Vale S.A.
Form 20-F
April 28, 2011

Use these links to rapidly review the document
TABLE OF CONTENTS

Table of Contents

As filed with the Securities and Exchange Commission on April 28, 2011

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 20-F

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended: December 31, 2010
Commission file number: 001-15030

VALE S.A.

(Exact name of Registrant as specified in its charter)

Federative Republic of Brazil
(Jurisdiction of incorporation or organization)

Guilherme Perboyre Cavalcanti, Chief Financial Officer
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Avenida Graça Aranha, No. 26
20030-900 Rio de Janeiro, RJ, Brazil
(Address of principal executive offices)

Securities registered or to be registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Preferred class A shares of Vale, no par value per share	New York Stock Exchange*
American Depositary Shares (evidenced by American Depositary Receipts), each representing one preferred class A share of Vale	New York Stock Exchange
Common shares of Vale, no par value per share	New York Stock Exchange*
American Depositary Shares (evidenced by American Depositary Receipts), each representing one common share of Vale	New York Stock Exchange
6.75% Guaranteed Notes due 2012, Series VALE, issued by Vale Capital II	New York Stock Exchange
6.75% Guaranteed Notes due 2012, Series VALE.P, issued by Vale Capital II	New York Stock Exchange
9.0% Guaranteed Notes due 2013, issued by Vale Overseas	New York Stock Exchange
6.25% Guaranteed Notes due 2016, issued by Vale Overseas	New York Stock Exchange
6.250% Guaranteed Notes due 2017, issued by Vale Overseas	New York Stock Exchange
5⅝% Guaranteed Notes due 2019, issued by Vale Overseas	New York Stock Exchange
4.625% Guaranteed Notes due 2020, issued by Vale Overseas	New York Stock Exchange
8.25% Guaranteed Notes due 2034, issued by Vale Overseas	New York Stock Exchange
6.875% Guaranteed Notes due 2036, issued by Vale Overseas	New York Stock Exchange
6.875% Guaranteed Notes due 2039, issued by Vale Overseas	New York Stock Exchange

*

Shares are not listed for trading, but only in connection with the registration of American Depositary Shares pursuant to the requirements of the New York Stock Exchange.

Securities registered or to be registered pursuant to Section 12(g) of the Act: None

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act: None

The number of outstanding shares of each class of stock of Vale as of December 31, 2010 was:

3,256,724,482 common shares, no par value per share
2,108,579,618 preferred class A shares, no par value per share
12 golden shares, no par value per share

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes ý No o

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934.

Yes o No ý

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports) and (2) has been subject to such filing requirements for the past 90 days.

Yes ý No o

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes ý No o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of "accelerated filer" and "large accelerated filer" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ý Accelerated filer o Non-accelerated filer o

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP ý International Financial Reporting Standards as issued by the International Accounting Standards Board o Other o

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow.

Item 17 o Item 18 o

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes o No ý

Table of Contents

TABLE OF CONTENTS

Table of Contents

FORM 20-F CROSS REFERENCE GUIDE

Item	Form 20-F caption	Location in this report	Page
1	**Identity of directors, senior management and advisers**	Not applicable	
2	**Offer statistics and expected timetable**	Not applicable	
3	**Key information**		
	3A Selected financial data	Selected financial data	12
	3B Capitalization and indebtedness	Not applicable	
	3C Reasons for the offer and use of proceeds	Not applicable	
	3D Risk factors	Risk factors	2
4	**Information on the Company**		
	4A History and development of the company	Business Overview, Capital expenditures and projects	15, 65
	4B Business overview	Business overview, Lines of business, Reserves, Regulatory matters	15, 22, 54, 70
	4C Organizational structure	Exhibit 8	
	4D Property, plant and equipment	Lines of business, Capital expenditures and projects, Regulatory matters	22, 65, 70
4A	**Unresolved staff comments**	None	
5	**Operating and financial review and prospects**		
	5A Operating results	Results of operations (2010 compared to 2009, and 2009 compared to 2008)	79, 87
	5B Liquidity and capital resources	Liquidity and capital resources	93
		Shareholder debentures	96
	5C Research and development, patents and licenses, etc.	Capital expenditures and projects	65
	5D Trend information	Results of operations (2010 compared to 2009, and 2009 compared to 2008)	79, 87
	5E Off-balance sheet arrangements	Off-balance sheet arrangements	97
		Critical accounting policies and estimates	97
	5F Tabular disclosure of contractual obligations	Contractual obligations	96
	5G Safe harbor	Forward-looking statements	1
6	**Directors, senior management and employees**		
	6A Directors and senior management	Management	119
	6B Compensation	Management compensation	129
	6C Board practices	Management Board of directors	119
	6D Employees	Employees	130

Table of Contents

Table of Contents

Table of Contents

FORWARD-LOOKING STATEMENTS

This annual report contains statements that may constitute forward-looking statements within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. Many of those forward-looking statements can be identified by the use of forward-looking words such as "anticipate," "believe," "could," "expect," "should," "plan," "intend," "estimate" and "potential," among others. Those statements appear in a number of places and include statements regarding our intent, belief or current expectations with respect to:

our direction and future operation;

the implementation of our principal operating strategies, including our potential participation in acquisition, divestiture or joint venture transactions or other investment opportunities;

the implementation of our financing strategy and capital expenditure plans;

the exploration of mineral reserves and development of mining facilities;

the depletion and exhaustion of mines and mineral reserves;

trends in commodity prices and demand for commodities;

the future impact of competition and regulation;

the payment of dividends;

industry trends, including the direction of prices and expected levels of supply and demand;

other factors or trends affecting our financial condition or results of operations; and

the factors discussed under *Risk factors*.

We caution you that forward-looking statements are not guarantees of future performance and involve risks and uncertainties. Actual results may differ materially from those in forward-looking statements as a result of various factors. These risks and uncertainties include factors relating to (a) the countries in which we operate, mainly Brazil and Canada, (b) the global economy, (c) capital markets, (d) the mining and metals businesses and their dependence upon global industrial production, which is cyclical by nature, and (e) the high degree of global competition in the markets in which we operate. For additional information on factors that could cause our actual results to differ from expectations reflected in forward-looking statements, see *Risk factors*. Forward-looking statements speak only as of the date they are made, and we do not undertake any obligation to update them in light of new information or future developments. All forward-looking statements attributed to us or a person acting on our behalf are expressly qualified in their entirety by this cautionary statement, and you should not place undue reliance on any forward-looking statement.

Vale S.A. is a stock corporation, or sociedade por ações, organized on January 11, 1943 and existing under the laws of the Federative Republic of Brazil for an unlimited period of time. Its head offices are located at Avenida Graça Aranha, No. 26, 20030-900 Rio de Janeiro, RJ,

Brazil, and its telephone number is 55-21-3814-4477.

In this report, references to "Vale" are to Vale S.A. References to "we," "us" or the "Company" are to Vale and, except where the context otherwise requires, its consolidated subsidiaries. References to our "preferred shares" are to our preferred class A shares. References to our "ADSs" or "American Depositary Shares" include both our common American Depositary Shares (our "common ADSs"), each of which represents one common share of

Table of Contents

Vale, and our preferred class A American Depositary Shares (our "preferred ADSs"), each of which represents one class A preferred share of Vale. American Depositary Shares are represented by American Depositary Receipts ("ADRs") issued by the depositary. References to our "HDSs" or "Hong Kong Depositary Shares" include both our common Hong Kong Depositary Shares (our "common HDSs"), each of which represents one common share of Vale, and our class A preferred Hong Kong Depositary Shares (our "preferred HDSs"), each of which represents one preferred Class A share of Vale. Hong Kong Depositary Shares are represented by Hong Kong Depositary Receipts ("HDRs") issued by the depositary. Unless otherwise specified, we use metric units.

References to "real," "reais" or "R$" are to the official currency of Brazil, the real (singular) or reais (plural). References to "U.S. dollars" or "US$" are to United States dollars. References to "CAD" are to Canadian dollars, and references to "A$" are to Australian dollars.

RISK FACTORS

Risks relating to our business

The mining industry is highly exposed to the cyclicality of global economic activity and requires significant investments of capital.

The mining industry is primarily a supplier of industrial raw materials. Industrial production tends to be the most cyclical and volatile component of global economic activity, which affects demand for minerals and metals. At the same time, investment in mining requires a substantial amount of funds in order to replenish reserves, expand production capacity, build infrastructure and preserve the environment. Both the sensitivity to industrial production and the need for significant capital investments are important sources of financial risk for the mining industry.

Adverse economic developments in China could have a negative impact on our revenues, cash flow and profitability.

China has been the main driver of global demand for minerals and metals over the last few years. In 2010, Chinese demand represented 59% of global demand for seaborne iron ore, 37% of global demand for nickel, 38% of global demand for copper and 41% of global demand for aluminum. The percentage of our operating revenues attributable to sales to consumers in China was 33.1% in 2010. Although China largely withstood the recent global recession, a contraction of China's economic growth could result in lower demand for our products, leading to lower revenues, cash flow and profitability. Poor performance in the Chinese real estate sector, the largest consumer of carbon steel in China, could also negatively impact our results.

