7.1 Solutions in times of crisis

The 1990s were not easy for Brazilian industry. In the economic field at the start of the decade, there was a break with the military regime’s economic protectionism, commercial and financial opening up to foreign capital, and a deep recession. The figures are damning. ‘From 1980 to 1993, Brazil had four currencies, five price freezes, new stabilization plans, 11 indices to measure inflation, 16 salary policies, 21 proposals for payment of the country’s foreign debt, and 54 changes in the price policy’.5

Between 1985 and 1989, during the Sarney administration, four economic plans succeeded each other (the Cruzado, Cruzado II, Bresser and Verás plans). The remedy was to freeze prices and cut zeros from currency values, and this strategy directly affected the free trade desired by business people. The plans’ effects were devastating: according to data from INEIE, monthly inflation in December 1989 reached 53.55%. The full-year inflation rate was 1,794.87%. By the end of the 1980s, prices had risen by more than 39 million percent.6

Fernando Collor de Mello took over as Brazil’s president in the eye of the storm; in March 1990, after a closely fought two-round election against Luiz Inácio Lula da Silva. They were the first direct presidential elections in 30 years. Expectations about the measures to be taken by the young new president were considerable.

One day after taking office, on March 15, 1990, Fernando Collor unveiled a new economic package aimed at containing hyperinflation.7 Later called the Collor Plan, this included a number of controversial measures, including an 18-month confiscation of the balance of private individuals’ current accounts, savings accounts and other investments exceeding 50,000 new cruzados. A new currency was created with an old name: the Cruzeiro, Brazil’s currency in the 1940s and 1970s, was back.

Full-year inflation in 1990 amounted to 1,476.56%. Collor stood down in 1992 after an impeachment process and, following this, in 1993, the annual inflation rate reached a peak for the 1989 to 1996 period, as shown in Table 1.

7 - For more figures on inflation in the period, see Azevedo, Elisabeth and Gorayeb, José. BNDES 50 anos de desenvolvimento. São Paulo: DBA Artes Gráficas, 2002.
Vale | Our History

The success of the diversification policy implemented by Vale was confirmed in early 1994, when the company achieved new iron and manganese production records at its mines in Carajás.

### TABLE 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Index</th>
<th>% Change</th>
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<tbody>
<tr>
<td>1989</td>
<td>1.764</td>
<td>480%</td>
</tr>
<tr>
<td>1990</td>
<td>1.476</td>
<td>2,780%</td>
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<tr>
<td>1991</td>
<td>0.888</td>
<td>9.3%</td>
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<tr>
<td>1992</td>
<td>1.158</td>
<td>14.7%</td>
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<tr>
<td>1993</td>
<td>2.780</td>
<td>9%</td>
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<tr>
<td>1994</td>
<td>1.093</td>
<td>8%</td>
</tr>
<tr>
<td>1995</td>
<td>14.7%</td>
<td>3.5%</td>
</tr>
<tr>
<td>1996</td>
<td>9%</td>
<td></td>
</tr>
</tbody>
</table>

Source: IBGE.

Companies protected themselves as best they could. Investments were premised on productivity by introducing organizational innovations and improving quality systems. 7 At the same time, the economic liberalization promoted by the government moved forward. Reductions in Brazil’s tariffs had also been implemented. Between 1985 and 1993, average tariffs on industrial goods fell from over 50% to 13.2%, facilitating trade in goods and services with other countries. In this context, state-owned enterprises – or rather, the privatization of these companies – would play a determining role in the economic restructuring planned by the federal government.

Economist Paulo Haddad, in an article published in newspaper Estado de S. Paulo, showed how the Brazilian economic crisis in the 1980s profoundly affected state-owned companies, especially those that were executing major investment projects. “The interruption of external capital flows to Brazil suppressed these companies’ main source of funding, delaying construction timetables, increasing costs and postponing expected revenues. Expansion prospects were hampered by a lack of funding, given that, by the start of the 1990s, public savings – and therefore the self-financing capacity of the state-owned enterprises’ controlling shareholder – had also run down. ”

In his article, Haddad highlighted state-owned companies’ difficulties in developing efficient management as a result of external capital flows. Among these roles, one may highlight controlling tariffs and prices to reduce inflation rates, taking equity stakes in pioneering projects, and locating operations in deprived areas to reduce regional development disparities. In general, this resulted in lower profitability. 8

The success of the diversification policy implemented by Vale was confirmed in early 1994, when the company achieved new iron and manganese production records at its mines in Carajás.

7. All the figures related to the Vale-Mining Company’s (now known as Vale S.A.) official inflation measures should be multiplied by 1.93. From 1964, they were based on the Brazilian Institute of Geography and Statistics – IBGE.
8. The information was taken from Rangel, Le et al., op cit.

Vale | Our History
In December 1991, a milestone was reached in the accumulated volume of iron ore extracted in the municipality of Itabira (Minas Gerais) since the start of mining activities in 1942. In 1991, a total of 1 billion metric tons of ore had been removed over a 49-year period. This was equivalent to 180,000 kilometers of loaded railroad cars – enough to go around the Earth four times.

Another piece of good news was that Itabira’s reserves, contrary to the initial estimates made by Rio Doce Geologia e Mineração S.A. (Docegeo), Vale’s subsidiary responsible for mineral research and exploration, were still far from running out. New studies showed that the total amount extracted in 50 years corresponded to just half of the potential of the region’s reserves. There was still a lot left to mine.

