate is the iron ore used in steelmaking. In 1977, the seven Latin American producers (Argentina, Brazil, Colombia, Chile, Mexico, Peru and Venezuela), had 4.8% of the world steel production capacity and 22.5% of the world iron ore capacity.34/

In the second place, iron metallurgy requires a good deal of technology and economies of scale, with a minimum 40 000 tons per year being required for the production of tinplate. In addition, because of the high value of tin, it is more economical to transport than steel.

Finally, existing tinplate plants are utilized way under their capacity and this seriously hinders access to the world tinplate market, particularly in the industrialized countries. In 1975, the industrialized countries used only 57% of their tinplate production capacity and the developing countries, 48% (see table 19). The situation in Latin America was different: in 1979, utilization was 70% on average for the seven countries mentioned before and might have been 81% of available capacity if they had covered their entire tinplate consumption with their own production. Later on we will refer again to the dynamism of the tinplate industry in the relatively more industrialized Latin American countries.

What should be stressed here is the fact that the industrialized countries, particularly Belgium, the Federal Republic of Germany, France, Japan, the United Kingdom and the United States, are large tinplate exporters, even without fully utilizing their production capacity. On the other hand, the countries of the periphery, such as the Latin American ones, which have and do not fully use

34/ See UNIDO, Mineral Processing in Developing Countries, October 1980.

/Table 19

Table 19

SEVEN LATIN AMERICAN COUNTRIES: TINPLATE PRODUCTION CAPACITY AND CONSUMPTION, 1975-1979

(Thousands of tons)

Country	Installed capacity	Production		Consumption		Use of capacity as a percentage of	
						Production	Consumption a/
	1979	1975	1979	1975	1978	1979	1978
Argentina	100	31	67	117	68	61	98
Brazil	610	278	537	385	553	88	91
Colombia	65	12	59	15	60	91	92
Chile	100	36	49	36	43	49	43
Mexico	350	156	220	138	306	63	87
Peru	100	10	30	30	37	30	37
Venezuela	140	50	70	97	127	50	91
Seven Latin American countries, total	1 475	573	1 032	818	1 194	70	81
Developing countries, total	2 060	981	...	1 295	...	48	63
Developed countries, total	18 392	10 394	...	8 642	...	57	47
World (excluding socialist countries), total	20 452	11 375	...	9 937	...	56	49
Percentage share							
Developing countries/World	10	9	...	13	...	...	...
Latin America/World	6	5	...	8	...	...	...
Latin America/Developing countries	55	57	...	61	...	...	...

Source: CEPAL/CTC Joint Unit, based on: A. La Spada, "World Tinplate Statistics: Production, Trade and Apparent Consumption", in Proceedings of the First International Tinplate Conference, London, 5-8 October 1976, Greenford, International Tin Research Institute and International Tin Council, Monthly Statistical Bulletin, several issues.

a/ Estimates of the use of installed capacity are based on a theoretical assumption of a homogeneous composition of production and consumption of tinplate (see the case of Brazil, mentioned previously).

/their tinplate

their tinplate production capacity, import large amounts of secondary tinplate, which, although of inferior quality and also cheaper, does meet their needs. In 1978, for example, Brazil imported from the United States only 164 tons of prime tinplate but bought 5 400 tons of secondary tinplate, at average values of US$ 584 and US$ 306 per ton respectively.35/

Arguments similar to those mentioned above for the tinplate industry could also be applied with regard to bearing metals (babbit), bronze and brasso, special pipes, foils and sheets, i.e., goods containing greater inputs of tin but which are not expanding because of the use of different substitutes, such as aluminium, antimony, copper and lead. It should also be borne in mind that the chances of producing and exporting solder with a tin content of over 60% and a relatively uncomplicated technology are better.