Our business can be adversely affected by declines in demand for the products our customers produce, including steel (for our iron ore business), stainless steel (for our nickel business) and agricultural commodities (for our fertilizer nutrients business).

Demand for our iron ore and nickel products depends on global demand for steel. Iron ore and iron ore pellets, which together accounted for 70.5% of our 2010 operating revenues, are used to produce carbon steel. Nickel, which accounted for 8.3% of our 2010 operating revenues, is used mainly to produce stainless and alloy steels. Demand for steel depends heavily on global economic conditions, but it also depends on a variety of regional and sectoral factors. The prices of different steels and the performance of the global steel industry are highly cyclical and volatile, and these business cycles in the steel industry affect demand and prices for our products. In addition, vertical backward integration of the steel industry could reduce the global seaborne trade of iron ore.

The global seaborne trade of iron ore could also suffer from competition from metallics, such as semi-finished steel and scrap. In certain cases, it may be more economical for steelmakers to charge more scrap in basic oxygen furnaces ("BOF") and electric arc furnaces ("EAF"), instead of producing pig iron.

Table of Contents

Semi-finished products, such as billets and slabs, may also be available from fully-integrated steel mills at low cost, reducing overall demand for seaborne iron ore.

The demand for fertilizers is affected by global prices of agricultural commodities. A sustained decline in the price of one or more agricultural commodities could negatively impact our fertilizer business.

The shift to index-based quarterly pricing for iron ore based on short-term market references and consequent price volatility could adversely affect our iron ore business.

We reached agreements with all our iron ore customers during the first half of 2010 to move from annual benchmark contracts to quarterly index-based contracts to better reflect market fundamentals. The previous annual benchmark price system for iron ore has been replaced by a new system under which iron ore prices are established quarterly based on a three-month average of price indices for the period ending one month before the beginning of the new quarter. While the new pricing system more clearly differentiates pricing based on product quality, allowing our iron ore products to earn a premium over the price of standard iron ores, the increased price volatility resulting from the quarterly price changes could adversely affect our cash flow.

The prices of nickel, copper and aluminum, which are actively traded on world commodity exchanges, are subject to significant volatility.

Nickel, copper and aluminum are sold in an active global market and traded on commodity exchanges, such as the London Metal Exchange and the New York Mercantile Exchange. Prices for these metals are subject to significant fluctuations and are affected by many factors, including actual and expected global macroeconomic and political conditions, levels of supply and demand, the availability and cost of substitutes, inventory levels, investments by commodity funds and others and actions of participants in the commodity markets.

Increased availability of alternative nickel sources or substitution of nickel from end-use applications could adversely affect our nickel business.

Scrap nickel competes directly with primary nickel as a source of nickel for use in the production of stainless steel, and the choice between them is largely driven by their relative prices and availability. In 2010, the stainless steel scrap ratio remained unchanged from 2009, at 42%. Nickel pig iron, a product developed by Chinese steel and alloy makers that utilizes lateritic nickel ores, competes with other nickel sources in the production of stainless steel. In 2010, estimated nickel pig iron production increased 61%, representing 11% of global nickel output. Demand for primary nickel may be negatively affected by the direct substitution of primary nickel with other materials in current applications. In response to high nickel prices or other factors, producers and consumers of stainless steel may partially shift from stainless steel with high nickel content (series 300) to stainless steels with either lower nickel content (series 200) or no nickel content (series 400), which would adversely affect demand for nickel.

We may not be able to adjust production volume in a timely or cost-efficient manner in response to changes in demand.

During periods of high demand, our ability to rapidly increase production capacity is limited, which could render us unable to satisfy demand for our products. Moreover, we may be unable to complete expansions and greenfield projects in time to take advantage of rising demand for iron ore. When demand exceeds our production capacity, we may meet excess customer demand by purchasing iron ore, iron ore pellets or nickel from joint ventures or unrelated parties and reselling it, which would increase our costs and narrow our operating margins. If we are unable to satisfy excess customer demand in this way, we may lose customers. In addition, operating close to full capacity may expose us to higher costs, including demurrage fees due to capacity restraints in our logistics systems.

Table of Contents

Conversely, operating at significant idle capacity during periods of weak demand may expose us to higher unit production costs since a significant portion of our cost structure is fixed in the short-term due to the high capital intensity of mining operations. In addition, efforts to reduce costs during periods of weak demand could be limited by labor regulations or previous labor or government agreements.

Regulatory, political, economic and social conditions in the countries in which we have operations or projects could adversely impact our business and the market prices of our securities.

Our financial performance may be negatively affected by regulatory, political, economic and social conditions in countries in which we have significant operations or projects, particularly Argentina, Australia, Brazil, Canada, Colombia, Guinea, Indonesia, Liberia, Malawi, Mozambique, New Caledonia, Oman and Peru.

Our operations depend on authorizations and concessions from governmental regulatory agencies of the countries in which we operate. For details about the authorizations and concessions upon which our operations depend, see *Information on the Company Regulatory matters*. We are subject to laws and regulations in many jurisdictions that can change at any time, and changes in laws and regulations may require modifications to our technologies and operations and result in unanticipated capital expenditures.

Actual or potential political changes and changes in economic policy may undermine investor confidence, which may hamper investment and thereby reduce economic growth, and otherwise may adversely affect the economic and other conditions under which we operate in ways that could have a materially negative effect on our business.

Protesters have taken actions to disrupt our operations and projects, and they may continue to do so in the future. Although we vigorously defend ourselves against illegal acts, while supporting the communities living near our operations, future attempts by protesters to harm our operations could adversely affect our business.

Some of our operations and reserves are located on or near lands owned by indigenous or aboriginal tribes or other groups. These indigenous peoples have rights to participate in natural resource management, and we negotiate with them for access to their lands. A disagreement or dispute with an indigenous or aboriginal group could hamper our ability to develop our reserves and conduct our operations.

We could be adversely affected by changes in government policies, including the imposition of new taxes or royalties on mining activities.

Mining is subject to government regulation in the form of taxes and royalties, which can have an important financial impact on our operations. In the countries where we operate, governments may impose new taxes, raise existing taxes and royalty rates, or change the basis on which they are calculated in a manner that is unfavorable to us.

Our projects are subject to risks that may result in increased costs or delay that prevent their successful implementation.

We are investing to further increase our production capacity, logistics capabilities and to expand the scope of minerals we produce. Our projects are subject to a number of risks that may adversely affect our growth prospects and profitability, including the following:

We may encounter delays or higher than expected costs in obtaining the necessary equipment or services and in implementing new technologies to build and operate a project.

Our efforts to develop projects according to schedule may be hampered by a lack of infrastructure, including a reliable power supply.

Table of Contents

We may fail to obtain, or experience delays or higher than expected costs in obtaining, the required permits to build a project.

Changes in market conditions or regulations may make a project less profitable than expected at the time we initiated work on it.

Adverse mining conditions may delay and hamper our ability to produce the expected quantities of minerals.

Some of our development projects are located in regions where tropical diseases, AIDS, malaria, yellow fever and other contagious diseases are a major public health issue and pose health and safety risks to our employees. If we are unable to ensure the health and safety of our employees, our business may be adversely affected.

Our controlling shareholder has significant influence over Vale, and the Brazilian government has certain veto rights.

As of March 31, 2011, Valepar S.A. ("Valepar") owned 53.5% of our outstanding common stock and 33.3% of our total outstanding capital. As a result of its share ownership, Valepar can control the outcome of some actions that require shareholder approval. For a description of our ownership structure and of the Valepar shareholders' agreement, see *Share ownership and trading Major shareholders*.

The Brazilian government owns 12 golden shares of Vale, granting it limited veto power over certain company actions, such as changes to our name, the location of our headquarters and our corporate purpose as it relates to mining activities. For a detailed description of the Brazilian government's veto powers, see *Additional information Memorandum and articles of association Common shares and preferred shares*.

Our governance and compliance processes may fail to prevent regulatory penalties and reputational harm.

We operate in a global environment, and our activities straddle multiple jurisdictions and complex regulatory frameworks with increased enforcement activities worldwide. Our governance and compliance processes, which include the review of internal control over financial reporting, may not prevent future breaches of law, accounting or governance standards. We may be subject to breaches of our Code of Ethical Conduct, business conduct protocols and instances of fraudulent behavior and dishonesty by our employees, contractors or other agents. Our failure to comply with applicable laws and other standards could subject us to fines, loss of operating licenses and reputational harm.

Some of our operations depend on joint ventures, consortia or the participation of other investors, and our business could be adversely affected if our partners fail to observe their commitments.

We currently operate important parts of our pelletizing, bauxite, nickel, coal, copper and steel businesses through joint ventures with other companies. Important parts of our electricity investments and all of our oil and gas projects are operated through consortia. Our forecasts and plans for these joint ventures and consortia assume that our partners will observe their obligations to make capital contributions, purchase products and, in some cases, provide skilled and competent managerial personnel. If any of our partners fails to observe its commitments, the affected joint venture or consortium may not be able to operate in accordance with its business plans, or we may have to increase the level of our investment to implement these plans. For example, the subsidiary that owns our nickel project in New Caledonia has a minority shareholder, Sumic Nickel Netherlands B.V., with a put option to sell us 25%, 50%, or 100% of its shares. Sumic may exercise the put option if the cost of the project exceeds a certain value agreed upon by a subset of the shareholders and certain other conditions are met. For more information about our joint ventures, see *Information on the Company Lines of business*.

