



CVRD and the Brazilian iron ore industry

By Hayrettin Erdemli
Translation by GRREC

Since the end of the Second World War Companhia Vale do Rio Doce, better known as CVRD, has emerged as the world's leading iron ore exporter.

What role is the CVRD playing in the Brazilian iron industry today? What are the long term plans of the company and the implications of these plans?

These are a few of the questions analysed by Hayrettin Erdemli in the following article on CVRD today.

Hayrettin Erdemli is an economist and member of the Research Group on the Regulation of the Capitalist Economy (GRREC) at the Faculty of Economic Sciences at the University of Social Sciences, Grenoble, France.

H Erdemli is working on international economic questions, specializing in the metallurgic industries and raw materials. He is currently preparing a study on the crisis in the world steel industry.

Address: GRREC, Université de Science Sociales de Grenoble, U.E.R. Faculté des Sciences Economiques, 47 X Centre de Tri, 380 40 Grenoble Cedex, France.

The CVRD was founded in 1942, after the merger of three firms (*Cia. Brasileira de Mineração e Siderurgica S.A., Itabira de Mineração S.A., Estrada de Ferro Vitória a Minas*) following a tripartite agreement between the USA, Great Britain and Brazil.¹

Although the CVRD is organized as a public company, it is the Brazilian state which owns most of its nominal capital, as can be seen in the following figures on the share capital of the CVRD:²

Brazilian treasury	85.70%
Nationalized companies	5.21%
Share of the State	90.91%
Public	9.09%
	100.00%

At the present time, the CVRD is one of the main companies of the Brazilian public sector. It is also classified by *Fortune* among the 500 biggest non US companies in the world.

In the *Fortune* classification the CVRD occupied the 288th place in 1975, the 275th in 1976, the 313th in 1977, the 298th in 1978 and the 285th in 1979 as well as in 1980.

Tables 1 and 2 show how the main indicators of its activity have progressed over the last few years.

The iron mines run by the CVRD.

At the present time the CVRD runs five iron mines in the Itabira region. The main mine is that of *Caucé*.

Table 1

CVRD – Basic data 1976-80

Year	Numbers employed	Assets (US\$ 000)	Sales (US\$ 000)	Net income (US\$ 000)
1976	21,600	1,972,197	863,798	21,600
1977 ¹	18,544	2,224,918	823,983	18,544
1978	27,970	2,820,758	1,105,958	42,038
1979	29,354	2,246,843	1,408,909	35,548
1980	29,400	2,275,350	1,644,326	269,461

¹ for the parent company only

Source: Fortune.

Table 2

Classification of the five foremost world iron ore exporting companies

Company	Shipments/tons		
	1980	1979	1978
CVRD	68,885,760	68,261,000	50,574,000
Hamersley Iron Pty.Ltd	38,171,000	29,498,000	30,567,000
Hanna Mining Co.	34,180,000	38,714,000	27,773,721
US Steel	33,019,250	34,870,000	24,580,317
Mt. Newman Mining Co.	27,125,570	30,664,000	31,757,829

Source: Skillings' Mining Review.

The others are *Conceição*, *Dois Corregos*, *Picarrao* and *Timbopeba*. *Periquita* which is run in association with Acesita (Companhia Agos Espaciais Itabira) should also be mentioned.

These mines contain two sorts of ore:

hematites: "this type of ore has more than 66 per cent iron content. Generally nearly 50 per cent of the ore consists of fines"³

itabirites: "this term is applied to several products ranging from hard ore which is slightly poorer and more siliceous than the *hematite* category agents

and which may be enriched by eliminating the siliceous fines through screening"⁴

The data derived from various sources concerning the *reserves* of these mines are divergent. This is due to different estimate periods on the one hand, and to differing criteria on the other. They are presented in table 3.

In 1977 the *production capacity* of all the mines of the CVRD taken together amounted to 66.1 million tons/year, distributed as follows:⁵

Caue	46.0	million tons/year
Conceição	11.0	" "
Dois Corregos	4.0	" "
Picarrao	2.6	" "
Timbopeba	2.5	" "
	66.1	" "

According to the revue of the ILAFA, the production capacity of the CVRD had increased to 71,900 000 tons of iron ore in 1979. To this iron ore production capacity should be added that of five *pelletization plants*:

Company	tons/year
CVRD/Tubarao ⁶	
Plant no. 1 ⁷	2 million
Plant no. 2	3 million
NIBRASCO ⁸ (2 plants)	6 million
ITABRASCO	3 million

Table 3

The iron ore reserves of the CVRD

Mines	Source of data	Reserves			
		Hematites		Itabirites	
		10 ⁶ tons	Content %	10 ⁶ tons	Content
Caue	United Nations ¹	265	67-68.7	838	45-55
	Battelle Institute ²	401		751	
Conceição	United Nations	363	67-68.8	142	45-55
	Battelle Institute	511		1 560	
Picarrao (*)	Battelle Institute	11		17	
Timbopeba	United Nations	45			
	Metal Bulletin ³	100			
Dois Corregos	United Nations	67	67-68.8	212	45-60
	Battelle Institute	85		150	

Sources:

¹ *Le Marche Mondial du Minerai de Fer*. New York, 1968.

² *Iron ores for direct reduction*, 1977.

³ *Iron and manganese ores*, 1977.

Note:

(*) For overall reserves, Metal Bulletin gives the figure of 34 million tons, with 45 to 68.5 percent iron content, while of 20 million tons.