More good news for Vale came from abroad. The volume exported by the company remained high: while in 1952 the company exported 1.5 million metric tons of iron, by 1992 this same quantity was exported every week.
sinter feed also hit a record in January 1994, of 2,991,683 metric tons, up from 2,932,044 metric tons in November 1993.24 As of 1993, Vale’s ore production was certified for its quality. For successive years, CVRD was awarded ISO 9000, attaining to the quality of its production models. Interconnected investments – especially in logistics associated diversification – created a new structure for the company in September 1994. CVRD was a conglomerate composed of nearly 30 companies, including subsidiaries and affiliates, with offices in the USA, Japan and Brussels. The company’s 1993 Annual Report highlighted that the Vitória-Minas Railroad (FVMinas) and Carajás Railroad (EFC), the most modern in Brazil at that time, accounted for 64% of the country’s total railroad traffic in terms of total kilometers carrying the millions cargo in goods, including 103 million metric tons of iron ore and a large share of steel and pulp for export. The first five years of the 1990s would also be marked by the definitive introduction of new words into the vocabulary of Brazilians: Topics such as sustainability, social and environmental development, forest management, global warming, the ozone layer and recycling became common items of discussion. The 1992 Rio Earth Summit took place in this context, and CVRD was once more in the lead, with prominent projects in the field.

7.2 The environment: highlight of the 1990s

Thirty-two years after the founding of Brasília, Rio de Janeiro was once again Brazil’s capital. In 1992, the Earth Summit was responsible for returning to the city, albeit only for 11 days, the sensation of being the center of power in the country. During the event, President Fernando Collor de Mello transferred the capital to Rio in order to host public officials and conference guests at the seat of government. The Earth Summit was held 20 years after the 1972 Stockholm Conference in Sweden, the first international meeting organized by the United Nations to discuss development and the environment.

The Stockholm Conference was attended by representatives of 123 countries, which during the discussions became polarized into two antagonistic groups: rich and poor.25 Developing countries feared that restrictions on their growth were on the agenda. For the first time, the environmental effects of untrammeled industrialization were discussed, and the initial reaction was one of distrust. After clashes between the two groups, the outcome of the conference was the creation of the United Nations Environment Program (UNEP), which was tasked with regulating international actions for environmental protection and sustainable development.

June 5 was declared World Environment Day, and the legal framework began to pay attention to environmental issues in Brazil. The direct effect of the Swedish conference was the creation in 1973 of the Special Environment Secretariat (Sema), reporting to the Ministry of Internal Affairs. This was the seed of Brazil’s environmental regulator, Ibama, established in 1989. In 1992, in Rio de Janeiro, the atmosphere among developed and developing countries was more amicable. The city received heads of state and other representatives from more than 370 countries,26 demonstrating the importance of environmental discussions at the end of the 20th century. Between June 3 and 14, government officials signed the Rio Declaration on Environment and Development, which reaffirmed the discussions in Stockholm and set out the following as Principle 4: “In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot

24 - See Iron and Steel, no. 175, February 1994, p. 1.
be considered in isolation from it.”

The Statement of Forest Principles, the United Nations Convention on Biological Diversity, the United Nations Framework Convention on Climate Change, and Agenda 21 were other outcomes of the Earth Summit.

Vale and the environment

CVRD’s environment program was one of the main highlights of Vale’s environment program, organized into four macro areas: technology control (environmental projects inside operational production facilities); natural resources (conservation of forested areas and production of saplings of species native to the Atlantic Forest and Amazon Rainforest); social and environmental development (social initiatives inside areas of influence); and research and development, especially in developing countries. The other stand was installed at the Global Forum, a parallel event held in Flamengo Park, attracting non-governmental organizations from across the world.

At both events, CVRD presented the main activities of its environment program, organized into four main areas: environmental control (environmental projects inside operational production facilities); natural resources (conservation of forested areas and production of saplings of species native to the Atlantic Forest and Amazon Rainforest); social and environmental development (social initiatives inside areas of influence); and research and development, especially in developing countries. The other stand was installed at the Global Forum, a parallel event held in Flamengo Park, attracting non-governmental organizations from across the world.

The Statement of Forest Principles, the United Nations Convention on Biological Diversity, the United Nations Framework Convention on Climate Change, and Agenda 21 were other outcomes of the Earth Summit.

In that year, Vale became the first Brazilian company to conduct an earth environmental audit. During the 1992 Earth Summit and throughout that year, CVRD’s facilities in Carajás received many official visits. Among the illustrious visitors were Prince Charles and Princess Diana, a delegation from Norway (Japan’s federation of industry, and a group of UNESCO scientists.

Tree planting

In January 1992, Vale’s Itabira Mines Superintendent’s Office (Sumin) in Minas Gerais, through Florestas Rio Doce, celebrated the planting of 270,000 trees in the Pico do Amor, Cambucal and Barragem do Rio Poço regions of the municipality of Itabira, as well as along avenues and streets in the town of Itabira. This reforestation in peripheral areas encompassed hillsides, fields, urban areas (such as Rio Do Amor), land along the tracks of the Vitória-Minas Railroad (SVM), and areas around water sources.

In all, Sumin’s Environment Division had planted 3.1 million trees in Itabira. Tree planting took place in partnership with the municipal government, using more than 100 native and exotic species, all grown at Barraçu Ecological Park (a 1,200-hectare reserve) and Linhares Forest Reserve (now called the Vale National Reserve) in Espirito Santo, both owned by CVRD.

Vale also planted trees in Belo Horizonte when the city government conducted a second major remodeling of its Municipal Park. This Romantic-inspired architectural project entailed implementing an irrigation system, repaving sidewalks and building new gates and paths. In October 1993, Vale donated 60,000 saplings to the city, all of native Atlantic Forest species grown at Linhares Forest Reserve by Florestas Rio Doce, which also provided technical tree planting guidance. The restoration of the Municipal Park – the biggest green area in the city, covering around 160,000 square meters – was funded by CVRD, Florestas Rio Doce and Celso Hipo-Brasiliana S.A. (Cedras).