The arguments discussed briefly above, i.e., the relatively low tin content of the goods in the manufacture of which it is used as an input, the technological and economy-of-scale requirements for the production of tinplate and, finally, the excess capacity worldwide of the metallurgical industry in general and of tinplate production in particular, appear to impose serious limits on the industrial development of Bolivia based on tin as its main natural resource. One expert on the subject states that "tin constitutes a necessary but insignificant part in the production of most of the tin-using intermediate products so that the domestic availability of tin per se does not confer an important advantage to the tin-producing LDCs in the production of the intermediate goods".36/

Obviously, to accept this concept of comparative advantage in the strict neoclassical sense would be to sentence the countries of the periphery, at least for a long period in history, to maintain the prevailing international division of labour between the centre and the periphery and, in the specific case of tin, to stop its processing and industrialization at the metal-tin-production stage. Without going into the broad and complex debate on comparative advantages, the trend towards openness and the role of the State in economic development, it is worthwhile to quote from a recent work by Aníbal Pinto:

35/ See: International Tin Council, Monthly Statistical Bulletin, No. 5, May 1980, p. 50.

36/ See D. Lim, Industrial Processing and Location: Study of Tin, op. cit.

/"Starting from

"Starting from the other end of the range of positions, it is obvious that the pragmatic approach -by its very nature- has not managed to produce a clear and comprehensive theoretical corpus on this issue (of comparative advantage), which is unquestionably extremely complex in that it necessarily goes beyond an economistic framework.

"However, it is important not to underestimate the valuable contribution to the analysis of this issue contained in studies and proposals in the field of planning, since these are the concrete manifestations of resource allocation criteria both within the domestic economy and with regard to the external sector.

"Indeed, these contributions have made it possible to blend the different senses of the concept of comparative advantage -which can be absolute (where the natural resource endowment is predominant), relative (when it emerges from the contrasting of viable options), or acquired (in which national determination is crucial, and which involves 'learning by doing')."37/

In the concept of self-sustained development advocated by CEPAL, special importance is obviously attached to those aspects of relative and acquired advantages the utilization of which characterizes the industrialization process in the Latin American countries during the postwar years, or even from the period following the great world crisis of the 1930s, which naturally takes on different shades depending on the particular situation of each country in the region. Obviously, any decision on the future course of industrialization in Bolivia should be supported by a thorough analysis of the situation and the social and economic goals of national development, bearing in mind the comparative advantages of the tin industry, those of other natural resources and also, given the relatively small size of the domestic market, the possibilities for interregional co-operation, particularly among the Andean Pact countries. We will conclude this chapter with some remarks on this latter aspect of regional co-operation.

(b) Experiences and possibilities for increased regional co-operation

Table 20 provides some basic data on trends, during the postwar years, in the production and consumption of tinplate in seven relatively more industrialized countries of the region (Argentina, Brazil, Colombia, Chile, Mexico, Peru and Venezuela). The fact that stands out first of all is that the tinplate industry in the region is relatively young: in Brazil and Mexico, production only began around the mid-1950s; in Argentina, Colombia and Chile, in the second half of

37/ See: Aníbal Pinto, "The opening up of Latin America to the exterior", CEPAL Review, No. 11, August 1980, p. 39.

/Table 20

Table 20

LATIN AMERICA (7 COUNTRIES): DYNAMISM OF PRODUCTION AND CONSUMPTION OF ELECTROLYTIC TINPLATE

(Thousands of tons)

Country	Enterprise	Nominal capacity		Average annual consumption		
		Year installed	Tons	5-year period	Tons (annual average)	Index
Argentina	Somisa (San Nicolás)	1966	110	1961-1965	98.6	
				1966-1970	112.0	113.6
Brazil	Cía. Siderúrgica Nacional (Volta Redonda)	1953	140	1948-1952	113.5	
				1952-1956	252.3	222.0
		1967	150	1962-1966	196.2	
				1967-1971	311.7	159.0
		1976	160	1971-1975	359.5	
		1979	610	1975-1979	384.9	107.0
Colombia	Holasa (Medellín)	1968	65	1963-1967	29.9	
				1968-1972	24.1	81.0
Chile	Cía. de Acero del Pacífico (Talcahuano)	1967	100	1962-1966	29.9	
				1967-1971	36.5	122.0
Mexico	Altos Hornos de Mexico (Monclova) and Hojalata y Lámina (Monterrey)	1956	60	1951-1955	35.1	
				1956-1960	95.7	273.0
		1966	100	1961-1965	94.9	
				1966-1970	152.8	161.0
		1972	150	1972-1976	185.5	121.0
		1974	100	1977-1978	552.0	297.0
		1979	350			
Peru	Siderperú (Chimbote)	1976	100	1971-1975	19.6	
				1976-1979	23.0	117.0
Venezuela	Siderúrgica del Orinoco (Matauras)	1973	132	1968-1972	71.5	
		1979	140	1973-1977	186.0	260.0

Source: CEPAL/CTC Joint Unit, on the basis of: B.T.K. Barry, "The International Tinplate Industry", in Proceeding of the First International Tinplate Conference, op. cit., and International Tin Council, Monthly Statistical Bulletin, several issues.