The structure of capital in the Brazilian iron ore industry and in the CVRD

In 1977 the total installed production capacity for iron ore in Brazil was around 114,150 000 Tons/year⁹ (Cf page 41). This total capacity was distributed among eight firms:

CVRD	66,100 000	tons/year
CVRD/ACESITA	7,000 000	" "
CSN	4,000 000	" "
MBR	15,500 000	" "
Samitri	11,150 000	" "
Ferteco	7,400 000	" "
Mannesmann	1,000 000	" "
W. H. Muller	2,000 000	" "

Total 114,500 000 tons/year

These firms may be put into three categories:

- public corporations: CVRD, CVRD/ACESITA, CSN
- mixed private firms: MBR
- foreign firms: Samitri, Ferteco, Mannesmann, W. H. Muller.

Mannesman billboard in Minas Geraes, Brazil. (Bottom).

● **MBR (Minerações Brasileiras Reunidas SA)**

The MBR group is the second-ranking iron ore producer in Brazil. The management of the group is Brazilian. However, the group's capital is owned by Japanese, Brazilian and American interests. The structure of the group's nominal capital is shown in the figure.¹⁰

● **Samitri (SA Mineração da Trindade)**

The ARBED group controls 60 per cent of the Samitri. However, the Cie. Siderurgica Belgo Mineira is also involved, and receives part of the Samitri output. Samitri also operates Samarco Mineração SA, a joint venture (51/49%) with Utah International Inc., of the US.

● **Ferteco SA**

The Ferteco group was set up by the Gewerkschaft Exploration und Bergbau GmbH. This company was itself set up by ten German iron and steel companies. Through its mining activities on a world level it supplies the German steel industry with raw materials. The parent companies of Ferteco are as follows:

% of shareholding

August Thyssen Hütte A.G.	28.1
Hoesch Hüttenwerke A.G.	17.9
Fried-Krupp Hüttenwerke A.G.	13.3
Klöckner Werke A.G.	8.5
Mannesmann A. G.	8.3
Hüttenwerke Oberhausen A.G.	8.0
Stahlwerke Peine Salzgitter	6.4
Reinstahl Hüttenwerke A.G.	5.7
Rochling'sche Eisen und Stahlwerke	2.2
Dillinger Hüttenwerke A.G.	1.6
	100.0

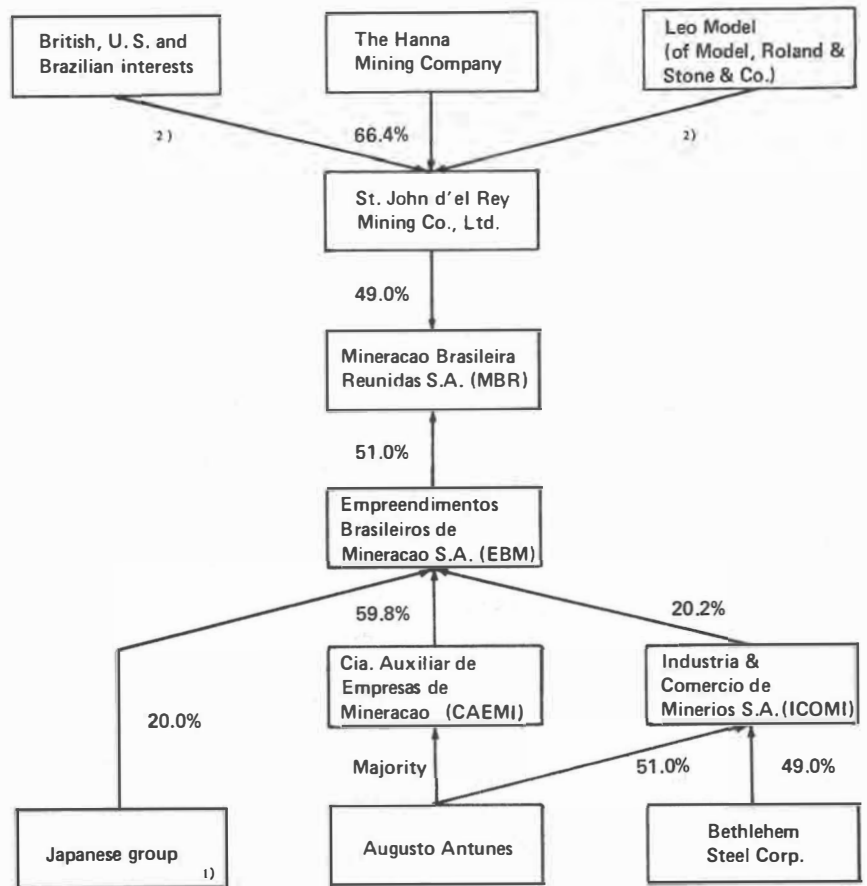
The Ferteco group also has two subsidiaries in Brazil:

- The Cia. de Mineração de Ferro e Carvão
- The Cia. de Mineração Serra da Moeda

● **Mannesmann Mineração**

This company is a subsidiary of the Cia. Siderurgica Mannesmann which in turn is dependent on the German group Mannesmann. It operates on part of the

MBR – OWNERS AUTUMN 1981



1) The Japanese group consists of five trading companies and six steel companies

Trading companies		Steel companies		
Mitsui	15.5%	NSC	23.370%	
C. Itoh	15.5%	NKK	8.235%	
Marubeni	7.5%	Kawasaki	8.235%	
Sumitomo	7.5%	Sumitomo	8.235%	Total 15.735%
Mitsubishi	4.0%	Kobe	1.000%	
		Nisshin	0.925%	

2) Not available

Sources: Iron Ore Manual 1981/1982
Hanna Industrial Complex, Nacia 1969.
Annual Reports



Mutaca deposits. Most of its output is intended for the steel plant of the Cia. Siderurgica Mannesmann.

● **The Internatio-Muller Group**

Internatio-Muller is a Dutch group whose activities are very much diversified. Its activities in the sphere of iron ore in Brazil are carried out by its two subsidiaries:

- Minas do Paraopeba SA (MIPASA) whose capital is half-owned by the group.
- Minas do Itacolony SA (ITASA) whose capital is entirely owned by the group.