Reality after the Earth Summit

The recommendations approved at the Earth Summit were gradually implemented. In 1993, through Ordinary No 7/93, Brazil’s Ministry of Education and Culture (MEC) established a permanent working group in order to coordinate, support, track, evaluate and implement actions, targets and strategies for implementing environmental education in schools at all levels and in all modalities. The MEC also created Environmental Education Centers to spread teaching methodologies concerning conservation. Vale was an early adopter of these concepts. In 1989, the company started to plant a green belt around Valem, its aluminum plant in Santa Cruz, one of the hottest regions in the state of Rio de Janeiro. In order to absorb pollution and lessen the heat, around 20,000 saplings were planted every 45 days. Forty years later, in 1999, 210,000 trees formed the Valem green belt, consisting of 125 native Atlantic Forest species and covering more than 10 hectares of the 60-hectare site housing the company’s furnaces, reduction facilities, warehouses and aluminum production facilities. These figures show the pioneering nature of Vale’s actions. In order to absorb pollution and lessen the heat, around 20,000 saplings were planted every 45 days. Forty years later, in 1999, 210,000 trees formed the Valem green belt, consisting of 125 native Atlantic Forest species and covering more than 10 hectares of the 60-hectare site housing the company’s furnaces, reduction facilities, warehouses and aluminum production facilities. These figures show the pioneers nature of Vale’s actions.
of the company’s initiatives to reforest areas around its plants. The newly planted trees made the site cooler for its employees, restored the landscape, and soaked up polluting agents such as dust and noise. The trees, planted right up to the walls of the mine, had the function of absorbing sound and reducing heat levels during work. Alumina (a raw material used to make aluminum) dust was trapped together with fluoride fumes in the leaves of the replanted forest, preventing the circulation of dust particles at Vale’s site and in the surrounding area.

At the end of 1993, the company owned and maintained 22,000 hectares in Espirito Santo (Linhares Reserve), 17,000 hectares in Pará (Marabá Reserve), and 10,000 hectares in Maranhão (Buriticupu Reserve). Vale also conserved its mining concession area in Carajas, covering 411,948.87 hectares of native Amazon Forest, and conducted surveillance activities to help protect 726,000 hectares of forest maintained by Ibama, also in Pará.

Opening a plant and protecting the environment

In March 1994, Vale opened its fifth electrostatic precipitator (of a series of six) at the CYvb-1 plant in Vitória, Espírito Santo. The apparatus cost Vale around US$3.5 million and prevented the escape of 99% of solid particles, which until then had been emitted to the atmosphere. The particles of dust are attracted to steel plates and mechanically dislodged by vibration, and are then used in the pelletizing process. “Operating a plant and protecting the environment are equally important,” said Vale’s internal newsletter, Jornal da Vale, in an article about the inauguration of the precipitator.

In its 1994 Annual Report, Vale proclaimed that it had achieved a position of leadership on the domestic and international stage thanks to its environmental policies. The company was a member of the general coordination unit of the Environmental Normalization Support Group (known by Portuguese acronym Gana), responsible for formulating the standards of ISO 14000 International Environmental Quality Certification. Initiatives highlighted in the document included a social and environmental diagnosis in Cucupolópolis, Pará, conducted in order to produce an Environmental Impact Plan to resume gold prospecting in the area in Carajás.

The company’s concern to guarantee complete harmony between ore production and environmental conservation was demonstrated again in 1995, when it invested heavily to control the dust that was escaping from operational units toward the town of Itabira in Minas Gerais. Vale perceived that the main sources of “fugitive dust”, as the problem is known, were the mining process and circulation of automobiles and heavy trucks along the site’s internal roads managed by the company’s Mines Superintendence’s Office (Sumin) and in the tailings deposit areas. The main initiative taken was to install a nebulizer at Cauê Mine, to form a 30-meter-high curtain of mist, using 412 meters of hose, in order to contain the dispersal of residues. This was the first project of its kind in Brazil.

Another dust-containment strategy, announced at the start of 1995, was to sprinkle the roads at Chacrinha Mine, the closest mine to the town of Itabira, at the time, 25,000 square meters of roads were dampered using an automatic sprinkler system. In addition, in order to contain dust on circulation roads, dozens of sprayers were drawn every day along the region’s highways and roads to settle and silence the fine dust on them.

Vale was also concerned about the quality of the water and soil in locations close to its mines. In January 1995, a concrete tank was installed in Itabira to prevent residues from Cunhaçu Mine from polluting a stream flowing through the region and the Rio do Peixe Reservoir, into which it flows. This was the first phase of the Zero Residues Project, which aimed to completely eliminate the transportation of material extracted from the mine along the Conceição Stream.

Alongside anniversary celebrations of the city of Vitória, in Espírito Santo, in September 1995, an important green space was opened: Augusto Ruschi Municipal Park, on the site of the former Maruípe Garden, which dated back to 1938. Using around US$500,000 provided by Vale, the 69,000-square-meter site was returned to the city with new electrical, hydraulic and irrigation infrastructure, flower pots, a bromeliad collection and small lakes formed by damming a brook. The company also provided 7,000 trees from Linhares Reserve for landscaping purposes.