/the 1960s;

the 1960s; and in Peru and Venezuela, production of tinplate began in the 1970s.

In the second place, in every case installed capacity is way over the minimum 40 000 tons required to achieve economies of scale. Indeed, at the end of 1979, the combined capacity of the seven Latin American countries was almost 1.5 million tons, and in 1975, their combined share represented 6% of world capacity and 55% of the combined capacity of all the developing countries.

In the third place, tin production in these seven countries almost doubled in the second half of the 1970s, which enabled them to reduce by one-third the deficit that had to be covered with imports and to raise the use of existing capacity to a level much higher than that of other parts of the world.38/

Finally, as may be seen in table 20, the installation of new production capacity was accompanied in most cases by a significant increase in local consumption of tinplate, especially in Brazil, Mexico and Venezuela.

The above analysis shows that the seven relatively more industrialized Latin American countries established their own tiplate industry within a relatively short period of time and that in most cases both production and consumption increased substantially. To venture any kind of comparison between this success and the situation in Bolivia, one must bear in mind that all these countries, as we have already mentioned, have their own ferrous metallurgy industry and their own iron ore resources. In addition, Brazil has considerable tin reserves and production. Bolivia, on the other hand, does not have these additional advantages, at least not right now. It does appear, however, that the Latin American market for metal tin from Bolivia is characterized by a significant dynamism.

38/ In making this comparison, we must bear in mind the problem, mentioned previously, of the divergence between the production mix and the consumption mix of prime and secondary tinplate. While between 90 and 95% of the tinplate produced by the electrolytic method, used in all the Latin American countries, will be higher quality prime tinplate and only the remainder will be secondary tinplate, consumption of the less expensive secondary tinplate is greater, as mentioned in the previous section. This fact shows the advisability of increasing co-operation between producer and consumer countries.

/Finally, one

Finally, one may draw the conclusion that any analysis of the relative and acquired advantages (or potential advantages) of further developing the tin industry in Bolivia should be viewed within the broader framework of regional co-operation, particularly among the Andean Group countries, considering possibilities for co-ordinating plans for developing the relevant branches of the metallurgical industry with a view to the eventual establishment of joint enterprises by two or more countries of the region.

9. Conclusions to be drawn from the Bolivian experience

(a) On the threshold of the 1980s, tin continues to be the main material resource for the development of Bolivia. In 1979, it accounted for almost 70% of the value of production in the mining sector, which in turn contributed in that year one-fourth of the total revenues of the public budget and over 70% of those of the balance of payments. It is thus obvious that any model for the future development of the country must necessarily be based on full utilization of this basic wealth of Bolivia.

(b) During the three decades of the postwar period, two significant changes in the economy of the country stand out: the nationalization of the large mines in 1952 and the establishment of the national metallurgical capacity during the 1970s, as a result of which the country is now able to smelt all its tin ore domestically. These events constituted an important foundation for strengthening the country's bargaining power and increasing the benefits for its economy.

Nevertheless, the exclusion of transnational enterprises from direct participation in the mining and smelting of tin did not mean the breaking of their links with the Bolivian industry or the end of their intervention in it; in 1977, it contributed approximately 15% to world production. The main aspects of these links are summarized below.

(c) The origin of large-scale tin mining and its development during the first half of the century are closely linked with the Bolivian national Simón I. Patiño, who used this major natural resource of the country to build a large vertically integrated transnational corporation that owns tin

/mines and

mines and smelters in the major world centres of the industry.39/ His mining properties in Bolivia were nationalized (together with those of the other two "tin barons", Hochschild and Aramayo) in 1952, i.e., long before the series of nationalizations of natural resources that took place in the Third World countries during the 1960s and 1970s, supported by a political concern with the needs of the New International Economic Order.