Table of Contents

Environmental, health and safety regulation may adversely affect our business.

Our operations involve the use, handling, discharge and disposal of hazardous materials into the environment and the use of natural resources, and nearly all aspects of our activities, products, services and projects around the world are subject to environmental, health and safety regulation, which may expose us to increased litigation or increased costs. Such regulations require us to obtain environmental licenses, permits and authorizations for our operations, and to conduct environmental impact assessments in order to get the approval for our projects and permission for initiating construction. Additionally, all significant changes to existing operations must also undergo the same procedure. Difficulties in obtaining permits may lead to construction delays or cost increases, and in some cases may lead us to postpone or even abandon a project. Environmental regulation also imposes standards and controls on activities relating to mineral research, mining, pelletizing activities, railway and marine services, decommissioning, refining, distribution and marketing of our products. Such regulation may give rise to significant costs and liabilities. In addition, community activist groups and other stakeholders may increase demands for socially responsible and environmentally sustainable practices, which could entail significant costs and reduce our profitability. Private litigation relating to these or other matters may adversely affect our financial condition or cause harm to our reputation.

Environmental regulation in many countries in which we operate has become stricter in recent years, and it is possible that more regulation or more aggressive enforcement of existing regulations will adversely affect us by imposing restrictions on our activities and products, creating new requirements for the issuance or renewal of environmental licenses, raising our costs or requiring us to engage in expensive reclamation efforts. Concern over climate change, and efforts to comply with international undertakings under the Kyoto Protocol, could lead governments to impose limits on carbon emissions applicable to our operations, which could adversely affect our operating costs or our capital expenditure requirements. For example, the Brazilian government has adopted a decree under the carbon emissions law (*Política Nacional de Mudanças Climáticas*) that contemplates specific limits on carbon emissions to be established in late 2011 and phased in through 2020.

Natural disasters have been increasing in frequency and may inflict severe damages to our operations and projects in the countries where we operate and/or may cause a negative impact in our sales to countries adversely affected by such disasters.

Natural disasters, such as wind storms, floods, earthquakes and tsunamis, have been increasing in frequency around the world and may adversely affect our operations and projects in the countries where we operate, and may cause a contraction in sales to countries adversely affected due to, among other factors, power outages and the destruction of industrial facilities and infrastructure. In the last quarter of 2010 and first quarter of 2011, our coal operations in Australia were negatively affected by floods in the state of Queensland. Our sales of mining products to Japan will suffer the adverse impact of the earthquake that hit the northeast region of the country in March 2011.

Our reserve estimates may materially differ from mineral quantities that we may be able to actually recover; our estimates of mine life may prove inaccurate; and market price fluctuations and changes in operating and capital costs may render certain ore reserves uneconomical to mine.

Our reported ore reserves are estimated quantities of ore and minerals that we have determined can be economically mined and processed under present and anticipated conditions to extract their mineral content. There are numerous uncertainties inherent in estimating quantities of reserves and in projecting potential future rates of mineral production, including factors beyond our control. Reserve engineering involves estimating deposits of minerals that cannot be measured in an exact manner, and the accuracy of any reserve estimate is a function of the quality of available data and engineering and geological interpretation and judgment. As a result, no assurance can be given that the indicated amount of ore will be recovered or that it will be recovered at the rates we anticipate. Estimates may vary, and results of our mining and production subsequent to the date of an estimate may lead to revisions of estimates. Reserve estimates and

Table of Contents

estimates of mine life may require revisions based on actual production experience and other factors. For example, fluctuations in the market prices of minerals and metals, reduced recovery rates or increased operating and capital costs due to inflation, exchange rates or other factors may render proven and probable reserves uneconomic to exploit and may ultimately result in a restatement of reserves.

We may not be able to replenish our reserves, which could adversely affect our mining prospects.

We engage in mineral exploration, which is highly speculative in nature, involves many risks and frequently is non-productive. Our exploration programs, which involve significant capital expenditures, may fail to result in the expansion or replacement of reserves depleted by current production. If we do not develop new reserves, we will not be able to sustain our current level of production beyond the remaining lives of our existing mines.

Drilling and production risks could adversely affect the mining process.

Once mineral deposits are discovered, it can take a number of years from the initial phases of drilling until production is possible, during which the economic feasibility of production may change. Substantial time and expenditures are required to:

establish mineral reserves through drilling;

determine appropriate mining and metallurgical processes for optimizing the recovery of metal contained in ore;

obtain environmental and other licenses;

construct mining, processing facilities and infrastructure required for greenfield properties; and

obtain the ore or extract the minerals from the ore.

If a project proves not to be economically feasible by the time we are able to exploit it, we may incur substantial losses and be obliged to take write-downs. In addition, potential changes or complications involving metallurgical and other technological processes arising during the life of a project may result in delays and cost overruns that may render the project not economically feasible.

We face rising extraction costs over time as reserves deplete.

Reserves are gradually depleted in the ordinary course of a given mining operation. As mining progresses, distances to the primary crusher and to waste deposits become longer, pits become steeper and underground operations become deeper. As a result, over time, we usually experience rising unit extraction costs with respect to each mine. Several of our mines have been operating for long periods, and we will likely experience rising extraction costs per unit in the future at these operations in particular.

Labor disputes may disrupt our operations from time to time.

A substantial number of our employees, and some of the employees of our subcontractors, are represented by labor unions and are covered by collective bargaining or other labor agreements, which are subject to periodic negotiation. Negotiation may become more difficult in times of higher prices and consequently higher profits in the mining and metals industries, as labor unions may seek wage increases and other forms of additional compensation.

Table of Contents

Strikes and other labor disruptions at any of our operations could adversely affect the operation of facilities and the timing of completion and cost of our capital projects. For more information about labor relations, see *Management and employees Employees*. Moreover, we could be adversely affected by labor disruptions involving unrelated parties that may provide us with goods or services.

We may face shortages of equipment, services and skilled personnel.

The mining industry has faced worldwide shortages of mining and construction equipment, spare parts, contractors and other skilled personnel during periods of high demand for minerals and metals and intense development of mining projects. We may experience longer lead-times for mining equipment and problems with the quality of contracted engineering, construction and maintenance services. We compete with other mining companies for highly skilled management and staff with relevant industry and technical experience, and we may not be able to attract and retain such people. Shortages during peak periods could negatively impact our operations, resulting in higher production or capital expenditure costs, production interruptions, higher inventory costs, project delays and potentially lower production and revenues.

Higher energy costs or energy shortages would adversely affect our business.

Energy costs are a significant component of our cost of production, representing 16.4% of our total cost of goods sold in 2010. To fulfill our energy needs, we depend on the following sources: oil by-products, which represented 42% of total energy needs in 2010, electricity (29%), coal (15%), natural gas (10%) and other energy sources (4%), using figures converted into tons of oil equivalent ("TOE").

Fuel costs represented 10.0% of our cost of goods sold in 2010. Increases in oil and gas prices adversely affect margins in our logistics services, mining, iron ore pellets, nickel and alumina businesses.

Electricity costs represented 6.4% of our total cost of goods sold in 2010. If we are unable to secure reliable access to electricity at acceptable prices, we may be forced to curtail production or may experience higher production costs, either of which would adversely affect our results of operations. We face the risk of energy shortages in the countries where we have operations and projects due to excess demand or weather conditions, such as floods or droughts.

Electricity shortages have occurred throughout the world, and there can be no assurance that growth in power generation capacity in the countries in which we operate will be sufficient to meet future consumption increases. Future shortages, and government efforts to respond to or prevent shortages, may adversely impact the cost or supply of electricity for our operations.

Through our subsidiary PT International Nickel Indonesia Tbk ("PTI"), we process lateritic nickel ores using a pyrometallurgical process, which is energy-intensive. Although PTI currently generates a majority of the electricity for its operations from its own hydroelectric power plants, low rainfall or other hydrological factors could adversely affect electricity production at PTI's plants in the future, which could significantly increase the risk of higher costs or lower production volume.

Price volatility relative to the U.S. dollar of the currencies in which we conduct operations could adversely affect our financial condition and results of operations.

A substantial portion of our revenues and debt is denominated in U.S. dollars, and changes in exchange rates may result in (i) losses or gains on our net U.S. dollar-denominated indebtedness and accounts receivable and (ii) fair value losses or gains on our currency derivatives used to stabilize our cash flow in U.S. dollars. In 2010, we had currency gains of US$102 million; in 2009, we had currency gains of US$665 million; in 2008, we had currency losses of US$1.011 billion. In addition, the price volatility of the Brazilian *real*, the Canadian dollar, the Indonesian rupiah and other currencies against the U.S. dollar affect our results since most of our costs of goods sold are denominated in currencies other than the U.S. dollar, principally the *real* (64% in 2010) and the Canadian dollar (11% in 2010), while our revenues are mostly U.S. dollar-denominated. We expect currency fluctuations to continue to affect our financial income, expense and cash flow generation.