According to the share of these various interests in the iron ore sector, the distribution of production capacity per country may be determined as in table 4.

In this table, the share of each country is calculated in proportion to the financial participation of the firms which represent them. Thus Brazil's share includes that of the CVRD, CVRD/Acesita, CSN and that which belongs to the Companhia Auxiliar de Empresas de Minações in the production capacity of the MBR group.

Clearly the table does not provide in an exact manner the share of the production capacity effectively controlled by each country. It does, however, give an indication of a minimum level.

Brazil's predominant position comes out quite clearly, with about 72 per cent of the production capacity at present in operation. The CVRD accounts for 80.7 per cent of Brazil's share, and 66 per cent of total capacity. This control operated by Brazilian interests, and in particular by the CVRD, in the sphere of production would seem to be export-oriented. A comparison between the share of production and deliveries brings this out clearly.

On the basis of data covering the four main companies operating in the iron ore sector, the following disparities concerning the control over and destination of production may be noted:

● Brazil, which controls 70.8 per cent of the production of the four major firms in its iron ore industry, only uses around 10 per cent in its domestic economy.

● Japan on the other hand, which receives 34 per cent of the supplies made on the basis of this production, has only a negligible control over it. This, admittedly to a lesser extent, is also the case of the European countries.

These data are significant for an understanding of the development goals of the CVRD. *The function of the CVRD would seem to be to provide the Brazilian economy with export earnings from raw materials.*

Trends in production and exports of Brazilian iron ore and the role of the CVRD

Iron ore production in Brazil rose from 9 million tons in 1960 to 34 million in

1970 and on to 87.4 million tons in 1980.

Over the same period the production of the CVRD developed as follows:

1960	5 million tons
1965	11 million tons
1970	20 million tons
1975	52 million tons
1980	63 million tons

The share of the CVRD in Brazilian output for these years was respectively 56, 63, 59, 59 and 65 per cent.

The rapid Brazilian increase in production was intended to cover a growing volume of exports. Brazil, which exported 5 million tons of iron ore in 1960, provided the world market with 28 million tons in 1970. By 1980, this volume of exports had more than doubled and reached 79 million tons.

The exports of the CVRD accounted for 82 per cent of Brazilian iron ore

Table 4
Control of total Brazilian iron ore production capacity (tons)

Company	Capacity	%
Brazil	81 920 500	71,8
Bel/Lux	11 150 000	9,8
USA	9 098 500	8,0
FRG	8 400 000	7,3
Netherlands	2 000 000	1,7
Japan	1 581 000	1,4

Table 5
Control and consumption of Brazilian iron ore by the four largest iron ore companies

Company from	Share of production in %	Share of deliveries in %
Brazil	71,8	9,8
Europe	18,5	47,5
USA	9,1	7,4
Japan	1,6	47,5
Others	—	1,4

Table 6
Brazilian and CVRD iron ore exports (million tons)

Year	Brazilian exports	CVRD exports	CVRD share (%)
1960	5 230	4 300	82,2
1970	28 060	21 900	78,0
1975	72 500	47 300	65,2
1976	67 000	46 300	69,1
1977	58 500	41 900	71,6
1978	66 400	47 800	71,9
1979	77 000	48 800	63,4
1980	79 000	56 900	72,0
1981	79 400	62 500	78,7

Source: Skillings Mining Review, CVRD Annual Report 1980.

exports in 1960, 78 per cent in 1970 and 72 per cent in 1980, progressing as is shown in table 6.

This progression shows that a major part of the CVRD production is intended for export. Thus, the share of exports in CVRD production amounts to 83 per cent in 1960, 78 per cent in 1965 and 91 per cent in 1980. Between 1965 and 1975 almost all its output was exported. From 1969 to 1974 not only did the CVRD export all of its annual output but also used its stocks to this end, and occasionally bought from other mining companies in order to export, since over this period 1969-74 exports were above annual output.

Thus the function of the CVRD – to develop the extraction and export of Brazil's raw materials – is confirmed quite clearly. We will now go on to examine how this strategy is implemented by the CVRD.

SOME ASPECTS OF THE STRATEGY OF THE CVRD

The CVRD is known mainly as a company involved in iron ore production and export. This is, of course, the main activity of the CVRD. However, the CVRD is very much a general raw material producer and is engaged in the production of other ores. Once we have dealt with the development of its iron ore related activities, we will go on to discuss the main lines of its diversification activities.

Extension of existing iron ore mines

The production capacity for iron ore of the CVRD is at present around 71.9 million tons. This production capacity will be developed firstly through the extension of mines already in operation, secondly by opening new mines.

The prospects for short term development, and also for a 1985 horizon, were evaluated in 1979 as is shown in table 7.

Table 7. CVRD's short and long term mine production capacity

Mine	Production capacity (tons)	
	Short term	Horizon 1985
Caue	36,000,000	36,000,000
Conceição-Dois Corregos	24,700,000	24,700,000
Periquita	7,000,000	7,000,000
Picarrao	1,700,000	1,700,000
Caraca	5,000,000 (*)	5,000,000 (*)
Capanema	10,500,000	10,500,000
Timbopeba	7,500,000 (*)	10,000,000 (*)
Guanhaes		10,000,000 (*)
Carajas		1,500,000 (*)
Total	92,400,000	120,000,000

(*) Estimate.

Source: *Siderurgia Latino Americana*, No. 235, 1979.

It should be noted that for certain projects, the prospects have been scaled down in comparison with those which were defined some years ago.

The extension of production capacities, which is projected or at present being carried out, concerns the mines of Conceição, Dois Corregos and Periquita.

The extension objective for the first two mines has been to raise their joint production capacities to 28.5 million tons. However, according to the evaluation made in 1979, the projected 1985 production capacity for the two mines is 24.7 million tons.