In September 1995, one of the most important environment-related events for Vale in the 1992-1996 period took place in Washington D.C., when the company’s vice-president, Anáctacio Fernandes Filho, signed an agreement with the World Bank to borrow US$85 million to finance some of the more than 70 projects in the company’s Environment Program. All of Vale’s operational areas were covered in the program, which encompassed environmental management and control in production activities, the restoration of degraded areas, ecosystem maintenance, studies and research, and joint investment with the municipal governments of Itabira (Minas Gerais) and Paragominas (Pará).
7.3 The conquest of certifications and new markets

Vale’s efforts to improve its productivity reviewed a major international endorsement in May 1993, when for the first time a company from the group obtained an ISO 9000 series certificate. Vale SA, which produced primary aluminum and alloys, was awarded ISO 9002 certification in recognition of the quality of the management of its production process. This international endorsement was crucial to the company’s reputation outside Brazil. At the time, of the 93,000 metric tons of aluminum produced every year by Vale SA, half was already shipped to foreign markets.1

All of the investments made—whether in the productive, social or environmental fields—reaffirmed Vale’s importance in the country. In May 1993, the Minister of Mines and Energy, Paulo Góes de Vasconcelos, referred to the company publicly as a “major agent for the country’s development,” surpassed only by the national development bank, BNDES.2

In October 1993 it was Sumin’s turn, in Brazil, to begin operating in accordance with the standards established by the ISO 14000 series. The aim of achieving certification was to ensure that the Superintendents’ Office’s production system complied with strict international quality standards. The certification endorsed and guaranteed an international standard for the company. During this period, 70% of the 50 million metric tons of iron ore produced every year by Vale was exported to foreign countries.3 During this period, 70% of the 50 million metric tons of iron ore produced every year by Vale was exported to foreign markets.4

In July 1993 in Seoul, South Korea, Vale signed a general agreement to formalize a joint venture. The partnership was responsible for constructing the company’s seventh pelletizing plant at Tubarão Complex in Espírito Santo. Planned investment amounted to US$215 million. The new company, called the Korean-Brazilian Pelletizing Company (Korpsulco), was created with the participation of Pohang Iron & Steel Company (Posco), a major Korean steel producer. Posco undertook to buy more than 60% of annual output, which was planned to be 4 million metric tons of pellets5 per annum.6 These figures were obtained through various advantages since the year 2000 (more information, see references):7

Even bigger news came from Ponta da Madeira Maritime Terminal in Maranhao, which, in 1995, shortly before its tenth anniversary, achieved record annual shipments of 45.1 million metric tons of iron ore, manganese, soy and pig iron, and an accumulated total of 300 million metric tons over the course of the decade.8 These figures were unprecedented for a terminal of its category and helped the company to attain a leaking global position. Despite all its good results, Vale’s net operating revenues at the end of 1995 were only R$2.5 billion (parent company) and R$3.7 billion (consolidated results), down from the 1994 figures of R$2.97 billion (parent company) and R$4.7 billion (consolidated results) of the company’s net income also fell, from R$668 million in 1994 to R$337 million the following year.9

To reverse this situation—especially given the country’s economic recession—1996 would have to be a year of greater openness to external markets. Vale was drunk to celebrate one of the most important projects in the company’s diversification drive, as Celulose Nippon-Brasileira (Cenibra)’s second industrial unit was opened in Bodo Dorette, 250 kilometers from Bodo Horizonte. A high-level delegation attended the inauguration: Brazilian president Fernando Henrique Cardoso, accompanied by the governor of Minas Gerais, Eduardo Azeredo, Mines and Energy Minister Macambinho Neto, Industry, Trade and Tourism Minister Dorothéa Werneck, the presidents of CVRD and Japan Brazil Paper and Pulp Resources Development Co. (JBP), Francisco José Schettino and Kathbirstra Yamaha respectively, and Japan’s ambassador to Brazil, Chihito Tsubasa. Various senators, deputies, shareholders, customers and employees were also present.

One of the largest private investments ever made in Brazil at that time, the expansion project cost US$702.7 million. The purpose was to double the company’s pulp production, from 150,000 to 700,000 metric tons per year. Cenibra, an association between Vale and JBP, became the world’s second largest producer of short-fiber eucalyptus pulp.10

As it celebrated its 30th anniversary on April 1, 1996, Vale’s oldest port system was thriving. Tubarão Complex had launched the company’s key mine-railroad-port strategy. At this time, the company had a fleet of 7,400 ore cars, 5,700 general freight cars, 60 passenger cars and 200 locomotives. At the ceremony, the purchase of more than 70 car-carrier freight cars to transport Fiat automobiles in Betim since 1974, and eight air-conditioned passenger cars was announced. To complete the improvement, 10 new locomotives were also acquired. With the expansion of the railroad network belonging to Vale, this fleet would continue to receive reinforcements of new tracks.

The opportunity to expand Vale’s rail network arose with the inclusion of various stretches belonging to the Federal Railroad Network (RFFSA) in the privatization program implemented by the federal government. In 1996, Mineração Tacumã, controlled by Vale, made a winning bid of US$316.9 million for the Center-East Network, the largest part of the RFFSA. This network would become part of the Centro-Atlântica Railroad (FCA), which in 2010 had 8,023 kilometers of tracks, extending across the Brazilian states of Sergipe, Bahia, Espírito Santo, Minas Gerais, Rio de Janeiro and Goiás as well as the Federal District.

The acquisition made it possible to transport goods (including soybeans) from the country’s central region to Espírito Santo. Various straight lines arrived at the same destination. All of the company’s investments in the logistic sector would in some way be present at Tubarão Complex, which in 1996 was 30 years old. At its celebration its 30th anniversary on April 1, 1996, Vale’s oldest port system was thriving. Tubarão Complex had launched CVRD’s key mine-railroad-port strategy. It had been responsible for a major boost to Vale’s activities in Espírito Santo and it drove industrial and commercial diversification in the state, whose economy had until then been based on coffee.