It is always difficult to find out what are the factors and historical causes of a change in power relations so fundamental that it would impel a government in the periphery to deprive a powerful transnational corporation from the enjoyment of its basic wealth. In the particular case of Bolivia, one might mention the growing national opposition to the monopsonistic power of the United States, which was detrimental to the country's main source of external income; and, also, the social and political effects of the transnationalization of the S.I. Patiño corporation, originally a Bolivian one, which transformed the struggle for justice in the mining enclaves into a common political cause taken up by large segments of the Bolivian people. Within this framework, it must be borne in mind that national ownership of tin has been maintained throughout the last three decades, despite the many changes of government along the most varied ideological and political lines.

(d) The reaction of the nationalized corporations and of the countries that were buyers of Bolivian tin followed the general pattern: initially, drastic measures, including attempts to embargo Bolivian tin on the world markets and the use of the monopolistic power of the British smelter, W. Harvey (belonging to Patiño), to collect from the Government of Bolivia, unilaterally, the payments on the compensation for nationalization. This behaviour continued until the mid-1960s, when a pragmatic approach was taken under the Triangular Plan through which the Governments of the United States and the Federal Republic of Germany, in co-operation with the Inter-American Development Bank, provided assistance and loans for the rationalization of mining production by the

39/ Although there are many publications, both supportive and critical, on the life and activities of this first major owner and executive of a transnational mining enterprise who came from a small country of the periphery, this experience has yet to be assessed from the standpoint of the problems and current needs of Bolivian mining.

/public enterprise

public enterprise COMIBOL. This plan also contributed to a final solution of the differences with the nationalized transnational corporations and put an end to compensation payments in 1961.

(e) Nevertheless, even after nationalization and throughout the 1960s and 1970s, Bolivian mining continued to be dependent on foreign corporations which controlled the world market for tin smelting and marketing. It was not until 1966 that the Bolivian Government initiated, in co-operation with two European firms (Kloeckner and Bergsoe), the construction of the Vinto smelter, which processed 65% of COMIBOL's production in 1979, as compared with the 6%, 20% and 3% processed by the smelters owned by the transnational corporations, i.e., Gulf Chemical, Capper Pass and Metallgesellschaft. COMIBOL's dependence on the foreign smelters enabled them to keep an important part of the value added to Bolivian tin as a result of the refining and marketing processes (around 10% of the value of the metal). In addition, this dependence allowed the corporations to exercise a negative influence on the incipient integration of the Bolivian mining and metallurgical industries.

(f) The importance of the public tin smelting enterprise, ENAF, which with an annual capacity of 30 000 tons 40/ should be able during the 1980s to process all the mineral produced in the country, lies mainly in the following:

(i) The increase in the value of tin exports that is put back into the country's economy (retained value), with the positive implications this has for technological know-how, employment and the balance of trade and balance of payments.

(ii) The diversification of markets for Bolivian tin and thus increased flexibility and commercial profitability, as well as increased co-operation with other Latin American countries.

(iii) The integration of the mining-metallurgical sector as a result of which mining ceased to be an enclave that was dependent on external factors and was able to establish a basis for the possibility of subsequent industrialization based on Bolivia's major natural resources.

40/ Including smelting of low grade ore, begun in 1980.

/(g) On

(g) On the other hand, for the transnational corporations that had previously completely dominated the smelting and marketing of Bolivian tin, the integration of the mining and metallurgical industries meant not only losing their usual supply of Bolivian concentrates, but also finding on the world markets a new competitor -the public enterprise, ENAF. In response to these events, the transnational corporations began a dumping operation in respect of smelting fees (maquilas) -which are discounted from the price of the metal obtained by COMIBOL- whereby the fees were reduced substantially in comparison with previous periods, to levels from 15 to 47% lower than those paid by COMIBOL under its contract with the public enterprise ENAF. This virtual boycott against domestic smelting represented an intervention in the economic life of the country, because the aforementioned reductions were not in the least justified, in view of the world inflationary situation, and must be viewed as a temporary manoeuvre designed to hamper the integration of the domestic mining and metallurgical industries, which would be followed -if sucessful- by a substantial increase in the foreign smelting fees. As for the smelting fees currently offered by foreign smelters, "if it is true that these were the costs, that means that in the past Bolivia lost around 400 million dollars".41/