The production capacity of the Periquita mine was to be raised to 10 million tons in 1980 and 25 million tons in 1985. However these objectives were revised in 1979 to an even greater extent than for the previously mentioned mines. According to 1979 forecasts, the production capacity of the Periquita mine will be around 7 million tons until 1985.

The opening of new iron ore mines

● The Capanema project

This project will be carried through by a joint subsidiary composed of the CVRD

and a Japanese grouping. The latter owns 49 per cent of the capital and is composed of the following firms:

Kawasaki Steel Corp.	24.50%
Nomura Trading Co.	7.16%
Mitsubishi Mining & Cement Co.	5.62%
Kawasho Corp.	4.22%
Kawatetsu Bussan Co.	2.60%
Nissho-Iwai Co.	1.96%
Toyo Menka Kiasha	0.98%

This project aims at extracting the iron ore deposits in Capanema. The resources of these deposits are estimated at 233 million tons of iron ore with an average 60.8 per cent iron content. The installed production capacity should be around 11 million tons from 1980 onwards.

The steel plant of Tubarao in Brazil and the installations of the Kawasaki complex in Mindanao in the Philippines will each receive 2 million tons/year of iron ore. The remaining 7 million tons will be marketed.¹¹

● The Barao de Cocais project

The reserves of the Barao de Cocais deposits are evaluated at 2.4 billion (2 400 000 000) tons of ore with an iron content of 63-64 per cent. The exploitation of these deposits was to be carried

the Mineração Haime Ltd. set up by the following companies and groups:

- the Brazilian group Buzzano Simonson
- the CVRD
- a Japanese grouping composed of Nippon Kokan, Kokan Mining, and Marubeni Corp.

The projected production capacity is around 35 million tons.¹² However, at the present time this project is not at all sure because of the financing and investment problems that it raises.

● The Carajás project

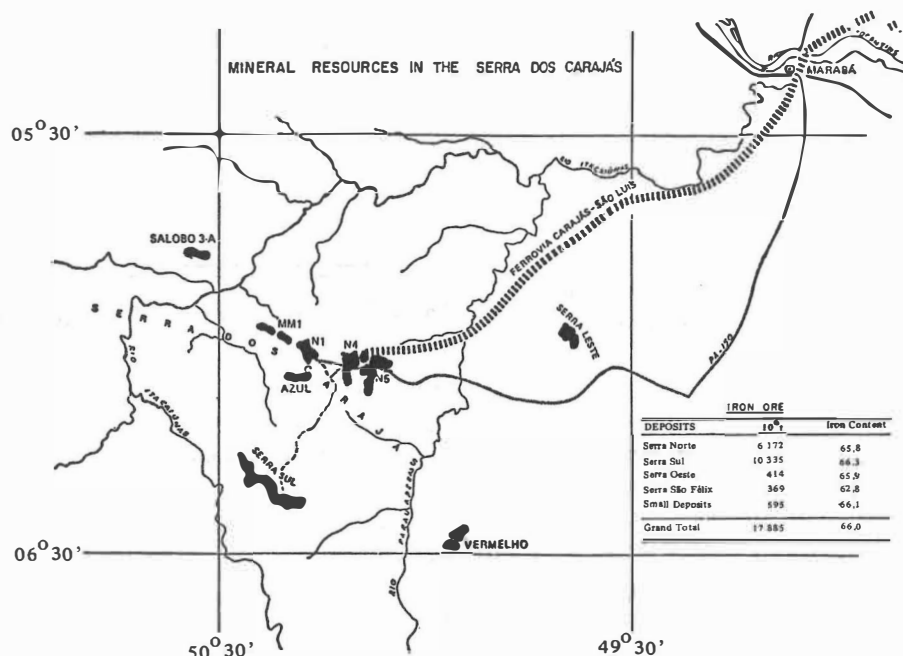
The Carajás project may be described as a project of international dimensions, because of the reserves which are there to be exploited, the production capacity of the mines, the tremendous investments necessary for its completion, and the financing which involves huge resources on an international level.

Here it should be noted that the project concerning the iron mine is in fact part of a far larger project which has been advocated by the experts from the IBRD for the development of all the natural resources of the region around the Carajás deposits.¹³

This project, of unheard of dimensions will necessitate an investment of 33.6 billion dollars, covering the production of iron, copper, gold, sulphuric acid and coal, the development of lumbering, the installation of various plantations and the construction of hydro-electric power plants, etc. ...¹⁴

The iron ore project was originally envisaged by one company: Amazonia Mineração S.A. which was set up jointly by the CVRD (50.9%) and U.S. Steel (49.1%). The company intended to install a production capacity of 50 million tons of iron ore a year.

However, in May 1977 US Steel withdrew both from the joint company and from the project, partly because of the high level of investment it would have had to provide in the middle of a period of crisis. With the withdrawal of



U.S. Steel, the project took on more modest proportions, with a start-off production capacity of 8 million tons and a projected 22 million tons capacity in the final phase.¹⁵

The project was then postponed for several years as the managers of the CVRD attempted to solve the key-problem of financing the operation. During 1980 the project came back into the news, but this time in a substantially altered version of the initial plan. The new features of the project are analysed in detail in the IBASE studies at page 48-69 and will therefore here only be described in a general way.