The career of Wilson Brumer (Belo Horizonte, Minas Gerais, 1944) at Companhia Vale do Rio Doce began in the 1980s, as finance director. In 1990, during Fernando Collor’s government, he was appointed president of the company. Brumer took over CVRD with the mission of promoting, in an embryonic form, an administrative reform to prepare the company for its future privatizations. His work was marked by the strengthening of Vale’s presence on the stock market and the resumption of investment in Brazil. When Collor stood down as Brazil’s president in 1992, Brumer also left Vale’s presidency. He subsequently served as Minas Gerais State secretary for economic development and held managerial positions in major companies linked to mining and steelmaking, such as Acesita and Usiminas. He graduated in Business Administration from Fundação Mineira de Educação e Cultura (Fumec-Minas Gerais).
Francisco José Schettino

Francisco Schettino (Belo Horizonte, Minas Gerais, 1936) led Vale in the period leading up to its privatization. A qualified engineer, he was appointed by President Itamar Franco and remained in his position under President Fernando Henrique Cardoso. He took over the company soon after the 1992 United Nations Rio Earth Summit. This would be a determining factor in his continuity as CVRD’s president.

Schettino’s work focused on two areas: more company investment in environmental preservation; and modernizing Vale’s logistics infrastructure, such as the new Ponta da Madeira Maritime Terminal in Maranhão. Under his administration, the company was already a giant, with 15,700 employees and a profit of US$329 million in 1995. He led Vale in the period leading up to its privatization.

The celebration of the date was also the starting point for new port expansion projects. Work on building three new berths was announced, two exclusively for grains and bulk liquids, and the third for fertilizers. The aim was to handle a larger quantity of raw materials and goods.

The work, whose budget was approximately US$48 million, would increase annual cargo-handling capacity by around 15 million metric tons (more than the combined annual handling capacity of the ports of Vitória and Cajuúca, both located in Vila Velha, also in Espírito Santo).60

The North System

The North System, built in the 1990s in the Brazilian states of Pará and Maranhão, was fundamental to achieving the economic results and social integration sought by CVRD. It wasn’t just about ore. From Carajás, the company paved the way for the development in areas ranging from agriculture to education – of a large part of the region stretching from Pará to Lúcio Maranhão.

In the last quarter of 1993, a record volume of goods was carried by the Carajás Railway (EFC) as a result, over the course of the full year, 35 million metric tons of iron ore was transported, up 10% from the previous year, as well as general freight – especially limestone, drinks, fuels, timber vehicles, industrial and agricultural inputs, and grains. The EFC’s daily passenger train service was – and still is – ‘the most used long-distance transportation system in the eastern Amazon region of Pará in 1993, around 500,000 people traveled on it.61 One important factor in this period was the revenue obtained from transporting general freight, favoring the expansion of agriculture in southern Maranhão. The transportation of soy, timber, limestone, drinks, fuels and vehicles covered 24% of Carajás’ operating costs.62 “You only have to sell it and we’ll transport it!” affirmed the EFC’s general manager of transportation, Luiz Elhebí.63 The company’s efforts would be rewarded less than one year later, with the opening of Pier 2 at Ponta da Madeira Maritime Terminal in São Luís, Maranhão.

Opened in March 1994, Pier 2 gave rise to one of the biggest port complex projects in the country. Called the Second Bulk Solids Loading System, the facility ensured flexibility for the company’s operations in the North System, which in 1993 handled more than 35 million metric tons of many types of goods at a single quay.64

The ceremony to open the new pier was attended by groups of Japanese, Korean and American business people who were partners in the project. Japanese trading company Nissho Iwai funded US$315 million of the construction costs. According to the director of Nippon Steel, Yoshioh Abe, “CVRD has become an important ally to support the global steel industry.” At the ceremony, the governor of Maranhão (who some years later would be appointed the Mines and Energy Minister), Edson Lobão, said that CVRD employees – present and in uniform at the ceremony, the governor of Maranhão (who some years later would be appointed the Mines and Energy Minister), Delcídio Coelho, and the president of Petróleo, José Rezende, as well as a number of CVRD directors and superintendents.65

The rhythm grew ever faster. In May 1995, the Pelletizing Superintendent’s Office (Gipel) registered new records at the Niterói plants, opened in 1974 at the Tubarão Complex in Vitória, Espírito Santo, and at the Italian-Brazilian Pelletizing Company (Ulba), established in 1977 at the same location. These companies, respectively, reached the milestones of 150 million and 50 million metric tons of total accumulated pellet output. In 1994 alone, the plants together produced 17.8 million metric tons of pellets, exceeding their nominal installed capacity of 18 million.66

In the same year of 1994, the Vitória-Minar and Carajás railroads transported 2.2 million passengers and 141 million metric tons of products. Meanwhile, Vale was conducting transoceanic shipping activities using Docenave’s 50 ships, which carried 30 million metric tons per year. Investment in infrastructure also underpinned the company’s actions in the areas of palletizing, steel, ferroalloys and aluminum. It was a logistics network that went from one shipment platform to unloading terminals across the world.

In December 1994, continuing the sequence of investment in infrastructure and logistics, CVRD began operating another maritime terminal, this time in the state of Sergipe Jalou Barreira Maritime Terminal. The terminal was capable of handling 3 million metric tons of bulk solids and 500,000 metric tons of general cargo per year. The opening ceremony was attended by the governor of Sergipe, Jokis Alviss Filho, the Mines and Energy Minister, Delcídio Coelho, and the president of Petróleo, José Rezende, as well as a number of CVRD directors and superintendents.67

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60 | Jornal da Vale, no. 157, January 1994, p. 3.
61 | Idem.
63 | Idem.
64 | Idem.
65 | Idem.