Table of Contents

Significant volatility in currency prices may also result in disruption of foreign exchange markets and may limit our ability to transfer or to convert certain currencies into U.S. dollars and other currencies for the purpose of making timely payments of interest and principal on our indebtedness. The central banks and governments of the countries in which we operate may institute restrictive exchange rate policies in the future.

We may not have adequate insurance coverage for some business risks.

Our businesses are generally subject to a number of risks and hazards, which could result in damage to, or destruction of, mineral properties, facilities and equipment. The insurance we maintain against risks that are typical in our business may not provide adequate coverage. Insurance against some risks (including liabilities for environmental pollution or certain hazards or interruption of certain business activities) may not be available at a reasonable cost, or at all. As a result, accidents or other negative developments involving our mining, production or transportation facilities could have a material adverse effect on our operations.

We are involved in several legal proceedings that could have a material adverse effect on our business in the event of an outcome that is unfavorable to us.

We are involved in several legal proceedings in which adverse parties have claimed substantial amounts. Although we are vigorously contesting them, the outcomes of these proceedings are uncertain and may result in obligations that could materially adversely affect our business and the value of our shares, ADSs and HDSs. For additional information, see *Additional information Legal Proceedings*.

Concessions, authorizations, licenses and permits are subject to renewal and various uncertainties and we might only renew some of our mining concessions a limited number of times and for limited periods of time.

Some of our mining concessions outside Brazil are subject to fixed expiration dates and might only be renewed a limited number of times for a limited period of time. Apart from mining concessions, we may need to obtain various authorizations, licenses and permits from governmental or other regulatory bodies in connection with the operation of our mines, which may be subject to fixed expiration dates or periodic review or renewal. While we anticipate that renewals will be given as and when sought, there is no assurance that such renewals will be given as a matter of course and there is no assurance that new conditions will not be imposed in connection therewith. Fees for mining concessions might increase substantially due to the passage of time from the original issuance of each individual exploration license. If so, our business objectives might be impeded by the costs of holding and/or renewing our mining concessions. Accordingly, we need to assess continually the mineral potential of each mining concession, particularly at the time of renewal, to determine if the costs of maintaining the mining concessions are justified by the results of operations to date, and might elect to let some of our concessions lapse. There can be no assurance that such concessions will be obtained on terms favorable to us, or at all, for our future intended mining and/or exploration targets.

Ineffective project management and other operational problems could materially and adversely affect our business and financial performance.

Ineffective project management and operational breakdowns might require us to suspend or curtail operations, which could generally reduce our productivity. Ineffective project management could mean that the logistics, including plant, machinery and transport, are not in place for continuous operation of our activities. Operational breakdowns could entail failure of critical plant and machinery. There can be no assurance that ineffective project management or other operational problems will not occur. Any damages to our projects or delays in our operations caused by ineffective project management or operational breakdowns could materially and adversely affect our business and results of operations.

The integration between the Company and those acquisition targets that are a key part of the Company's strategies might prove more difficult than anticipated.

We may not be able successfully to integrate our acquired businesses. We have grown our business in part through acquisitions, and some of our future growth could depend on acquisitions. The integration

Table of Contents

process following the completion of any acquisition by the Company might prove more difficult than anticipated. In addition, if the focus on this process after acquisitions impacts the performance of our existing businesses, the results and operations of the Company may be adversely affected. Integration of acquisition targets might take longer than expected and the costs associated with integration of acquisition targets might be higher than anticipated. Completed acquisitions could fail to achieve the increased revenues, cost savings or operational benefits that were anticipated at the time of their conception. Acquisitions could lead to the incurrence of substantial costs as a result of, for example, inconsistencies in standards, controls, procedures and policies between the Company and the acquisition target which could negatively affect our financial condition and results of operations. Management attention could be diverted from ordinary responsibilities to integration issues.

It could be difficult for investors to enforce any judgment obtained outside Brazil against us or any of our associates.

Our investors may be located in jurisdictions outside Brazil and could seek to bring actions against us or our directors or officers in the courts of their home jurisdictions. The Company is a Brazilian company, and the majority of our officers and directors are residents of Brazil. The vast majority of our assets and the assets of our officers and directors are likely to be located in jurisdictions other than the home jurisdictions of our investors. It might not be possible for the investors to effect service of process within their home jurisdictions on us or on our officers or directors who reside outside their home jurisdictions. In addition, foreign court orders will be enforceable in the courts of Brazil without a re-examination of the merits only if previously confirmed by the Brazilian Superior Court of Justice (*Superior Tribunal de Justiça*), which confirmation will only be granted if such judgment: (a) fulfills all formalities required for its enforceability under the laws of the country where it was issued; (b) was issued by a competent court after due service of process on the Company or after sufficient evidence of the Company's absence has been given, as required under applicable law; (c) is not subject to appeal; (d) was authenticated by a Brazilian consulate in the country in which it was issued and is accompanied by a sworn translation into the Portuguese language; (e) is for payment of a sum certain; and (f) is not contrary to Brazilian national sovereignty, public policy or good morals. Therefore investors might not be able to recover against us or our directors and officers on judgments of the courts of their home jurisdictions predicated upon the laws of such jurisdictions.

Risks relating to our depositary shares

If ADR holders or HDR holders exchange ADSs or HDSs, respectively, for the underlying shares, they risk losing the ability to remit foreign currency abroad.

The custodian for the shares underlying our ADSs and HDSs maintains a registration with the Central Bank of Brazil entitling it to remit U.S. dollars outside Brazil for payments of dividends and other distributions relating to the shares underlying our ADSs and HDSs or upon the disposition of the underlying shares. If an ADR holder or HDR holder exchanges its ADSs or HDSs for the underlying shares, it will be entitled to rely on the custodian's registration for U.S. dollars for only five business days from the date of exchange. Thereafter, an ADR holder or HDR holder may not be able to obtain and remit foreign currency abroad upon the disposition of, or distributions relating to, the underlying shares unless it obtains its own registration under Resolution No. 2,689 of the National Monetary Council ("CMN"), which permits qualifying institutional foreign investors to buy and sell securities on the BM&FBOVESPA. For more information regarding these exchange controls, see *Additional information Exchange controls and other limitations affecting security holders*. If an ADR holder or HDR holder attempts to obtain its own registration, it may incur expenses or suffer delays in the application process, which could delay the receipt of dividends or other distributions relating to the underlying shares or the return of capital in a timely manner.

We cannot assure ADR holders or HDR holders that the custodian's registration or any registration obtained will not be affected by future legislative changes, or that additional restrictions applicable to ADR holders or HDR holders, the disposition of the underlying shares or the repatriation of the proceeds from disposition will not be imposed in the future.

Table of Contents

ADR holders and HDR holders may be unable to exercise preemptive rights relating to the shares underlying their ADSs and HDSs.

ADR holders and HDR holders may not be able to exercise preemptive rights, or exercise other types of rights, with respect to the underlying shares. The ability of ADR holders and HDR holders to exercise preemptive rights is not assured, particularly if the applicable law in the holder's jurisdiction (for example, the Securities Act in the United States or the Companies Ordinance in Hong Kong) requires that either a registration statement be effective or an exemption from registration be available with respect to those rights, as is in the case in the United States, or that any document offering preemptive rights be registered as a prospectus, as is the case in Hong Kong. We are not obligated to file a registration statement in the United States, or to make any other similar filing in any other jurisdiction, relating to preemptive rights or to undertake steps that may be needed to make exemptions from registration available, and we cannot assure holders that we will file any registration statement or take such steps. We are also not obligated to extend the offer of preemptive rights to HDR holders through the depositary. For a more complete description of preemptive rights with respect to the underlying shares, see *Additional information Memorandum and articles of association Preemptive rights*.

ADR holders and HDR holders may encounter difficulties in the exercise of voting rights.

ADR holders and HDR holders do not have the rights of shareholders. They have only the contractual rights set forth for their benefit under the deposit agreements. ADR holders and HDR holders are not permitted to attend shareholders' meetings, and they may only vote by providing instructions to the depositary. In the event that we fail to provide the depositary with voting materials on a timely basis, or the depositary does not provide sufficient time for ADR holders and HDR holders to submit voting instructions, ADR holders and HDR holders will not be able to vote. With respect to ADSs for which instructions are not received, the depositary may, subject to certain limitations, grant a proxy to a person designated by us.

The legal protections for holders of our securities differ from one jurisdiction to another and may be inconsistent, unfamiliar or less effective than investors anticipate.

