BANCO NACIONAL DO DESENVOLVIMENTO ECONÔMICO

BNDE'S VIEW ON THE CARAJÁS PROJECT

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I - FOREWORD

On June, 1st, 1981 the BNDE contracted with Companhia Vale do Rio Doce, CVRD, a long-term loan in the amount of about US$ 740 million for erection of the Carajás Iron Ore Project in North Brazil. This amount added to the FINAME - BNDE's subsidiary - credit totalizes about US$ 1,065 million.

This is an integrated project comprising mine, railroad and port facilities intended to produce 35 million tons of iron ore with high Fe content each year, for export. Operation of the Project Will start in 1985, at a level of 15 million tons a year, with a figure of 25 million a year scheduled to be attained in 1986 and 35 million in 1987.

The basic conception of the Project has already been fully defined, detailed engineering design are almost completed, and most of the earth-moving work for the railroad has been contracted for, 33% of which are already performed.

The analysis of the Carajás Iron Ore Project and the financial support by the BNDE system are based on two fundamental issues, namely:

(a) the CVRD system, meaning its scale of business, the shape of the system itself and its long term and recent performance; and

(b) the soundness of the Project, meaning analysis of the concepts involved and the experience of those responsible for its implementation and operation, including technical, financial and marketing aspects as well. Equally important was the result of the Project's evaluation in terms of returns on investment and pay-back period and of the whole CVRD's system performance.

As regard the CVRD system, BNDE's analysis showed that this company holds a position of world leadership in the transocean iron ore market, having an adequate structure to the nature of its business and positive performance record, even at periods of considerable restriction on trade of iron ore.

In operational terms, BNDE's analysis indicated that the project's capital costs - though substantial - are compatible with the size of the company and its capacity to obtain resources, and the project's output is likewise adjusted to the current scale of operations of CVRD. The project was deemed feasible from the point of view of the technical, economic, financial and administrative and organizational aspects involved. It was also considered feasible for it to be erected within the scheduled time periods.

II - THE CVRD SYSTEM

The CVRD system consists of an integrated mine-railroad-port-transocean shipping operation, for production and marketing of iron ore, having also a steady support in the fields of geological and technological research.

CVRD's integrated operational structure is a positive factor to maintain its position of leadership on a worldwide level, and at the present time it is major company engaged in transocean trade in iron ore; it's market share amounts to some 16% of the yearly traded in this way.

CVRD operates in the major iron ore markets, and its main customers are: Japan (38%), Germany (13%), France (7%), Poland (7%), and Italy (5%).

In 1980 fiscal year, CVRD sold about 62 million tons of iron ore, representing nearly US$ 1.1 billion. CVRD's system revenues, including its associates raised to around US$ 1.6 billion.

From 1989 onwards, after the full operation of the Carajás Iron Ore Project, the CVRD system will be marketing approximately 105 million tons of ore a year, passing an intermediate level of 90 million tons a year in 1985. These figures also comprise an increase in the output of the southern mines.

That growth, though significant in absolute values, is nevertheless compatible with CVRD's technical, managerial and financial capability. In fact, company sales have expanded, rising from exports of about 9.5 million tons of ore in 1965 to 23 million in 1970, 50 million in 1975 and 62 million in 1980.

III- THE PROJECT

Main aspects of the Project are as follows:

- mine - Conventional open pit operation, with facilities for beneficiation, stockpiling and loading of freight cars located near the N4E body, first deposit to be worked in the area;

- railroad - Single line system, with 890 kilometers of 1.60 meter gauge line linking the mine to Ponta da Madeira, near the city of São Luiz, Maranhão, running through predominantly flat ground and without need for substantial tunneling or special structures, except for a 2.3 km bridge over the Tocantins river;

- port - Specialized sea terminal facility, in natural deep waters, for up to 280 thousand DWT ships, with a natural stable access channel and facilities comprising two car dumpers, one shiploader, one berth and protection works and navigation aids;

- townsites - Project includes one principal town site at the mine and new housing and supporting facilities integrated into existing townsites along the railroad route.

The Carajás Iron Ore, which is high grade hematite (averaging over 66% Fe), has characteristics that exempt the concentration phase, usual in the itabirite mines of Minas Gerais. Simple crushing and wet screening are steps needed to obtain an output of 83% sinter feed and 17% natural pellets, but it is possible to produce 100% sinter feed, depending on market conditions. Both the sinter fines and the natural pellets presented sound performance in blast furnace and direct reduction tests.