7.6 Market diversification

CVRD diversified its sales markets, thereby expanding its range of customers and creating new business opportunities. The company gradually incorporated new products and businesses, but without losing its main focus and control of its processes—and to Vale, processes are synonymous with logistics, large distances, railroads, ports and ships. Growing logistical mastery is a way of diversifying assets, skills, sources of productivity, economies of scale, scope and integration.

CVRD’s growth is associated with its capacity to develop new technologies to make better use of the company’s mineral resources. These technologies are not always available, and known techniques may not always be applied in other environments, other deposits and other mineral occurrences. Diversification made it possible to transform unusable resources into goods with economic value.

Mineral production processes also involve the possibility of finding and using other minerals besides iron ore. This diversification performs various functions, such as stimulating Vale’s technological development. Over the years, manganese, gold, copper and aluminum were added to iron. In this way, CVRD became a diversified mining company, building new opportunities and a more promising future.

Manganese and Urucum Mine

The search for manganese—which led to the discovery of Carajás in the 1960s, when American company US Steel was prospecting for manganese rather than iron in northern Brazil—later played an important role in CVRD’s history. At that time, interest in manganese was justified by its use in electrical goods, especially batteries. Later it was used more widely in steelmaking: its presence inhibits the action of impurities and strengthens iron alloys, increasing their malleability and durability. Manganese is the fourth most used metal in the world, and from the start...
Vale do Rio Doce Navegação S.A.'s ship Doceangra, anchored at the Brazilian Navy's arsenal in Rio de Janeiro in 1990.
Manganese and the external market

At the end of 1995, Vale took a decisive step to consolidate the vertical integration of its manganese production by purchasing 45% of the shares of Société Européenne d’Allages pour la Siderurgie (SEAS), the second biggest manganese ferroalloy manufacturer in France, and indeed in Europe. This was the first time Vale had controlled an operational company outside Brazil. Through this acquisition, the company could guarantee its permanent entry into the European alloy market, as well as the consumption of all its manganese using fines from Carajás. It was the first company in the world to operate using 100% sister ore from 500,000 metric tons.

A contract with the French company signed in December 1995 by Vale’s Director of Metallurgy, Guilherme Almeida Gazolla, gave CVRD access to the European alloy market.12 This agreement was consistent with the company’s record exports in this same month and year, when Ponta da Madeira Maritime Terminal reached the milestone of 100 million metric tons of iron ore shipped abroad since its opening.13

The year 1995, in which manganese mining in Urucum would expand, would also be the tenth anniversary of Azul Mine, a major producer of this mineral in the North System. In October of that year, thanks to an aggressive commercial policy, the mine attained record monthly output of 130,000 metric tons. The success was largely due to product diversification, with the launch of Seas silver product.14 Together with manganese, another success of Vale’s in late 1995 was the launching of low-grade ore. In October, a new low-grade ore concentration plant came into operation at Timbopeba Mine, in Ouro Preto, Minas Gerais. As a result, Urucum, until then considered a low-value ore, took on a new status. CVRD’s investment in the plant amounted to US$7 million, undertaken exclusively using internal resources. In all, 97% of the equipment used was manufactured in Brazil. The plant enabled an increase in the malleable reserves of hematite of more than 16 million metric tons, mostly for export.15

Gold and copper

CVRD continued with its diversification policy, in which gold and copper had played an important role in the 1990s. At the start of the decade, Vale became the biggest gold producer in Brazil, producing 11.3 metric tons in 1992.16 In the same year, as a result of mining, processing and geological research efforts, company ‘Vale do Rio Doce also became the largest producer of gold in Latin America’ in 1994, the company produced 13.8 metric tons, strengthening its position.17 Two years later, in June 1996, gold became prominent on CVRD’s agenda. In Caeté, Minas Gerais, the company opened its seventh gold mine, and its total production capacity rose to 750 kilograms per year. Vale’s arrival in the municipality meant the resumption of an activity long in the region’s agenda, with the town’s foundation by gold-mining entrepreneurs. During the initial period, Vale invested around US$181 million to discover new reserves, and the mine was implemented in a record time of 11 months. This achievement, however, did not come about suddenly. Decades had begun research in the region decades before, in 1972.18 During this period, Vale had opened Azul Mine in the recently created state of Tocantins, with capacity to produce 1 metric ton of gold per year.19

In the late 1990s, the very gold mines recently worked by Vale, a new company was established in November 1995, called Salobo Metais S.A., through an agreement between CVRD’s Mineiro Metais Vello e BHDE. Located in Marabá, 77 kilometers from Carajás in southern Para, Salobo Mine was discovered in 1977 by Descope. The company’s plan was to help make Brazil self-sufficient in copper.

Salobo Mine, which was planned to open in the second half of 2012, had estimated copper output of 100,000 metric tons per year in its first phase and 200,000 metric tons in the second phase. It was also expected to produce 8 metric tons of gold per year as a byproduct. The mine’s forecast lifespan was 19 years. In 2010, Vale’s FME 2010 Report stated that Salobo Mine’s reserves are likely to be exhausted in 2045.

Aluminium operations: from Alunorte to Valealum

In the 1960s in the Amazon, bauxite was the ore most sought after by Canadian aluminium company Alcan. Fundamental to aluminium production, it was discovered next to the Trombetas River in Pará in the second half of the decade. The ore was of excellent quality and there was enough of it to enable major projects: 500 million metric tons.

12 Jornal da Vale, no. 192, December 1995, p. 3.
Aluminum, as found in our everyday lives – in window frames, cooking utensils, automobile parts and aircraft – is obtained from alumina (aluminum oxide) extracted from bauxite. Pure alumina, a white powder that is water insoluble, is an intermediate product in the transformation of bauxite ore into aluminum. Producing aluminum involves a complex, expensive process of reducing (purifying) bauxite using the oxide. The end result is metal aluminum, lighter, more malleable and with immense usage possibilities.