(h) The strategy applied by the transnational corporations vis-à-vis the integration of the Bolivian mining-metallurgical sector clearly shows the importance of consolidating and rationalizing the public sector in this industry. In the early years following the nationalization of mining and the implementation of the national smelting capacity, there was a certain justification for the high costs and low profitability of COMIBOL and ENAF, which could be attributed inter alia to their initial indebtedness, the lack of managerial and technical experience of the local staff and the internal political instability of the country. Nevertheless, during the 1980s, given the progress that has been made in mining and metallurgy, these deficiencies of the public enterprises should be remedied and their co-operation with each other improved as regards co-ordination and joint programming of production and marketing activities with a view to weighing the advantages and disadvantages

41/ See the statement by the General Manager of ENAF, in Presencia, La Paz, 16 September 1980, p. 9.

/of establishing

of establishing a single public enterprise for the mining-metallurgical sector. It appears that it will also be important to institute tax reforms and incentives for the sector.42/

(i) As a result of ENAF's marketing of metal tin, direct sales to consumers have increased substantially (64% of the total in 1978) and sales have been diversified so that in 1979, 61% went to industrialized market economy countries, 10% to the Latin American countries and 27% to the socialist countries. By reducing dependence on international trading firms, better prices and terms of sales were obtained.

(j) There appear to be serious obstacles to the future industrialization of the country, on the basis of tin, such as the economic and technological complexity of the metallurgical industry (iron is required as well as tin), the surplus world capacity in this industry, particularly in tinplate production, etc. Nevertheless, the experience of other Latin American countries in developing the production and consumption of tinplate shows that in the exercise of comparing viable options for Bolivia's long-term development strategy and plans, consideration should also be given to this alternative, provided it is considered within the framework of regional co-operation and particularly among the countries of the Andean Group.

42/ Since this report is mainly concerned with links with the transnational corporations, we have not dealt in depth with these important issues of "internal" policy in the sector and have tried merely to point out those aspects which seem to be crucial to the country's bargaining power vis-à-vis external agents.

Annex 1

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Annex 2

MAIN CLAUSES AND TECHNICAL SPECIFICATIONS INCLUDED IN ENAF's TIN MARKETING CONTRACTS

1. Agency contracts

These contracts have the following features:

(a) Qualities, quantities and marketing areas covered are established, bearing in mind, basically, the capacity and the nature of the market.

(b) Deliveries are scheduled in monthly quotas distributed according to total annual tonnage and shipments are consigned to the agent against a bank guarantee extended by the agent. ENAF may collect the amount due 48 hours after presenting to the local bank the copy of the shipping documents.

(c) A provision is included to the effect that shipments are subject to favourable market conditions; if they are not favourable, ENAF may suspend shipments and at ENAF's option, the duration of the contract may be extended until such time as delivery of the amounts contracted for is completed.

(d) Although sales made by the agent are exclusively his own responsibility and he is to deal with collections, billing, etc., there must be a prior agreement with ENAF regarding prices, which are based on the London market prices and on the quality of the product (see point 4.(a), below).

(e) Should a buyer be insolvent, responsibility for payment falls solely on the agent, who must assume the risk on collection for tonnage sold.

(f) Should ENAF so require it, the agent must finance shipments made against the contract and may do so for an amount of up to 90% of the estimated value of each shipment.

(g) The agent also undertakes to train an ENAF staff member in marketing or other subjects deemed appropriate for periods of up to four months per year, assuming the staff member's travel expenses and remuneration, which must be sufficient to maintain the standard of living that is customary in the country in which the training takes place.

(h) According to these contracts, ENAF may at any time claim the existence of force majeure; the grounds for which shall be any factor which prevents the execution of the contract, including legal requirements issued by the Ministry of Mines, strikes, breakdowns, lack of concentrates, etc.

2. Contracts with corresponding agents

These contracts differ in some respects from the clauses described in the previous section. They have the following features:

(a) There is no obligation to issue a bank guarantee, since payments are made directly by consumers by means of confirmed sight letters of credit made out to ENAF.