3.1 - Technical Aspects

The technical concept of the Carajás Iron Ore project is basically developed on two factors, namely:

(a) production scale providing suitable capital and operational costs; and

(b) fully integrated and flexible mine/railroad/port operation and utmost reliability in its performance.

As regards the mining and beneficiation project, no major difficulties are foreseen for implementation and operation of the system. A 1 million tons/year pilot plant for tests of the iron ore beneficiation was built close to the mine site to optimize the operation.

Technically speaking, the concept of the integrated project is a sound one, either in the mining facilities, or in the railroad, or in the Ponta da Madeira port.

Environmental aspects are being considered by CVRD through preventing steps. BNDE is following up the actions implemented to make sure that they are proper to the purpose.

3.2 - Market

In 1980, CVRD maintained its continuing growth in terms of earnings from export sales, notwithstanding the crisis afflicting the world iron and steel industry. The Company's exports of ore and pellets generated earnings of US$ 792 million, 5% higher than the figure for the year before.

Demand forecasts for the international market show that developed countries will still be the major buyers of iron ore. Developing countries increased their shares in the last years, but will only have an important role in the far future.

Domestic market, to be supplied by CVRD's Minas Gerais mines, closely follows the trend of Brazilian steel industry's output, which is expected to increase in the next years.

Even if it happens the less favourable - but not probable - situation characterised by simultaneously oversupply of iron ore and a slow world steel industry recovery, by the end of the 80's, CVRD, as an integrated system, has competitive conditions to face this situation, due to its high production level; the long term sales contracts performed; the high quality iron ore; and its undoubted reliability based on integrated operations mine-railway-port and ocean transportation.

These characteristics will be kept in the Carajás Operation, that will add locational advantages for some important markets.

Its marketing strategy based on long-term contracts also affords security as to the proper placement of its output. Production at Carajás, expected to reach 35 million tons in 1987, is already being negotiated by CVRD, and the company has contracted sales amounting to 25.6 million tons a year, to the following countries amongst others: Japan, Belgium-Luxembourg, Italy, France, Western Germany, Poland, and South Korea.

3.3 - Economic and Financial Aspects

CVRD revenues during 1980 amounted to US$ 1.1 billion. With the start-up of the Carajás Iron Ore Project, they should undoubtedly reach a level of about US$ 2.2 billion by the end of the present decade. Analysis shows that operational costs are competitive according to facts previously presented. CVRD's net profit in 1980 was US$ 270.0 million, and that figure is expected to rise to some US$ 1.0 billion by the end of 80's.

During the period of Project implementation, the CVRD's estimated generation of earnings is sufficient to allow coverage of the commitments undertaken by the Company.

Rate of return on investments of the Carajás Iron Ore Project is about ten per cent. Hypothesis of variations in the capital costs and variations on sale prices of the iron ore have been formulated and tested. . It showed less sensitivity to variations in capital cost than to variations in sale price. Nevertheless, the Project's outcomes were allways favourable.

Project profits are sufficient to provide a satisfactory return on equity. Furthermore, in 1980 CVRD presented a coverage ratio of 1.6:1, and is expected to envolve to about 2.5:1 during the 80's, a satisfactory level considering the volume of investment involved.

Economic and financial indicators, in other words, bear out the soundness of CVRD and the feasibility of the project.

3.4 - Administrative and Organizational Aspects

The project entails two different types of obstacles to be coped with, namely, location in a region devoid of infra-structure and distant from the CVRD base of operations, and the need for deploying human, material and financial resources in line with sufficiently strict time schedules, so as to hold implementation costs down to the lowest possible levels. Overcoming these obstacles calls for an autonomous, flexible and capable administration, with sufficient knowledge of the region and of CVRD itself, so as to deal with difficulties on implementation and subsequent integration.

At the outset, CVRD acted in the project by its subsidiary, Amazonia Mineração S.A., AMZA, that was responsible for setting up the project. That approach afforded certain advantages. Yet no benefit was being derived from CVRD's experience in handling projects at increasing levels of complexity and with significant volumes of investment.

During last April, 1981, AMZA was incorporated into CVRD. The Superintendency for Establishment of the Carajás Project, SUCAR, was set up, and the North Carajás Pre-operational Superintendency, SUNOR, was stablished. These Superintendencies are responsible, respectively, for carrying out the project and its operation.

SUCAR reports to the CVRD Board of Planning, and coordinates management of the project, with responsibility for setting up standards, rules and routines and for making decisions according to the progress of the works and the procurement of goods and services. Executive tasks involved in management will be carried out by consulting companies in line with the six logic modules into which the project has been divided: mine, bridge over the Tocantins, railroad superstructure, port , townsites and supply facilities.