Initially, all the bauxite extracted from the region near the Trombetas River in Para was shipped to Alcan’s main operation in Canada. Despite the reserve’s large potential, output was modest: just 1 million metric tons per year. Pressured by the Brazilian government, Alcan doubled production, and at the start of the 1970s, it established Mineração Rio do Norte (MRN), involving the participation of Brazilian capital. The aim was to fully implement the project by 1975, but a crisis in the global aluminum market during the period brought a halt to the work in 1972.

Bauxite, aluminum and a greater Brazilian presence in the Amazon were national priorities in 1974. As a result, MRN’s project was restructured and control of the company came to be shared by Companhia Vale do Rio Doce (CVRD) and Companhia Brasileira de Alumínio (CBA), owned by Grupo Votorantim (10%). Alcan had a 75% stake in the company, and the remaining shares were held by another six companies, all multinationals.

MRN’s restructuring was not limited to the change of ownership and the transfer of shareholder control to Brazilian companies right from the start, an increase in production was planned, to 3.4 million metric tons of bauxite per year. The company had lofty ambitions. On August 13, 1979, the first batch of ore was shipped from the Port of Trombetas in Para and one of the most successful bauxite mining operations in the world began to operate.

Part of Companhia Vale do Rio Doce’s diversification strategy was its stake in MRN, which started to gain shape as of 1970. At that time, aluminum was in hot demand, and to produce it, it was necessary to assemble a production chain that began with bauxite extraction and ended at port terminals.

In 1974, CVRD subsidiary Dorrego embarked on research in the Amazon region that resulted in the first designs for the creation of alumina producer Alunorte and aluminum producer Albras. The project to build an aluminum production chain was strongly backed by the federal government, which through Mines and Energy Minister Shigeaki Ueki gave guarantees to enable Vale, a state-owned company to negotiate with Japanese partners of Light Metals Smelters Association (LMSA), an association of aluminum and alumina producers in Japan. The foundations for the establishment of Alunorte and Albras were put into place in 1980.

The figures – both those from the period and current ones – showed the need for well-planned investment in the construction of a plant to supply alumina in sufficient amounts to make the business feasible. Alunorte took on this role. In the initial project, it was estimated that Albras would consume 85% of Alunorte’s alumina production. Today, despite having increased its consumption by around 55%, Albras still uses less than 30% of Alunorte’s output.

Due to the plant’s high cost, a supply of power guaranteed by the federal government was indispensable for the project to be viable. This became possible when the Tucuruí Hydroelectric Plant (1984) was built. The basic construction necessary for the Brazilian alumina production complex was installed near Belém, Para. The location was close to the hydroelectric plant, it had reasonable port facilities and it was close to an urban center that could supply qualified manpower. Nevertheless, due to a series of problems, Alunorte only came on line in 1996, when it began to extract alumina from bauxite.

By the time of Vale’s privatization in 1997, the alumina market had changed. Despite its positive results in the operational field, Alunorte still had a significant debt. After unsuccessful attempts to sell some of its shares – the amounts offered by Alcoa and Alco, among others, were desastrous – Vale launched a wide-ranging project to restructure Alunorte. The plan called for reducing and renegotiating Vale’s debt ($800 million), issuing new equity and bringing in a new shareholder: Norwegian company Norsk Hydro. In 2000. With its costs and debt under control, Alunorte could now expand.

Vale Hydro’s involvement, Alunorte achieved an immediate rise in its production capacity of 2.3 million metric tons per year, which represented a 16% increase in the plant’s capacity. Vale (through Alunorte) held 50.27% of the company’s equity and started to consider alumina as a high-priority, strategic business. In order to further expand its output, Alunorte sought new bauxite suppliers and began to buy from Vale’s reserves in Paragominas, southeast Para, acquired from Anglo-Australian Rio Tinto. After deciding on new fields of activity, Expansion 1 –

A study of the status of global bauxite reserves, as well as alumina and aluminum output potential in the main production centers, pointed to ever more favorable conditions for making aluminum in Brazil.

Jório Dauster Magalhães e Silva

In an interview with Cyca Negreiros magazine published in July 2007, Jório Dauster (Rio de Janeiro, 1937) said that his main challenge was to reinvent the company: “It is necessary to constantly reinvent oneself. That is what he did throughout his life. Born in Rio de Janeiro, a trained diplomat (although, according to him, “I was never a member of the so-called ‘lace cuffs’ group of the Foreign Ministry”). Dauster is also a well-known name in literary circles, responsible for translating into Portuguese works by famous names such as Vladimir Nabokov (“The Gift”) and Philip Roth and J. D. Salinger (“Works of Love”). As co-founder of the privately owned magazine Época and its sister publication, the magazine Época Negócios, Dauster is a member of the so-called ‘lace cuffs’ group of the Foreign Ministry.”

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In Expansion 3, Alunorte invested US$1.135 billion to raise the plant’s annual capacity to 6.3 million metric tons. To produce this amount, 60% of the bauxite used would come from Paragominas. With the completion of its three growth plans, Vale, in association with the companies in which it held stakes, definitively shaped the aluminum production axis of Brazil, an axis that was also taking form at the other end of the chain.

Before Alunorte’s implementation was completed in the 1990s, Vale had already become the majority shareholder in Valesul, with 54.51% of its equity, in 1982, the year in which the company began its primary aluminum production operations in the neighborhood of Santa Cruz in Rio de Janeiro.