(b) There is also a requirement to obtain a surcharge on sales and the contract establishes a 2.5% commission on the gross value of the metal.

(c) There is a commitment to train personnel in the appropriate area under the same arrangement described above, i.e., payment of travel and a stipulated remuneration.

3. Direct sales contracts

These contracts include the following important clauses:

(a) They are signed for yearly periods establishing a schedule of shipments to be made directly to the consumer industries.

(b) Payment is made through guarantees or against the delivery of documents.

(c) The qualities of the material shipped must meet the specifications stipulated in the contract.

(d) No commission of any kind is envisaged.

(e) After the Vinto complex was expanded with a plant for the manufacture of different types of alloys, the practice was begun, particularly in Latin America, of including in agreements on tin sales clauses establishing a commitment to purchase a percentage of these tin-related products. Steps are also being taken to ensure compliance with the quotas assigned to Bolivia under the Andean Pact.

4. Specifications of the products

(a) Tin ingots

ENAF produces the following qualities of metal tin:

Grade A-1 with 99.95%
Grade A-2 with 99.90%
Grade A-3 with 99.85%
Grade A-4 with 99.50%
Grade A-5 with 99.00%

The first three qualities are called High-Grade on the world market and are sold at the prices published for this quality by the London Metal Exchange. As a result of constant technical improvements in the smelting process, ENAF has managed to produce larger quantities of grades A-1 and A-2, which means that it gets better prices and even bonuses. By producing these different qualities, ENAF is able to adjust to the various markets: for example, in Latin America, a high degree of purity or observations on the content of bismuth or arsenic are not required for grades A-4 and A-5; in the United States, on the other hand, because of strict pollution controls, any amount in excess of 300 grams per ton can only be sold at a discount.

(b) Alloys

ENAF has all the infrastructure necessary for manufacturing tin-based alloys of the following types: with lead, antimony and copper; it is able to manufacture these on request and according to the customer's specifications. Current capacity is 1 000 tons per year and ENAF could expand to greater capacity if economic and market conditions justified it. As has been mentioned above, agency contracts are currently being written with a clause providing for the sale of a certain percentage of alloys.

Annex 3

CONTRACT BETWEEN ENAF AND AN INTERNATIONAL SALES AGENT

1. General terms

The EMPRESA NACIONAL DE FUNDICIONES, hereinafter called simply ENAF, appoints the firm ....., hereinafter called the AGENT, as its International Sales Agent for metal tin in all areas of the world except the following countries: Chile, Bolivia, Argentina, Peru, Colombia, under the following terms and conditions; it may also make sales, subject to specific prior authorization by ENAF, in the following countries: German Democratic Republic, Bulgaria, Rumania, Czechoslovakia, Poland and the Soviet Union.

2. Material to be delivered and its quality

Metal tin produced by ENAF at the tin smelter of the Vinto metallurgical complex in Oruro, Bolivia, of the following grades:

(a) Minimum 99.95% Sn content
(b) Minimum 99.9% Sn content
(c) Minimum 99.8% Sn content
(d) Minimum 99.5% Sn content
(e) Minimum 99.0% Sn content

3. Quantity

ENAF shall assign to the Agent, for sale, a minimum amount of 3 000 (three thousand) metric tons per year of metal tin having the characteristics mentioned in clause 2. Should ENAF increase its production during the life of this contract or have surplus stocks from low sales in other areas, both parties may negotiate other terms in respect of the said surplus.

3.1 Independently of the tonnage assigned in point 3, ENAF may also offer tin-based alloys to the Agent for sale in the Agent's area on the basis of an agreement between principals, at prices to be agreed on at the time or as an Agency sale subject to a specific commission, at the option of ENAF.

4. Duration

This contract shall have a duration of two years which shall be obligatory and one year which shall be voluntary, to be reckoned from the date of signature of the contract. Both ENAF and the Agent agree to meet or exchange correspondence three months before the expiration of the obligatory term for the purpose of either extending the contract for the voluntary year or letting it lapse.

4.1 If the contract is not extended, it shall be terminated when one of the following circumstances occurs, whichever is later:

(a) At the end of the two obligatory years of the contract;

(b) Upon completion of delivery of the minimum 3 000 metric tons for each year, unless resort has been had to a cause of force majeure in which case the contract shall be adjusted in accordance with clause 13.