We are a global company with securities traded in several different markets and investors located in many different countries. The legal regime for the protection of investors varies around the world, sometimes in important respects, and investors in our securities should recognize that the protections and remedies available to them may be different from those to which they are accustomed in their home markets. We are subject to securities legislation in several countries, which have different rules, supervision and enforcement practices. The only corporate law applicable to us is the law of Brazil, with its specific substantive rules and judicial procedures. We are subject to corporate governance rules in several jurisdictions where our securities are listed, but as a foreign private issuer, we are not required to follow many of the corporate governance rules that apply to U.S. domestic issuers with securities listed on the New York Stock Exchange, and we are not subject to the U.S. proxy rules. Similarly, we have been granted waivers and exemptions from certain requirements of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited ("HKEx Listing Rules"), the Codes on Takeovers and Mergers and Share Repurchases and the Securities and Futures Ordinance of Hong Kong that are generally applicable to issuers listed in Hong Kong.

PRESENTATION OF FINANCIAL INFORMATION

We have prepared our financial statements in this annual report in accordance with generally accepted accounting principles in the United States ("U.S. GAAP"). We also publish financial statements in accordance with International Financial Reporting Standards ("IFRS"), which differ in certain respects from U.S. GAAP, and use IFRS in reports to Brazilian shareholders, in CVM filings, and in determining the legal minimum dividend under Brazilian law. Our Brazilian tax liability is determined based on accounting practices in effect in Brazil as of 2007, which differ in certain respects from both U.S. GAAP and IFRS.

Our financial statements and the other financial information in this annual report have been translated from Brazilian *reais* into U.S. dollars on the basis explained in Note 3 to our financial statements, unless we indicate otherwise.

Table of Contents

SELECTED FINANCIAL DATA

The tables below present selected consolidated financial information as of and for the periods indicated. You should read this information together with our consolidated financial statements in this annual report.

Statement of income data

	For the year ended December 31,				
	2006	**2007**	**2008**	**2009**	**2010**
	(US$ million)				
Net operating revenues	19,651	32,242	37,426	23,311	45,293
Cost of products and services	(10,147)	(16,463)	(17,641)	(13,621)	(18,814)
Selling, general and administrative expenses	(816)	(1,245)	(1,748)	(1,130)	(1,701)
Research and development	(481)	(733)	(1,085)	(981)	(878)
Impairment of goodwill			(950)		
Other expenses	(570)	(607)	(1,254)	(1,522)	(2,205)
Operating income	7,637	13,194	14,748	6,057	21,695
Non-operating income (expenses):					
Financial income (expenses)	(1,011)	(1,291)	(1,975)	351	(1,725)
Exchange and monetary gains, net	529	2,553	364	675	344
Gain on sale of investments	674	777	80	40	
Subtotal	192	2,039	(1,531)	1,066	(1,381)
Income before income taxes and equity results	7,829	15,233	13,217	7,123	20,314
Income taxes charge	(1,432)	(3,201)	(535)	(2,100)	(3,705)
Equity in results of affiliates and joint ventures and change in provision for gains on equity investments	710	595	794	433	987
Net income from continuing operations	7,107	12,627	13,476	5,456	17,596
Discontinued operations, net of tax					(143)
Net income	7,107	12,627	13,476	5,456	17,453
Net income attributable to non-controlling interests	(579)	(802)	(258)	(107)	(189)

Net income attributable to Company's shareholders	6,528	11,825	13,218	5,349	17,264
Total cash paid to shareholders(1)	1,300	1,875	2,850	2,724	3,000

(1) Consists of total cash paid to shareholders during the period, whether classified as dividends or interest on shareholders' equity.

Table of Contents

Basic and diluted earnings per share

	For the year ended December 31,(1)				
	2006	2007	2008(5)	2009	2010(6)
	(US$, except as noted)				
Earnings per share(2):					
Basic					
Per common share	1.35	2.41	2.58	0.97	3.23
Per preferred share	1.35	2.41	2.58	0.97	3.23
Diluted					
Per common share		2.42	2.61	1.00	3.24
Per preferred share		2.42	2.61	1.00	3.26
Weighted average number of shares outstanding (in thousands)(3):					
Common shares	2,943,216	2,943,216	3,028,817	3,181,706	3,210,023
Preferred shares	1,908,852	1,889,171	1,946,454	2,030,700	2,035,783
Treasury common shares underlying convertible notes		34,510	56,582	74,998	18,416
Treasury preferred shares underlying convertible notes		18,478	30,295	77,580	47,285
Total	4,852,068	4,885,375	5,062,148	5,364,984	5,311,507
Distributions to shareholders per share(4):					
In US$	0.27	0.39	0.56	0.53	0.57
In R$	0.58	0.74	1.09	1.01	0.98

(1) Share and per-share amounts for all periods give retroactive effect to all forward stock splits. We carried out two-for-one forward stock splits in September 2007 and in May 2006.

(2) Diluted earnings per share for 2007, 2008 and 2009 include preferred shares and common shares underlying the mandatorily convertible notes issued in June 2007. Diluted earnings per share for 2009 and 2010 also include preferred shares and common shares underlying the mandatorily convertible notes issued in July 2009.

(3) Each common ADS represents one common share and each preferred ADS represents one preferred share.

(4) Our distributions to shareholders may be classified as either dividends or interest on shareholders' equity. In many years, part of each distribution has been classified as interest on shareholders' equity and part has been classified as dividends. For information about distributions paid to shareholders, see *Share ownership and trading Distributions.*

(5) In July 2008, we issued 80,079,223 common ADSs, 176,847,543 common shares, 63,506,751 preferred ADSs and 100,896,048 preferred shares in a global equity offering. In August 2008, we issued an additional 24,660,419 preferred shares. In October 2008, our Board of Directors approved a share buy-back program, which was terminated on May 27, 2009. While the program was in effect, Vale acquired 18,415,859 common shares and 47,284,800 preferred class A shares, corresponding respectively to 1.5% and 2.4% of the outstanding shares of each class on the date the program was launched. For more information see *Share ownership and trading Purchases of equity securities by the issuer and affiliated purchasers*.

(6) On September 23, 2010, the Board of Directors approved a share repurchase program of up to US$2.0 billion that was completed by October 11, 2010. We acquired 21,682,700 common shares, at an average price of US$31.31 per share, and 48,197,700 preferred shares, at an average price of US$27.40

per share, totaling US$2.0 billion and corresponding respectively to 1.67% and 2.45% of the free float of each class at the outset of the program. The shares acquired are currently being held in treasury. For more information see *Share ownership and trading Purchases of equity securities by the issuer and affiliated purchasers*.

Table of Contents

Balance sheet data

	At December 31,				
	2006	2007	2008	2009	2010
	(US$ million)				
Current assets	12,940	11,380	23,238	21,294	31,791
Property, plant and equipment, net	38,007	54,625	49,329	68,810	84,370
Investments in affiliated companies and joint ventures and other investments	2,353	2,922	2,408	4,585	4,497
Other assets	7,626	7,790	5,017	7,590	8,481
Total assets	60,926	76,717	79,992	102,279	129,139
Current liabilities	7,312	10,083	7,237	9,181	17,912
Long-term liabilities(1)	10,008	13,195	10,173	12,703	17,195
Long-term debt(2)	21,122	17,608	17,535	19,898	21,591
Total liabilities	38,442	40,886	34,945	32,601	38,786
Redeemable non-controlling interests	346	375	599	731	712
Shareholders' equity:					
Capital stock	8,119	12,306	23,848	23,839	23,726
Additional paid-in capital	498	498	393	411	2,188
Mandatorily convertible notes common ADSs		1,288	1,288	1,578	290
Mandatorily convertible notes preferred ADSs		581	581	1,225	644
Reserves and retained earnings	11,056	18,603	16,446	29,882	42,051
Total Company shareholders' equity	19,673	33,276	42,556	56,935	68,899
Non-controlling interests	2,465	2,180	1,892	2,831	2,830
Total shareholders' equity	22,138	35,456	44,448	59,766	71,729
Total liabilities and shareholders' equity	60,926	76,717	79,992	102,279	129,139

(1) Excludes long-term debt.

(2) Excludes current portion of long-term debt.

Table of Contents

I. INFORMATION ON THE COMPANY

BUSINESS OVERVIEW

Summary

We are the second-largest metals and mining company in the world and the largest in the Americas, based on market capitalization. We are the world's largest producer of iron ore and iron ore pellets and the world's second-largest producer of nickel. We are one of the world's largest producers of manganese ore and ferroalloys. We also produce copper, thermal and coking coal, phosphates, potash, cobalt, kaolin, and platinum group metals ("PGMs"). To support our growth strategy, we are actively engaged in mineral exploration efforts in 24 countries around the globe. We operate large logistics systems in Brazil, including railroads, maritime terminals and a port, which are integrated with our mining operations. In addition, we have a maritime freight portfolio to transport iron ore. Directly and through affiliates and joint ventures, we have investments in energy and steel businesses.

The following table presents the breakdown of our total gross operating revenues attributable to each of our main lines of business, each of which is described in the following table.