Reserves and production

The resources of the Carajás deposits are at present evaluated at 18 billion tons. (Only a few years ago they were estimated at 15.8 billion tons.) The iron ore of these deposits has the very high iron content of 66.7 per cent.¹⁶

The projected production capacity is as follows:¹⁷

15 million tons/year	in 1985
25 " " " "	1986
35 " " " "	1987

The CVRD has already begun to carry out the project with an initial investment of 186 million dollars. A pilot plant with a capacity of 600 000 tons/year has just been completed and is ready for production.¹⁸

Investment and financing

Early in 1981 the investment necessary

for the project to be carried through was estimated at 3.200 million dollars.¹⁹ During the second semester of 1981, this estimate rose to 3.636 million dollars without taking into account financial charges. By including these latter the cost of the project is estimated at 5 000 million dollars.²⁰ Along with the properly so called mining parts, the investment includes the following installations:²¹

- the construction of the railway line Carajás-Itaqui 1 843.00 M US\$
- the development of the mine and the urban build up around Marabá 509.71 M US\$
- the development of the port of Itaqui 248.79 M US\$
- Urban development around the port 198.80 M US\$

A major part of these investments will benefit Brazil-based industries, since the CVRD intends ordering 75 per cent of the necessary equipment from constructors working within the Brazilian economy.

Finding the money to finance these investments is still the key problem for the completion of the project. The management of the CVRD has been attempting to get this money together through various loans.

In early 1981 they intended negotiating a loan of 700 million dollars from European banks and a further 300 million dollars from the World Bank.²²

In March 1981, the press reported a loan to the CVRD granted by a group

of ten American banks whose leader was the Morgan Guaranty Trust. The amount loaned by this group was set at 300 million dollars over eight years and at a high rate of interest.²³

At the present time, the project is to be financed with funds from the following origins:

Japanese Banks	500 M US\$
EEC Banks	500 M US\$
The World Bank	300 M US\$
KFW (Kreditanstalt für Wiederaufbau, a BRD state bank)	150 M US\$
Brazilian sources and CVRD	1 000 M US\$

In order to cover its own share in financing the project, the CVRD, is relying on sales contracts for Carajás iron ore which have already been partially negotiated with the steel industries of various countries.

Delivery programme for Carajás ore

On the basis of the negotiations which it has already carried out, the CVRD has envisaged the following delivery programme:

12 million tons year towards Europe
13 " " " " " Japan

What is more, it is counting on obtaining extra delivery contracts of 6.4 millions tons for W. Germany and 10 million tons for Japan.²⁴

In early 1981, the chairman of the CVRD, Eliezer Batista da Silva finalized the following contracts in Europe:

- in Paris a delivery contract of 3 million tons/year for USINOR
- in Rome a delivery contract of 2.5 million tons/year for Italsider
- in West Germany a delivery contract of 6 million tons/year for the German iron and steel industry.^{24, 25, 26}

By April 1981, the overall purchase commitments for Carajás ore obtained by the CVRD amounted to 20.6 million tons/year.²⁷ More recently, the CVRD signed a delivery contract with Korf

Stahl AG for 500 000 tons/year over 15 years from 1985 on.²⁸ At the present time the volume of definite orders is estimated at 25 million tons/year.

Other iron ore projects

The other, far less detailed, projects envisaged by the CVRD concern the development of the deposits of Cuanhaes (resources estimated at 3 billion tons) and of Urucum/Corumba (resources around the 500 million tons level).

Pelletizing projects

The production capacity for pellets of the CVRD was around 17 million tons in late 1977. In 1980, with the completion of pelletization projects, the pellet production capacity reached 29 million tons of which 21 million tons were located at Tubarao.

Diversification outside the iron ore sector

The five-year investment programme established by the CVRD in 1978 gives an indication of the extent to which it intends diversifying its activities.

Out of a total investment programme of 3.5 billion dollars, activities in the iron ore sector will receive 2.275 billion dollars i.e. 65 per cent of total investment, and diversification activities obtain 1.085 billion dollars i.e. 31 per cent of total investment.²⁹

We cannot give any indication here of comparative trends in investment in the iron ore sector and in diversification activities, which would enable us to pin point the main trends in the development of CVRD activities. Nonetheless, the share of the present investment programme allotted to diversification is in itself indicative of the importance attached to these activities.

Neither do we have exhaustive data on the various diversification activities of the CVRD. However, the few examples which we are going to discuss in the following would seem to show that these activities concern *primarily the mining sector*, with

the exception of aluminium, where the programme also provides for semi-manufactured products.

The CVRD is exploiting *manganese* deposits through two companies which it has set up in collaboration with other Brazilian firms. One of these companies was set up jointly with Metame, a company from the Brazilian public sector. The other company, the Mineração Urucum has the following shareholders.³⁰

the CVRD	33.3%
Cia Matogrossense de Mineração	33.3%
Cia Vale do Paraguba	33.3%

This company produces around 100 000 tons of manganese a year from deposits with reserves estimated at 40 million tons of ore with a 46 per cent manganese content.

The Mineração Vale Do Paranaíba (VALEP), a subsidiary of the CVRD, possesses substantial deposits of:

- Titanium oxide
- Niob
- Phosphate
- Rare Earths

The *titanium* reserves, evaluated at 220 million tons at the present time, make Brazil one of the main potential suppliers on a world level. The plant for processing titanium oxide, owned by the CVRD subsidiary, should produce 60 000 tons/year.³¹

Another subsidiary of the CVRD, the Rio Doce Geologia e Mineração (DOCEGEO), is carrying out preparatory operations aimed at exploiting the *nickel* deposits at Sao Joao do Piaui. The nickel reserves in these deposits are estimated at 20 million tons.³²

In 1979 DOCEGEO and CVRD decided to invest 125 million dollars for further development of the *copper* mines of the Serra dos Carajás where reserves amount to some 500 million tons. The investments projected for these projects in 1980 were 250 million dollars.³³

The CVRD also envisages developing *gold* deposits which have recently been

discovered in the state of Para. The projected output of the mine will be 19 000 tons³⁴. Moreover, another subsidiary of the CVRD, Vale Fertil is building a *phosphate fertilizer* complex in Uberaba, which is financed by de IBRD for a sum of 82 million dollars, and by the Credit Industriel & Commercial for 15 million dollars.³⁵