5. Marketing area

The Agent is authorized to make sales on the international market, except in the areas mentioned in clause 1. ENAF may, without restrictions, make direct sales of tin and tin alloys on the international market, without reducing the tonnage assigned to the Agent. The Agent shall receive no commission for direct sales.

6. Commission

ENAF shall pay the Agent a commission of 0.50% on the net sales values of metal tin sold by the Agent. This commission of 0.50% shall be liquid and net for the Agent, i.e., exempt from any Bolivian tax, whether existing or to be created, inasmuch as the said commission is subject to tax in the Agent's country, and because double taxation is not allowed.

6.1 Net value is understood to be the gross value of sales, minus deductions for land and sea freight and other transport and insurance expenses, i.e., ex-smelter.

7. Obligations

ENAF shall be responsible for dispatching the metal tin and alloys to the port of Matarani (Peru) or to any other port on the western coast of South America that is most convenient to ENAF. In addition, it shall make the necessary arrangements for shipment of the material to its final destination.

7.1 ENAF shall ship the metal tin every month in amounts proportional to the current tonnage agreed on unless, because of technical-economic conditions at the Plant or because of the market situation, ENAF and the Agent should agree to suspend or make shipments in greater or lesser quantities, during certain periods.

7.2 Operating procedures (billing, shipping, authorizations and others) shall be established by mutual agreement, by letter, before the first shipment is made by ENAF.

7.3 The Agent undertakes to sell the material specified in clauses 2 and 3 on the international market. The Agent shall also inform ENAF of the prices and terms obtained and shall obtain the prior agreement of ENAF for the sales. Nevertheless, ENAF may authorize the Agent, through an exchange of letters, to sell the material directly without prior authorization. These limits established in the exchange of letters may be changed according to circumstances but, in so far as possible, shall remain in force for three months.

7.4 The Agent shall constantly strive to obtain the highest prices on the market assigned, on the basis of the prices authorized by ENAF.

7.5 The Agent shall be entitled, under certain circumstances, to purchase lots of tin as a principal on the basis of a formula authorized by ENAF. The Agent shall receive no commission for these sales.

7.6 The Agent also undertakes to take the necessary measures to promote and advertise ENAF's metal tin in the Agent's area, at the Agent's own expense. In particular, in his international advertising programme, the Agent shall advertise ENAF products at his own expense. ENAF must be kept informed with regard to the Agent's compliance with this obligation and must receive the relevant publications.

7.7 As regards tin-based alloys, the Agent undertakes to inform ENAF of the terms and conditions under which such alloys may be sold within a reasonable time after ENAF informs the Agent of the quantity and quality of such alloys. On the basis of the experience acquired during the initial stages of this contract on the sale of alloys, ENAF may at a future date indicate to the Agent the margin of discretion within which the Agent may make sales without prior consultation, by means of an exchange of letters, as agreed under paragraph 7.4 for metal tin.

7.8 The Agent shall periodically inform ENAF, at no cost to ENAF, of the findings of its studies of the metals market. Likewise, the Agent shall, at the request of ENAF, carry out research and studies in respect of the products processed by ENAF.

7.9 The Agent, at his expense, shall register ENAF's metal tin on the London Metal Exchange, for which purpose ENAF shall provide the Agent with such information and products as may be necessary, whenever ENAF considers that such registration should be made.

8. Payments

If there are no other agreements between ENAF and the Agent, all payments shall be made in convertible currency. If ENAF requires provisional payments and financing of its exports, the Agent shall provide them.

8.1 The terms for any such provisional payments or financing that the Agent might grant to ENAF shall be determined by means of a letter, by mutual agreement.

8.2 The Agent shall make remittances to ENAF within 48 working hours from the time it receives payments from consumers and no later, in any event, than 15 days computed from the date of delivery of the material at its final destination, i.e., delivery to the client.

8.3 When payments are not made within the stipulated time for a reason imputable to the Agent, the Agent shall pay interest equal to the New York prime rate in force on the date on which the payment should have been made under clause 8.2, plus 2%, until the payments are made.