	Year ended December 31,					
	2008		2009		2010	
	(US$ million)	(% of total)	(US$ million)	(% of total)	(US$ million)	(% of total)
Bulk materials:						
Iron ore	US$17,775	46.2%	US$12,831	53.6%	US$26,384	56.8%
Iron ore pellets	4,301	11.2	1,352	5.6	6,402	13.7
Manganese	266	0.7	145	0.6	258	0.6
Ferroalloys	1,211	3.1	372	1.6	664	1.4
Coal	577	1.5	505	2.1	770	1.6
Subtotal bulk materials	US$24,130	62.7%	US$15,205	63.5%	US$34,478	74.2%
Base metals:						
Nickel	US$ 5,970	15.5%	US$ 3,260	13.6%	US$ 3,835	8.2%
Copper	2,029	5.3	1,130	4.7	1,608	3.4
PGMs	401	1.0	132	0.6	101	0.2
Other precious metals	111	0.3	65	0.3	72	0.2
Cobalt	212	0.6	42	0.2	30	0.1
Aluminum	3,042	7.9	2,050	8.6	2,554	5.5
Subtotal base metals	US$11,765	30.6%	US$ 6,679	28.0%	US$ 8,200	17.6%
Fertilizer nutrients	295	0.8	413	1.7	1,846	4.0
Logistics services	1,607	4.2	1,104	4.6	1,465	3.2
Other products and services(1)	712	1.9	538	2.2	492	1.1
Total gross operating revenues	US$38,509	100.0%	US$23,939	100.0%	US$46,481	100.0%

(1) Includes kaolin, pig iron and energy.

Bulk materials:

- *Iron ore and iron ore pellets.* We operate four systems in Brazil for producing and distributing iron ore: the Northern, Southeastern, Southern and Midwestern systems. The Northern and the Southeastern Systems are fully integrated, consisting of mines, railroads, a maritime terminal and a port. The Southern System consists of three mining sites and two maritime terminals. We operate 10 pellet plants in Brazil and we have two in Oman coming on stream. We also have a 50% stake in a joint venture that owns three integrated pellet plants in Brazil and a 25% stake in two pellet companies in China.

Table of Contents

- *Manganese and ferroalloys.* We conduct our manganese mining operations through subsidiaries in Brazil, and we produce several types of manganese ferroalloys through subsidiaries in Brazil, France and Norway.

- *Coal:* We produce metallurgical and thermal coal through Vale Australia Holdings ("Vale Australia"), which operates coal assets in Australia through wholly owned subsidiaries and unincorporated joint ventures. Through our subsidiary Vale Coal Colombia Ltd. Sucursal Colombia ("Vale Colombia") we produce thermal coal in the Cesar department of Colombia. We also have minority interests in Chinese coal and coke producers.

Base metals:

- *Nickel.* Our principal nickel mines and processing operations are conducted by our wholly owned subsidiary Vale Canada Limited ("Vale Canada", formerly Vale Inco Limited), which has mining operations in Canada and Indonesia. We are ramping up our Onça Puma nickel operations in Brazil and are in the final phase of commissioning our nickel operations in New Caledonia. We own and operate, or have interests in, nickel refining facilities in the United Kingdom, Japan, Taiwan, South Korea and China.

- *Copper.* In Brazil, we produce copper concentrates at Sossego in Carajás, in the state of Pará. In Canada, we produce copper concentrates, copper anodes and copper cathodes in conjunction with our nickel mining operations at Sudbury and Voisey Bay. In Chile, we are ramping up the Tres Valles copper SX-EW (solvent extraction electro winning) operation, located in the Coquimbo region.

- *Aluminum.* Until February 2011, we engaged in bauxite mining, alumina refining and aluminum smelting through subsidiaries in Brazil. After several related transactions that closed in February 2011, we hold a 22.0% interest in Norsk Hydro ASA ("Hydro") which we received as part of the consideration for the transfer to Hydro of our interests in Alumínio Brasileiro S.A. ("Albras"), Alumina do Norte do Brasil S.A. ("Alunorte") and Companhia de Alumina do Pará ("CAP"). We are still engaged in bauxite mining through a 40.0% interest in Mineração Rio do Norte S.A. ("MRN"), and a remaining 40.0% interest in Mineração Paragominas S.A. ("Paragominas"), which we will subsequently transfer to Hydro in two equal tranches in 2013 and 2015. Both of MRN and Paragominas are located in Brazil.

- *Cobalt.* We produce cobalt as a by-product of our nickel mining and processing operations in Canada and refine the majority of it at our Port Colborne facilities.

- *PGMs.* We produce PGMs as by-products of our nickel mining and processing operations in Canada. The PGMs are concentrated at our Port Colborne facilities, in the Province of Ontario, Canada, and refined at our precious metals refinery in Acton, England.

- *Other precious metals.* We produce gold and silver as by-products of our nickel mining and processing operations in Canada. Some of these precious metals are upgraded at our facilities in Port Colborne, Ontario, and all are refined by unrelated parties in Canada.

Fertilizer nutrients: We produce potash in Brazil, with operations in Rosario do Catete, in the state of Sergipe. Our main phosphate operations are conducted by our subsidiary Vale Fertilizantes S.A. ("Vale Fertilizantes"), which holds the majority of our fertilizer assets in Brazil and is the largest Brazilian producer of phosphate rock, phosphate and nitrogen fertilizers. In addition, we are ramping up operations at Bayóvar, a phosphate rock mine in Peru.

16

Table of Contents

Logistics services: We are a leading provider of logistics services in Brazil, with railroads, maritime terminals and a port. Two of our four iron ore systems incorporate an integrated railroad network linked to automated port and terminal facilities, which provide rail transportation for our mining products, general cargo and passengers, bulk terminal storage, and ship loading services for our mining operations and for customers. We conduct seaborne dry bulk shipping and provide tug boat services. We own and charter vessels to transport our iron ore sold on a cost and freight ("CFR") basis to customers. Our tug boat services provide an efficient and safe towing service at our terminals in Brazil. We also own a 31.3% interest in Log-In Logística Intermodal S.A. ("Log-In"), which provides intermodal logistics services in Brazil, Argentina and Uruguay, and a 41.5% interest in MRS Logística S.A. ("MRS"), which transports our iron ore products from the Southern System mines to our Guaíba Island and Itaguaí maritime terminals, in the state of Rio de Janeiro.

Business strategy

Our mission is to transform mineral resources into prosperity and sustainable development. Our vision is to become the largest mining company in the world by market capitalization, and to surpass established standards of excellence in research, development, project implementation and business operations. We aim to increase our geographical and product diversification and logistics capabilities. Iron ore and nickel will continue to be our main businesses while we boost the production capacity of our copper, coal and fertilizer nutrients businesses. To enhance our competitiveness, we will continue to invest in our railroads, maritime terminals, maritime freight portfolio and power generation capacities. We continue to seek opportunities to make strategic acquisitions, while focusing on disciplined capital management in order to maximize return on invested capital and total return to shareholders. Below are highlights of our major business strategies.

Maintaining our leadership position in the global iron ore market

We continue to consolidate our leadership in the global iron ore market. In 2009 and 2010, we had an estimated market share of 24.9% and 24.7%, respectively, of the total volume traded in the seaborne market. We are committed to maintaining our leadership position in the global iron ore market, by focusing our product line to capture industry trends, increasing our production capacity in line with demand growth, controlling costs, strengthening our logistics infrastructure of railroads, ports, shipping and distribution centers, and strengthening relationships with customers. Our diversified portfolio of high quality products, strong technical marketing strategy, efficient logistics and strong and long-standing relationships with major customers will help us achieve this goal. We have also encouraged steelmakers to develop steel projects in Brazil through joint ventures in which we may preferably hold minority stakes, in order to create additional demand for our iron ore.

Achieving leadership in the nickel business

We are the world's second-largest nickel producer, with large-scale, long-life and low-cost operations, a substantial resource base, diversified mining operations producing both nickel sulfides and laterites, advanced technology and a robust growth profile. We have refineries in North America, Europe and Asia, which produce an array of products for use in most nickel applications. We are a leading producer of high-quality nickel products for non-stainless steel applications, such as plating, alloy steels, high nickel alloys and batteries, which represented 65% of our nickel sales in 2010. Our long-term goal is to strengthen our leadership in the nickel business.

Developing our copper resources

We believe that our copper projects, most of which are situated in the Carajás mineral province in the Brazilian state of Pará, could be among the most competitive in the world in terms of investment cost per metric ton of ore. We are developing the Salobo project to produce copper concentrate. We expect these copper mines to benefit from our infrastructure facilities serving the Northern System. We are ramping up the Tres Valles copper project in Chile, and we have started developing the Konkola North copper mine in Zambia, Africa through a joint venture with African Rainbow Minerals Limited ("ARM"). We are engaged in mineral exploration in several countries to increase our reserve base.

Table of Contents

Investing in coal

We are pursuing various opportunities to become a large global player in the coal business. We have coal operating assets and a portfolio of exploration projects in Australia and Colombia, and minority interests in two joint ventures in China. We intend to continue pursuing organic growth in the coal business through the start-up of the Moatize project in Mozambique and its subsequent expansion, the development of more advanced coal exploration projects in Australia and Colombia, and mineral exploration initiatives in several countries, including Mozambique and Mongolia.

Investing in fertilizer nutrients

We are actively investing with the aim of becoming one of the world's largest producers of potash and phosphate rock in order to benefit from rising global consumption of agricultural products, which is expected to grow significantly, especially in emerging market countries. We expect per capita income growth and the growing use of biofuels to drive demand for fertilizers. In this context, Brazil is expected to play a key role in the global agricultural market, given its position as a global agricultural powerhouse and its growth potential, mainly due to its access to water and arable land.