As far as *bauxite* is concerned, the CVRD owns directly reserves which are estimated at 440 million tons.³⁶ The CVRD is the main shareholder of the Mineração Rio de Norte which is mining bauxite in Trombetas where the reserves are estimated at 600 million tons. The shareholders of this company are as follows: ³⁷

CVRD	46%
Alcan Aluminium Ltd (Canada)	19%
Cia. Brasileira de Alumínio	10%
A/S Årdal og Sunndal Verk (Norway)	5%
Norsk Hydro a.s (Norway)	5%
Instituto Nacional de Industria	5%
Reynolds Metals Company (USA)	5%
Billiton Int. Metals B.V. (Netherlands)	5%

The plant owned by this company has just started up production with a capacity of 3.35 million tons in the initial phase, including 1.5 million tons intended for the Alcan refinery in Quebec.³⁸ Still concerning bauxite, the subsidiary of the CVRD, the DOCEGEO, has discovered bauxite deposits in Tutai where reserves are evaluated at 4 billion tons. This ranks them in the third position on a world level.³⁹ After taking over 36 per cent of the shares of the Mineração Vera Cruz, a subsidiary of Rio Tinto-Zinc, the CVRD is now associated in the possible development of the bauxite deposits of Paragominas. The mining licences for these deposits are at present held by Mineração Vera Cruz, which until the intervention of the CVRD belonged entirely to RTZ.⁴⁰

As far as *alumina* is concerned, Alumina do Norte do Brasil (Alunorte) which is a joint subsidiary of the CVRD

(51 per cent) and the Nippon Amazon Aluminium Co. (49 per cent) will construct and run an alumina plant with a capacity of 800 000 tons/year and which should start production in 1981/1982.

This project for alumina production goes together with the projected construction of an electrolysis plant by Alumínio Brasileiro (Albras), which is a joint subsidiary with the same parent companies and financed in the same manner as the Alunorte company. The *aluminium* plant has a projected initial production capacity of 40 000 tons a year and should start production in 1982. Its final production capacity is estimated at 320 000 tons/year.

Another aluminium project which the CVRD is developing is that of Santa Cruz. A subsidiary company, Valesul Alumina S.A., created for this purpose by the CVRD (55%), Reynolds International Co (15%) and the groups Flavio Pentagana Guimares and Tabacov (Ifema) (30%), has an initial production capacity of 20 000 tons/year. From 1981 on the plant should produce 80 000 tons/year.

The investment strategy of the CVRD

One of the main problems – if not the main problem – of the CVRD concerning its investments is how to finance them. The CVRD has tried to resolve this problem in two ways:

- the creation of joint subsidiaries with other companies
- international loans.

The creation of joint subsidiaries

In most cases CVRD presence is guaranteed by means of joint subsidiaries, sometimes with Brazilian companies, most often with foreign corporations.

In the projects concerning the extraction of iron ore, of which we have already discussed the main characteristics, the associates of the CVRD are often large Japanese groups.

The new pellet production plants and

pelletization projects have been envisaged in association with Japanese, Italian and Spanish companies.

As far as bauxite, alumina and aluminium are concerned, the associates of the CVRD are not only Japanese, but also American and Brazilian. (On page 30-31 we have listed CVRD's most important subsidiaries and joint ventures).

The following examples clearly indicate that the creation of joint subsidiaries is one of the means employed by the CVRD in order to obtain access to external sources for financing investment.

Thus the Nibrasco obtained in 1977 a credit of 33 million dollars from the Industrial Bank of Japan ⁴¹ and Hispano-bras obtained a credit of 2.3 billion pesetas⁴² from the Hispano-Americano Bank and the Banco Exterior Hispano de Crédito.

In the field of aluminium production, the Nippo-Brazilian joint company Albras received 120 million dollars from the Japanese government. This amount represented 80% of the Japanese financial participation in the project.⁴³ In order to mine the bauxite of Trombetas, the company Mineração Rio de Norte obtained a credit of 98.8 million dollars granted by:

Orion Bank Ltd.	32 M US\$
Irving Trust Comp.	32 M US\$
Export-Import of America	19.8 M US\$
IFC (World Bank)	15 M US\$

The Mineração Rio de Norte company hopes to raise an overall credit total of about 144.8 million dollars.⁴⁴

International loans

Beside the credits obtained through the creation of joint subsidiaries, the CVRD takes up direct loans from international banks and institutions.

In this category of sources of finance, we may mention the loan from the Dresdner Bank to the CVRD as a result of the contract signed 1976-12-01. This loan amounted to 100 million D.M. at a rate of interest of 8.5%.⁴⁵ The CVRD has also

"Iron ore for sale", CVRD advertisement from the mid 1970's. (Top).

IRON ORE

We've got a lot of it in Brazil

Brazil

- Mineração Rio do Norte (bauxite)
- AMZA (iron ore)
- Mineração Vera Cruz (bauxite)
- Albrás/Alunorte (aluminium and alumina)
- Urucum Mineração (manganese)
- Valep (phosphate)
- Valefértil (fertilizer)
- Mineração Serra Geral (iron ore)
- Itavale (iron ore)
- Minas Del Rey (iron ore)
- Cenibra (pulp plant)
- Florestas Rio Doce (reforestation)
- Belém
- Brasília DF
- Belo Horizonte
- Vitória
- RIO
- Fionbra (reforestation)
- Nibrasco (pellets)
- Hispanobrás (pellets)
- Itabrasco (pellets)
- Valesul (aluminium)
- RDEP (engineering/planning)
- DOCEGO (mineral prospecting)
- DOCEVAE (shipping)

— Associates Subsidiaries

This is a portrait of the world's number one iron ore mining company. A portrait of Companhia Vale do Rio Doce. By 1980 we will be responsible for over 21% of the total amount of iron ore on the International market. And most of that ore is high grade with a Fe content of 67% as opposed to the average 35-40% Fe content of American ore.