8.4 In order for this contract to enter into force, the Agent shall establish, at his expense and on his account, and shall deliver to ENAF a bank guarantee of US$ 2 500 000 (two million five hundred thousand US dollars) at a first-class bank approved by ENAF. The format of the letter of guarantee is an integral part of this contract. This guarantee shall cover compliance with the contract and payment of collateral, within a meximum period of 20 days after payment for the metal tin should have been received by ENAF.

8.5 Payments for direct sales as principals shall be made against delivery of documents to the Agent acting as the Principal.

9. Insurance

ENAF shall be responsible for insuring the materials from the Vinto Plant until their final destination. In the event of risks and losses, the Agent undertakes to provide full documentation as required by the Insurance Company in order that ENAF may process the relevant claims.

10. Jurisdiction

Any disputes between the parties concerning the different stipulations or the validity of this contract that cannot be handled by common agreement shall be settled according to the laws and the competent courts of Bolivia.

11. Clarifications and special agreements

The Agent undertakes to receive annually at its main offices one ENAF staff member and to pay for a maximum of three months a subsidy of US$ 400 for his living expenses, in order that he may work as an intern and receive training in the marketing of ENAF products. ENAF shall pay the round-trip travel expenses.

11.1 Should a buyer chosen by the Agent be insolvent, 100% of the losses shall be borne by the Agent, but the Agent shall only be responsible for such losses up to an amount equivalent to 100% of the Agent's commissions for the year when the loss occurred.

12. Cancellation

Should the Agent be unable to sell in his area 50% of the monthly quota assigned to him of the grades specified in this contract, for three consecutive months, or should he not fulfil the obligations undertaken in this contract after 30 days have elapsed from the date of receipt of written warning from ENAF, and should such non-compliance not be due to causes of force majeure or causes beyond the Agent's control, this being proven in both cases to the satisfaction of ENAF, ENAF shall be empowered to cancel the contract by means of a simple note addressed to the Agent 30 days in advance.

12.1 This contract shall also be cancelled in the event that ENAF, together with the Agent, should decide to form the corporate association suggested by the Agent in his alternative proposal. Should these negotiations result in a mutual agreement, such new agreement shall replace the agency contract contained in this agreement.

13. Force majeure

If ENAF is unable to deliver to the Agent the minimum annual tonnage to which ENAF is committed under clause 2 (3 000 tons) for reasons of force majeure, the Agent may not demand delivery of such tonnage.

In cases of force majeure mentioned in clause 13 of this contract, the contract shall be extended for a period equivalent to the time the force majeure lasts and for a maximum period of 90 days, should the force majeure last more than 90 days, the parties may by mutual agreement cancel the contract, freeing ENAF from the obligation to deliver the tonnage corresponding to the period during which the force majeure existed.

13.1 Causes of force majeure are considered to be all events beyond the will of the parties which prevent them from complying with the obligations undertaken in this contract, such as war, revolutions, earthquakes, floods, epidemics, breakdowns at the Vinto Plant, legal prohibitions, strikes, lock-outs, lack of means of transport, lack of raw materials, for causes of force majeure, and any event which prevents or interferes with the execution of the contract against the wishes or the will of the contracting parties.

14. Amendments or modifications

Any amendment or modification to this contract, in order to be valid, must be stipulated in writing by means of one or more Addenda signed by the legitimate representatives of ENAF and the Agent.

15. Domicile and address

The contracting parties indicate that their respective domiciles are at the following addresses: .....

15.1 Postal, telex or cable correspondence between the parties shall be sent to the addresses mentioned above and any change in these addresses shall be communicated to the other party in writing.

15.2 In the interest of co-operation and to provide better service to ENAF, the Agent shall establish as his representative in Bolivia Messrs. ..... of the city of La Paz, who furthermore shall have sufficient power of attorney to carry out on behalf of the Agent any negotiation or representation with ENAF.

16. Approval

This contract is subject to the approval of the Board of Directors of ENAF.

17. Acceptance

The EMPRESA NACIONAL DE FUNDICIONES, represented by the representatives whose signatures appear below and ....., also represented by the representatives whose signatures appear below, accept the above contract, agreeing with all its clauses, and in witness thereof they sign it jointly in one (1) original and five (5) copies, the original and three copies of which shall be kept by ENAF and two copies of which shall be kept by the Agent.