We understand the fertilizer industry, having successfully operated a potash mine in Brazil (Taquari-Vassouras) since the early nineties, and in 2010 we started the ramp-up of the Bayóvar phosphate rock operation in Peru, our first greenfield project for the production of fertilizers. Also during 2010, we expanded our fertilizer nutrients operations through the acquisition of Brazilian phosphate and nitrogen operations, now consolidated under Vale Fertilizantes. Our portfolio, which includes a phosphate operation in Peru and project in Mozambique and potash projects in Argentina, Brazil and Canada, positions us to capture a significant portion of market growth. In addition, we are engaged in several phosphate rock and potash mineral exploration projects around the world as part of our growth strategy. For more information, see *Significant changes in our business* below.

Diversification and expansion of our resource base

We are actively engaged in a mineral exploration program, with efforts in 24 countries around the globe. We are mainly seeking new deposits of coal, copper, iron ore, manganese ore, nickel, phosphates, natural gas, PGMs, potash and uranium. Mineral exploration is an important part of our organic growth strategy.

Enhancing our logistics capacity to support our bulk materials business

We believe that the quality of our railway assets and extensive experience as a railroad and port operator, together with the lack of efficient transportation for general cargo in Brazil, position us as a leader in the logistics business in Brazil. We have been expanding the capacity of our railroads primarily to meet the needs of our iron ore business.

To support our commercial strategy for our iron ore business, we continue to invest in a dedicated maritime freight shuttle service from Brazil to Asia and in the development of distribution centers in Asia and the Middle East in order to minimize freight costs and maximize flexibility so as to enhance the competitiveness of our iron ore business in these regions.

In order to position ourselves for future expansion of our coal production in Mozambique and leverage our presence in Africa, we acquired control of Sociedade de Desenvolvimento do Corredor do Norte S.A. ("SDCN"), and will expand its capacity to develop the logistic corridor coming from our mine to the port of Nacala.

Table of Contents

Optimizing our energy matrix

Energy management and efficient supply have become a priority for us. As a large consumer of electricity, we believe that investing in power generation projects to support our operations will help protect us against volatility in the price of energy, regulatory uncertainties and the risk of energy shortages. Accordingly, we have developed hydroelectric power generation plants in Brazil, Canada and Indonesia, and we currently generate 45% of our worldwide electricity needs from our own plants, after accounting for the transfer of our aluminum production portfolio. As a potentially large consumer of natural gas, in 2007 we began investing in natural gas exploration in Brazil through consortia, and in 2009 we made our first discoveries.

We are seeking to develop a cleaner energy matrix by investing to develop clean energy sources such as biofuels and focusing on reducing our carbon footprint.

Significant changes in our business

We summarize below major acquisitions, divestitures and other significant developments since the beginning of 2010.

Index-based quarterly pricing for iron ore

We reached agreements with all our iron ore customers during the first half of 2010 to move from annual benchmark contracts to quarterly index-based contracts. The previous annual benchmark pricing system for iron ore, based on annual bilateral negotiations, has been replaced by a new system under which iron ore prices are established quarterly based on a three-month average of price indices for the period ending one month before the beginning of the new quarter. The move towards increased price flexibility brings more efficiency and transparency to iron ore pricing and allows for the recognition of quality differences, which helps encourage long-term investment. In addition, clients are able to know beforehand the price to be paid in the subsequent quarter.

Acquisition of iron ore assets in Guinea

In the second quarter of 2010, we acquired a 51% interest in VBG Vale BSGR Limited (formerly BSG Resources (Guinea) Limited), which holds iron ore concession rights in Simandou South (Zogota) and iron ore exploration permits in Simandou North (Blocks 1 & 2) in Guinea. We agreed to pay US$2.5 billion in cash, of which US$500 million was paid at closing and the balance will be paid in installments upon the achievement of agreed upon milestones. In connection with this acquisition, we have committed to renovate 660 kilometers of the Trans-Guinea railway for passenger transportation and light commercial use. We are currently negotiating contracts with the government of Liberia for the construction of an integrated railway-port system for transporting iron ore output from Simandou to a maritime terminal on the Atlantic coast in Liberia.

Acquisition of phosphate operations in Brazil

In a series of transactions during 2010, we acquired the Brazilian phosphate operations of Vale Fertilizantes (formerly Fertilizantes Fosfatados S.A. Fosfertil) and Vale Fosfatados S.A. (formerly Bunge Participações e Investimentos S.A.). On February 1, 2011, Vale Fosfatados merged into Vale Fertilizantes. As of the date of this report, we own 84.3% of the shares of Vale Fertilizantes, including 99.9% of its common shares. The total cost of these acquisitions was US$5.829 billion. The sellers included Bunge Ltd., The Mosaic Company ("Mosaic"), Yara Brasil Fertilizantes S.A. and other Brazilian companies.

Table of Contents

Acquisition of Biopalma in Brazil

In February 2011, we invested US$173.5 million to acquire control of Biopalma, in the state of Pará, Brazil. Biopalma will produce palm oil, a raw material used to make biodiesel, and most of the production will be used for a B20 mix (a blend of 20% biodiesel and 80% regular diesel) to power our fleet of locomotives, heavy-duty machinery and equipment. Our investment in producing biodiesel is part of our strategic emphasis on global sustainability.

Acquisition of copper assets in the African copperbelt

In April 2011, Vale and Metorex Limited ("Metorex") agreed to the terms of Vale's offer to acquire the total share capital of Metorex for US$1.125 billion, to be paid in cash. Metorex is a producer of copper and cobalt, with operations in the African copperbelt. Metorex has two operating mines, Chibuluma located in Zambia, in which it holds an 85% interest, and Ruashi in the Democratic Republic of the Congo (DRC), in which it holds a 75% interest. Metorex also has three projects in the DRC, one in the development phase and two in the exploration phase. Metorex shareholders will be asked to vote on the proposed acquisition, which will be implemented through a scheme of arrangement pursuant to South Africa's Companies Act. The acquisition of 100% of the share capital of Metorex requires approval by at least 75% of Metorex shareholders' voting rights, of which we have already received irrevocable undertakings representing 25.8%. The acquisition is also conditional on approvals by applicable governments and regulators, and by minority holders in Metorex's subsidiary companies, as well as to customary closing conditions.

Acquisition of stake in Belo Monte energy project

In April 2011, our Board of Directors approved the acquisition, subject to certain conditions, of up to 9% of Norte Energia S.A. ("NESA"), which is currently held by Gaia Energia e Participações S.A. ("Gaia"). NESA was established with the sole purpose of implementing, operating and exploring the Belo Monte hydroelectric plant in the Brazilian state of Pará. Vale will reimburse Gaia for capital invested into NESA and will assume future capital investment commitments related to the acquired stake, which are estimated at R$2.3 billion (US$1.4 billion). The acquisition is consistent with our strategy of reducing operational costs and minimizing energy price and supply risks.

Organic growth

We have an extensive program of investments in the organic growth of our businesses. Our main investment projects are summarized under *Capital expenditures and projects*. The most significant projects that have come on stream since the beginning of 2010 are summarized below:

Carajás Additional 20 Mtpy At the end of the first quarter of 2010, we started operating new facilities that added 20 million metric tons per year ("Mtpy") to the capacity of our Carajás iron ore mining operations. Due to debottlenecking and the development of operational flexibility, we were able to double the size of the capacity increase from our original plans of 10 Mtpy.

TKCSA Thyssen-Krupp Companhia Siderúrgica do Atlântico ("TKCSA"), a steel slab plant in the state of Rio de Janeiro, Brazil, began operations in 2010. The plant has a capacity of 5 Mtpy. Vale has a 26.87% stake and is the exclusive supplier of iron ore and pellets.

Bayóvar In the beginning of the third quarter of 2010, we started ramping up operations at Bayóvar, a phosphate rock mine in Peru, with nominal production capacity of 3.9 Mtpy. Bayóvar came on stream on time and is one of the lowest-cost phosphate rock mines in the world. It is our first greenfield project in the fertilizer business and also our first greenfield mining project concluded outside Brazil. We control Bayóvar with 51% of voting shares and 40% of the total equity. The other investors are Mosaic and Mitsui & Co., Ltd ("Mitsui").

Tres Valles In the fourth quarter, we started production at the Tres Valles copper operation in the Coquimbo region of Chile. The hydrometallurgical process has an estimated nominal production capacity of 18,500 metric tons per year of copper cathodes.

Table of Contents

Onça Puma In March of 2011, we started the ramp-up of Onça Puma, a nickel operation (mine and processing plant) in the Brazilian state of Pará. Its nominal production capacity is 53,000 metric tons per year of nickel contained in ferro-nickel, its final product.