However, the operations of Companhia Vale do Rio Doce go far beyond the production, transportation and marketing of iron ore. CVRD heads a conglomerate of subsidiary and associated firms producing bauxite, alumina and aluminium, phosphate and fertilizers. Other operations include reforestation and manufacture of chemical pulp, working of manganese, geological prospecting and technological research. This map shows the location of the firms in the CVRD group, with their sectors of activity and the kind of work they do. Work that helps to enhance the image of Brazil worldwide.

If you want to know more about our company get in touch with us at the address below:
Companhia Vale do Rio Doce,
 Avenida Graça Aranha, 26
 PO. Box 2414/ZC-00
 Cable: Valeriodoce
 Telex: 4021 23205/21975
 Rio de Janeiro, RJ, Brazil

Companhia Vale do Rio Doce

World Bank Preappraisal Mission visiting Carajás in February 1981. (Bottom). The World Bank's Report on the Carajás Iron Ore Project was presented in Paris on the 21st of September 1981.

obtained loans from the World Bank, eg a loan of 80 million dollars in order to finance the aluminium project of Valesul Alumínio.^{4,6} We have also seen the financial operations behind the Carajás project involving the participation of the World Bank and of several other major banks.

The Marketing Strategy of the CVRD

The most important aspect of the commercial strategy of the CVRD are the long-term sales agreements which it has passed with major steel groups abroad.

These contracts often involve the creation of joint subsidiaries. Those involved in setting up these subsidiaries obtain long-term supplies of iron ore or pellets in exchange for their financial participation or for the credit they provide, or for both. This is the case for many of the sales agreements with Japanese groups. This is also the case in the agreement to sell pellets to Ensidesa, whose parent company INI is a joint shareholder along with the CVRD, of Hispanobras.

In general, supplies are guaranteed over a period of 12 to 15 years in these contracts, with annual deliveries of 2-7 million, or 7-15 million tons per contract.

A great number of these sales agreements are contracted with European countries and Japan. However, the share of Japan is preponderant and illustrates its close commercial links with the CVRD. The CVRD has nevertheless been attempting to diversify its export markets in recent years. The supply contracts which have recently been signed with South Korea, Iran and Kuwait are witness to this orientation. These contracts also enable the CVRD to play an increasing part in the growth of the iron and steel industries in these developing countries.

Whilst attempting to avoid too exclusive relations with any one buyer, the CVRD has nonetheless tried to become





The Funil overpass, located at km 72 of the Fabrica branch line of EFVM, is 92 meters high. CVRD plans to invest 300 million dollars to electrify EFVM during 1982/83.

the preferential Brazilian partner for the importers of Brazilian iron ore. The practical means which have been used in order to reach this objective are as follows:

- the setting of a minimum FOB price for other iron ore exporters
- consultation at the CVRD on the export prices to Japan
- the demarcation of export zones: for example, the MBR does not sell to W. Germany in order to avoid disturbing the CVRD in this market
- the maintenance of a slight difference between the FOB price at the port of Tubarao and that of Rio in order to channel importers towards Tubarao which belongs to the CVRD⁴⁷
- the development of the CVRD railway line from Itabira to Tubarao as opposed to the Aguas Claras line. Thus the

other exporters are increasingly obliged to use the CVRD line.⁴⁸

Along with these measures which have been taken in favour of the CVRD, by the Brazilian authorities, the CVRD has itself defined a certain number of rules concerning the transportation of Samitri and Ferteco ore.

- As far as Ferteco is concerned, in exchange for each ton of Ferteco ore transported and loaded at Tubarao, the German firms which own Ferteco are committed to purchasing one ton of Itabira ore from the CVRD.
- Samitri is selling 50 per cent of its output to the CVRD at a price which represents 40 per cent of the FOB price of its ore. In exchange Samitri

is paying an overhead price of only 54 per cent of the Tubarao FOB price for its ore to be transported to this port.

Final remarks

The development of the CVRD has been very much determined by its objective of bringing foreign currency into the country. This objective has led the company to undertake a vast programme for developing the deposits not only of iron ore but of other ores as well. It has developed its international trade relations, the volume of its exports, and to a certain extent it has accepted to enter into the free play of competition which the Japanese steel companies have established between Brazil and Australia.⁴⁹

However the CVRD's programme has come up against certain limitations. The very large export-oriented development programme exceeds the financial possibilities of the CVRD. The aim of bringing in foreign currency would seem to have pushed the CVRD into attempting to obtain these currencies from major

Table 8
Control and destination of iron ore production—the case of the four main mining companies

Company	Production capacity (Tons/year)	Share of production capacity (10 ³ t) in proportion to					Destination of production in 1976					Total supplies (10 ³ t)	
		financial		participation			Brazil	USA	Europe	Japan	Belg/Lux		others
		Brazil	USA	Japan	Belg/Lux	W. Germ.							
CVRD	66 100 000	66 100.0					2 547	4 868	24 149	18 318			49 882
MBR	15 500 000	4 820.5	9 098.5	1 581			650	530 ¹	3 493	6 810		478 ²	11 961
Samitri	11 150 000				11 150		1 013	71	1 579		2 474	595	7 952 ⁴
Ferteco	7 400 000					7 400	823		3 549 ³				4 372
Total	100 150 000	70 920.5	9 098.5	1 581	11 150	7 400	5 033 (7 253)	5 469	32 770	25 128	2 474	73	74 167
%	100.0	70.8	9.1	1.6	11.1	7.4	9.8	7.4	44.2	33.9	3.3	1.4	100.0

Notes:

¹ USA and Canada

² For Latin America

³ 1 298 000 tons for W. Germany

231 000 tons for France

2 093 000 tons for Belgium

⁴ Including sales of 2 220 000 tons to the CVRD

American, European and Japanese banks and from international banking institutions.