BNDE's analysis, and the close follow-up of the project management scheme, lead to the conclusion that the solutions adopted are adequate to the degree of complexity involved and the volume of investments required.

IV- FINANCIAL ARRANGEMENTS FOR THE PROJECT

The up-to-date total amount of applications in the project - investments, including variations in working capital and interests during construction - raises to US$ 4,901 million.

The project is based on the following financial set-up:

- Sources already commited

Equity:

CVRD system is expected to supply approximately US$ 2,300 million up to 1987; US$ 344 million of which were spent until July, 1981.

BNDE:

The contract between BNDE and CVRD is for an amount equivalent to approximately US$ 740,0 million.

FINAME:

Approval was given to a loan by FINAME in an amount equivalent to approximately US$ 325,0 million, at current values.

These amounts (from BNDE and FINAME) jointly represent about 22% of total investments to be effected over the 1981/87 period, and, together with the CVRD resources, of about 48% of the aggregate amount, account for 70% of the investments called for. That means that over two thirds of the needed funding will be supplied domestically and are already assured.

Morgan:

Loan commited (US$ 30 million).

- Sources in advanced stage of negotiation

IBRD: US$ 300.0 million
KFW : US$ 159.0 million

These two sources jointly add to 9% of the budget for the project.

- Other sources in negotiation:

JAPANESE LOANS, EEC, US EXIMBANK, IFC, and others, in the amount of US$ 986,0 million, or about 21,0% of the total.

BNDE's financing conditions may be summarized as follows:

- disbursement period, 5 years; grace period, 6 years, and amortization over a period of 12 years after expiration of the grace period, at interest rates of 9% a year plus monetary correction. The time periods are compatible with the project lead time. It should also be noted that the rates applied by BNDE vary from 8% to 12%, depending on the sector and region in which projects are being carried out.

FINAME's terms are variable according to the nature of the equipment and defined in each case. The average terms are: time to use funds, 6 years (1982/87), grace period of 3 1/2 years after each commitment, and 9 years for amortization, at 9% per year interest.

The table of sources of funds, in current dollars, presented by CVRD and now being revised, is as follows:

CARAJÁS IRON ORE PROJECT

Sources of Funds

Current US$ 10^6

Itens	Total	%	Disbursed until July, 31th, 1981	To Disburse
Sources already assured	3.456,9	71	397,0	3.059,9
Equity	2.361,9		344,0	2.017,9
BNDE	740,0		23,0	717,0
FINAME	325,0		-	325,0
Morgan	30,0		30,0	-
Sources in advanced stage of negotiation	459,0	9	-	459,0
IBRD	300,0		-	300,0
KFW	159,0		-	159,0
Other sources in negotiation	986,0	20	-	986,0
TOTAL	4.901,9	100	397,0	4.504,9

V - PRESENT STATUS OF THE PROJECT

Initial expenditures on the Project started to set up at the beginning of 1980, and at the outset just CVRD funds were available.

By the middle of 1981, with the approval by the BNDE System of an amount of about US$ 1,065 million, the Project started to dispose of substantial additional funding.

At the end of July/1981, the disbursement of the Project had already reached a level of US$ 397 million, about 11% of the fixed capital costs plus physycal contingencies. This amount includes US$ 121 million obtained in 1981.

Work under way covers all items involved in the project, and the detailed engineering design is 70% completed.

Though actual construction work is still in the initial phase, the project is proceeding within the time schedules set up, and by July 1981, a rate of progress of 6 to 7% had already been attained in the mine, railroad and port sectors, and 2% on the townsites.

It is important to point out that in the railroad item, covering 51% of aggregate investments, that same month of July 1981 saw completion of contracting for the whole of the infra-structural civil works, and the proposals for building the super-structure are currently in course of analysis.

From the total earth movement required (some 116.6 million m^3) 38.4 million m^3 has already been done.

In July 1981, the job site had assigned to it a total contingent of 17,117 workers, 16,137 engaged in construction activities, 893 in contracted supervisory tasks and 270 members of the CVRD staff itself (Carajás Superintendency).

VI - CONCLUSION

In providing financial support to the project, the BNDE took into account its technical, economic and financial feasibility and the administrative and organizational standing and soundness of the CVRD system.

BNDE also considered that the Carajás Iron Ore Project is the result of efforts put forth by CVRD to identify new high quality iron ore reserves and work them in order to attend the needs of the overseas market and maintain its position as a major exporter.

Finally BNDE has considered that for Brazil, it stands for an investment due to have positive impact on the balance of payments, in addition to permitting rational occupation of Eastern Amazonia.