Until 1995, Valesul bought alumina of various origins, but as of 1996, when shipments of alumina produced by Alunorte began to flow, the aluminum plant came to rely on a single supplier.

Alunorte’s first shipment, dispatched from the Port of Belém in Pará to Valesul on January 29, 1996, served as a decisive impetus to strengthen aluminum production in Rio de Janeiro. Winner, a Panamanian ship with an Indian crew, transported the first 7,000 metric tons of alumina to the plant in Rio. From then on, batches would be sent there monthly. Winner’s voyage marked the start of a partnership between Alunorte and Valesul, guaranteeing the success of Vale’s aluminum project.

A study of the status of global bauxite reserves, as well as alumina and aluminum output potential in the main production centers, pointed to ever more favorable conditions for making aluminum in Brazil. In October 2001, with Murilo Ferreira appointed as CEO of Alunorte, Vale acquired MBM’s entire block of shares in Alunorte for around US$40 million. This was followed by investment in research (especially in bauxite processing) and methods for removing excess water from bauxite slurry in order to transport it via a pipeline for up to 200 kilometers.

Given the size of its reserves, its processing methods, its transportation system and its success in bauxite slurry dewatering, Alunorte was ready to grow even more. The Expansion 1 project would be launched on January 19, 2003, in the presence of Brazil’s president, Luiz Inácio Lula da Silva.

Expansion 2 was practically twice the size of Expansion 1. Costing US$790 million in total, it expanded the plant’s annual production capacity to 4.3 million metric tons. A major benefit was intended to be the use of bauxite from Paragominas (Pará), which would reach the plant via a 340-kilometer slurry pipeline, but due to difficulties in obtaining environmental licenses to build the pipeline, bauxite from Trombetas (Pará) continued to be used instead. Expansion 2 was inaugurated in the first quarter of 2006.

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View of Alunorte’s site in Barcarena, Pará, 14 February 2006.
Contrary to what many people think, mining can contribute to environmental preservation. This is what Vale’s presence in southeast Pará demonstrates. Since it began mining iron ore in the region in 1985, the company has been helping to conserve the Carajás National Forest and other areas of the Amazon biome in partnership with the Chico Mendes Institute for Biodiversity Conservation (ICMBio). Over the years, Vale has also developed technologies and management systems that have led to lower-impact operations.

Carajás National Forest, which is home to a number of Vale’s iron, manganese and copper mines, is a Conservation Unit created in 1998 by presidential decree, and whose objectives include “the sustainable exploration of natural resources” such as mining. Vale’s operations occupy just 3% of Carajás National Forest’s area of approximately 4,120 km$^2$. In addition, Vale’s support has been fundamental in preventing cattle raising and logging from encroaching on the forest.

Carajás National Forest and four adjacent areas covering a total of 4,559.5 km$^2$ together make up the Carajás Region Mosaic of Conservation Units. The Mosaic is protected through a partnership between Vale and ICMBio, which conducts monitoring, research, fire prevention, firefighting and environmental education activities. The company protects or helps to protect an area 3.5 times larger than that occupied by its global operations, adding up to 13,700 km$^2$ of natural habitat. In 2011, Vale invested US$1.030 billion in environmental monitoring and protection, up 40% from the previous year.
**Vale’s commemorative stamps**

An indication of Vale’s importance to Brazil can be seen from the postage stamps that have commemorated some of the milestones in its history. Since the 1960s, the Brazilian postal service has produced several stamps of this kind.

The first such stamp was issued in 1966 to commemorate the opening of Tubarão Maritime Terminal in Espírito Santo. Another example is the stamp produced to mark Vale’s 40th anniversary, issued on June 1, 1992.

The ceremony to unveil the first stamp, held at the office of Vale’s president in Minas Gerais, was attended by Mines and Energy Minister César Cabi, the director of the postal service, José Mariano Raulfer, and Vale’s president, Élmer Batista, accompanied by former company presidents Oscar de Oliveira, Antônio Dias Leite, Raymundo Mascarenhas, Juracy Magalhães and Fernando Rauber. Created by Portuguese artist Licínio de Melo, the stamp’s design represented mountains of ore and the technical apparatus used to extract it. The accompanying catalog produced by the post office explained that the artist sought to depict the company’s strength.

Another important stamp dedicated to CVRD was produced to commemorate the launch of the Carajás Iron Project in 1985, which the postal service proclaimed as “the biggest iron ore project in the world.” In 1995, post-service’s last stamp to celebrate Vale was issued, to mark the company’s 50th anniversary.

The postal service has also created stamps to celebrate the work of former Brazilian First Lady and anthropologist Ruth Cardoso, as founder of NGO Conselho da Comunidade Solidária (“Solidarity Community Council”).

The Council, led by Ruth Cardoso and composed of 10 ministers and 21 representatives of civil society, promoted dialogue between society and government entities, and encouraged partnerships to efficiently tackle longstanding social problems.

During the awards ceremony, Vale and the postal service also launched another stamp to celebrate the work of former Brazilian First Lady and anthropologist Ruth Cardoso, as founder of NGO Conselho da Comunidade Solidária (“Solidarity Community Council”).

The people to be “immortalized” were chosen through an internet poll that took place over two months, attracting 250,000 votes. Two types of awards were given: a national award and awards for each of Brazil’s five regions. In the national category, the winner was José Hamilton Ribeiro, a journalist from São Paulo who received 70% of the votes. The regional winners were economist and historian Paulo Bertoni (Center-West region), writer Rachel de Queiroz (Northeast), Rio de Janeiro maestro Tom Jobim (Southeast), writer and poet Zeneida Lima (from the island of Marajó in the North), and businessman Mário Kräggen (from Santa Catarina in the South).

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