The long term sales contracts are to a certain extent the result of difficulties in financing investment. With a limited number of importers these contracts can create a certain inflexibility. This explains the development of the CVRD's relations with the steel industries of the developing countries.⁵⁰

These financial constraints would seem to be having two principal effects on the CVRD's policies: firstly *the CVRD is obliged to export more and more*, and secondly, *since it is increasing production in order to export, it is becoming increasingly dependent on international sources of finance* in order to step up its production capacities.

Notes:

¹ Metal Bulletin, *Iron and Manganese ores, a world survey*, 1977, p. 57.

² Hubert Laurent, *Contribution d'étude de l'évolution des approvisionnements mondiaux en minerai de fer*. Metz, 1973, p. 782.

³ United Nations, *Le marché mondial du minerai de fer*, New York, 1968, p. 257.

⁴ idem.

⁵ According to *Stahl und Eisen*, 1977-03-11, the production capacity of the CVRD is estimated at 71 Mt/year. This estimate very probably takes into account the share of the CVRD in the production capacity of the Acesita/CVRD mine, i.e. 4 million Tons.

⁶ Battelle Institute, *Iron for direct reduction*, 1977.

⁷ Because of the uncertainty concerning future orders from European steel industries, the CVRD decided in early 1981 to close down momentarily the No. 1 plant in Tubarao. *Metal Bulletin* No. 6565, 1981-02-17.

⁸ One of these two plants may also suspend production if the request from

one of the Japanese partners of the Ni-brasco to be supplied with sinterfeeds rather than pellets is accepted by the CVRD. *Metal Bulletin*, 1981-01-16.

⁹ In 1979, the production capacity of MBR was around the 24 million ton level. That of the other firms remained more or less at the same level as in 1977 with the exception of the CVRD which we have already noted.

¹⁰ Hubert Laurent, op. cit. page 801.

¹¹ *Moci*, No. 220, 1976-12-13.

¹² *Revue de Metallurgie*, Jan. 1978.

¹³ *Metal Bulletin*, 1981-02-13.

¹⁴ *Brazil Trade and Industry*, March 1981.

¹⁵ *Revue de Metallurgie*, Jan. 1978. Battelle Institute, op. cit.

¹⁶ *Brazil Trade and Industry*, March 1981.

¹⁷ *Metal Bulletin*, 1981-02-13.

¹⁸ " " 1981-09-11.

¹⁹ " " 1981-02-13.

²⁰ " " 1981-09-11.

²¹ idem.

²² *Metal Bulletin*, 1981-02-13.

²³ *ITDOM*, March 1981.

²⁴ *Metal Bulletin*, 1981-09-11.

²⁵ " " 1981-01-06.

²⁶ " " 1981-02-13.

²⁷ " " 1981-04-14.

²⁸ " " 1981-05-01.

²⁹ *Usine Nouvelle*, No. 12, 1978-03-18.

³⁰ *Metal Bulletin*. Iron and manganese ores 1977. *ITDOM*, May 1977.

³¹ *Mining Magazine*. Sept. 1976. *ITDOM* Feb. 1980.

³² *ITDOM*, Feb. 1977.

³³ *ITDOM*, Feb. 1980.

³⁴ *ITDOM*, Nov. 1977.

³⁵ *ITDOM*, June 1977.

³⁶ *Mining Magazine*, Sept. 1977.

³⁷ *ITDOM*, May 1981.

³⁸ *ITDOM*, May 1981.

³⁹ " Feb. 1980.

⁴⁰ *Revue de l'Aluminium*, Feb. 1978.

⁴¹ *ITDOM*, August 1977.

⁴² *Usine Nouvelle*, Oct. 1975.

⁴³ " " Jan. 1976.

⁴⁴ *ITDOM*, Oct. 1977. *Revue de l'Aluminium*, Feb. 1978.

⁴⁵ *Revue de la Metallurgie*, Feb. 1977.

⁴⁶ *Revue de l'Aluminium*, Feb. 1978.

⁴⁷ Along with Aracruz Cellulose (20 per cent) and Portobras (60 per cent) the CVRD has set up a new company to build the new port installations at Barra do Riacho. The cost of this new port is estimated at 460 million dollars. *ITDOM*, Sept. 1977.

⁴⁸ In order to electrify the railway line Vitoria Minas between Itabira and Tubarao, the CVRD will invest 300 million dollars. This electric line is to be ready for use in 1983.

⁴⁹ In June 1981, after his visit to Brazil (to the CVRD) the Australian Minister of Trade and Resources, Mr. Doug Anthony declared that Brazil and Australia intended joining forces in order to raise iron ore prices (*Metal Bulletin*, 1981-06-26). A few days later, the magnates of the Australian mining industry explained that the development of the reserves in the West of Australia was being held up because of the Japanese agreements to purchase iron ore from Carajás in Brazil, and that the Marando project for the development of iron ore in W. Australia was the only project which could be carried out without raising the price of iron ore (by about 40%). According to Mr. J. Hancock the Marando ore can be delivered to Japan at a CIF price which would be 5\$ A less than that of Brazilian iron ore (*Metal Bulletin*, 1981-07-03).

⁵⁰ Quite recently the CVRD signed a contract to sell 1 million tons of pellets/year over five years with the Sabc and Hadeed companies of Saudi Arabia. The CVRD supplies are intended for the Direct Reduction plant in Jubail which belongs to the Saudi Iron and Steel Co. (Hadeed). The Sabc, along with the German firm Korf Stahl, is a shareholder of the Hadeed (*Metal Bulletin*, 1981-06-26). ■