Oman The Oman operations, in the industrial site of Sohar, Oman, are coming on stream and consist of two pellet plants, each with the capacity to produce 4.5 Mtpy, adding an aggregate of 9.0 Mtpy to our production capacity. The two pellet plants will produce direct reduction pellets. The first plant is commissioned and started up production in April 2011. The second plant is expected to reach the ramp-up stage by the second half of 2011. We are also developing a bulk terminal and a distribution center with the capacity to handle 40 Mtpy.

Estreito In March 2011, the first of eight turbines of the Estreito hydroelectric power plant became operational. Estreito is our first hydroelectric power plant in the Northern region and is located near the Tocantins River, on the border of the Brazilian states of Maranhão and Tocantins. The plant will have an installed capacity of 1,087 megawatts. We have a 30% stake in the consortium that operates the plant.

Aluminum portfolio management

In February 2011, we transferred a substantial part of our aluminum businesses to Hydro, an integrated aluminum company with operations in Norway and other countries that is listed on the Oslo Stock Exchange and the London Stock Exchange (ticker symbol: NHY). We transferred our interests in Albras, Alunorte and CAP, with net debt of US$655 million, along with off-take rights and outstanding commercial contracts, for US$503 million in cash and shares in Hydro representing a 22.0% interest in its equity. As part of the transaction, we transferred the Paragominas bauxite mine and all of our other Brazilian bauxite mineral rights (apart from rights owned through our stake in MRN) to the newly incorporated company Mineração Paragominas S.A. ("Paragominas"), 60.0% of which we transferred to Hydro in exchange for US$578 million in cash. We will transfer the remaining 40.0% of Paragominas in two equal tranches in 2013 and 2015, each in exchange for US$200 million in cash. In addition, as part of the agreement, Tito Martins, our Executive Officer of Base Metals Operations, has joined Hydro's board.

Other divestitures

We are always seeking to optimize the structure of our portfolio of businesses. To that end, we dispose of assets from time to time that we have determined to be non-strategic. We summarize below our most significant dispositions and asset sales since the beginning of 2010.

In June 2010, our wholly owned subsidiary Valesul Alumínio S.A. concluded the sale of its aluminum assets in the state of Rio de Janeiro, Brazil. The assets were sold to the Metalis group for US$31.2 million.

In July 2010, we completed the sale of our 86.2% stake in Pará Pigmentos S.A. ("PPSA"), a kaolin producer, and other kaolin mining rights located in the state of Pará, Brazil. The shares of PPSA and the kaolin mining rights were sold to Imerys S.A. for US$74 million.

Listing on the Hong Kong Stock Exchange

In the fourth quarter of 2010, we listed on The Stock Exchange of Hong Kong Limited ("HKEx") depositary receipts representing our common shares and our class A preferred shares. The HDRs began trading on the HKEx on December 8, 2010.

Asia is the main market for our products and is becoming increasingly important. Listing our HDRs on the HKEx using current common and preferred shares outstanding will provide direct exposure to Asian capital markets, which are of significant size and are the fastest growing in the world.

Table of Contents

LINES OF BUSINESS

Our principal lines of business consist of mining and logistics services. We also invest in energy to supply part of our consumption. This section presents information about operations, production, sales and competition and is organized as follows.

1. Bulk materials

1.1 Iron ore
1.1.1 Operations
1.1.2 Production

1.2 Iron ore pellets
1.2.1 Operations
1.2.2 Production

1.3 Iron ore and iron ore pellets
1.3.1 Customers, sales and marketing
1.3.2 Competition

1.4 Manganese ore

1.5 Ferroalloys

1.6 Manganese ore and ferroalloys:
sales and competition

1.7 Coal
1.7.1 Operations
1.7.2 Production
1.7.3 Customers and sales
1.7.4 Competition

2. Base metals

2.1 Nickel
2.1.1 Operations
2.1.2 Production
2.1.3 Customers and sales
2.1.4 Competition

2.2 Copper
2.2.1 Operations
2.2.2 Production
2.2.3 Customers and sales
2.2.4 Competition

2.3 Aluminum
2.3.1 Bauxite

2.4 PGMs and other precious metals

2.5 Cobalt

3. Fertilizer nutrients

3.1 Phosphates

3.2 Potash

3.3 Customers and sales

3.4 Competition

4. Infrastructure

4.1 Logistics services
4.1.1 Railroads
4.1.2 Ports and maritime terminals
4.1.3 Shipping

4.2 Energy
4.2.1 Electric power
4.2.2 Oil and natural gas

5. Other investments

Table of Contents

23

Table of Contents

1. Bulk materials

Our bulk materials business includes iron ore mining, iron ore pellet production, manganese ore mining, ferroalloy production and coal production. Each of these activities is described below.

1.1 Iron ore

1.1.1 Operations

We conduct our iron ore business in Brazil primarily at the parent-company level and through our wholly owned subsidiaries Urucum Mineração S.A. ("Urucum") and Mineração Corumbaiense Reunidas ("MCR"). Our mines, all of which are open-pit, and their related operations are mainly concentrated in three systems: the Southeastern System, the Southern System and the Northern System, each with its own transportation capability. We also conduct mining operations in the Midwestern System and through joint venture Samarco Mineração S.A. ("Samarco").

Company	System	Our share of capital		Partners
		Voting	Total	
		(%)		
Vale	Northern, Southeastern, Southern and Midwestern			
Urucum	Midwestern	100.0	100.0	
MCR	Midwestern	100.0	100.0	
Samarco		50.0	50.0	BHP Billiton

Southeastern System

The Southeastern System mines are located in the Iron Quadrangle region of the state of Minas Gerais, where they are divided into three mining sites (Itabira, Minas Centrais and Mariana).

The ore reserves in the three mining sites have high ratios of itabirite ore relative to hematite ore. Itabirite ore has iron grade of 35-60% and requires concentration to achieve shipping grade, which is at least 63.5% average iron grade.

We conduct open-pit mining operations in the Southeastern System. At the three mining sites, we generally process the run-of-mine by means of standard crushing, classification and concentration steps, producing sinter feed, lump ore and pellet feed in the beneficiation plants located at the mining sites. In 2010, we produced 65.3% of the electric energy consumed in the Southeastern System at our hydroelectric power plants (Igarapava, Porto Estrela, Funil, Candonga, Aimorés, Capim Branco I and Capim Branco II).

We own and operate integrated railroad and terminal networks in the three mining sites, which are accessible by road or by spur tracks of our EFVM railroad. The EFVM railroad connects these mines to the Tubarão port in Vitória, in the state of Espírito Santo. For a more detailed description of the networks, see *Logistics*.

Southern System

The Southern System mines are located in the Iron Quadrangle region of the state of Minas Gerais in Brazil. The mines of our subsidiary Minerações Brasileiras Reunidas S.A. MBR ("MBR") are operated at the parent-company level pursuant to an asset lease agreement. The Southern System has three major mining complexes: Minas Itabirito (comprised of four mines, with two major beneficiation plants and three secondary beneficiation plants); Vargem Grande (comprised of three mines and one major beneficiation plant); and Paraopeba (comprised of four mines and three beneficiation plants).

Table of Contents

We beneficiate run-of-mine obtained from open pit mining operations into sinter feed, lump ore and pellet feed. In 2010, we produced 63.3% of the electric energy consumed in the Southern System at our hydroelectric power plants (Igarapava, Porto Estrela, Funil, Candonga, Capim Branco I and Capim Branco II).

We enter into freight contracts with our affiliate, MRS, an affiliate railway company in which we own a 41.5% stake, to transport our iron ore products at market prices from the mines to our Guaíba Island and Itaguaí maritime terminals in the state of Rio de Janeiro.

Northern System

The Northern System mines, located in the Carajás mineral province of the Brazilian state of Pará, contain some of the largest iron ore deposits in the world. The reserves are divided into northern, southern and eastern ranges situated 35 kilometers apart. Since 1985, we have been conducting mining activities in the northern range, which is divided into three main mining bodies (N4W, N4E and N5). The Northern System has open-pit mines and an ore-processing plant. The mines are located on public lands for which we hold mining concessions.

Because of the high grade (66.7% on average) of the Northern System deposits, we do not need to operate a concentration plant at Carajás. The beneficiation process consists simply of sizing operations, including screening, hydrocycloning, crushing and filtration. Output from the beneficiation process consists of sinter feed and pellet feed. We obtain all of the electrical power for the Northern System at market prices from regional utilities.

We operate an integrated railroad and maritime terminal network in the Northern System. After completion of the beneficiation process, our EFC railroad transports the iron ore to the Ponta da Madeira maritime terminal in the state of Maranhão. To support our Carajás operations, we have housing and other facilities in a nearby township. These operations are accessible by road, air and rail.

Midwestern System

The Midwestern System is comprised of the mines of Urucum and Corumbá, located in the state of Mato Grosso do Sul.

We conduct open-pit mining operations in the Midwestern System. The Urucum ore reserves contain a high ratio of hematite ore, which has an average grade of 62.2%. In September 2009, we concluded the acquisition of the Corumbá mine, where we produce lump ores. At the Urucum and Corumbá mines, we generally process the run-of-mine by means of standard crushing and classification steps, producing lumps and fines.

Iron ore products from the Urucum and Corumbá mines are delivered to customers by barges traveling along the Paraguay and Paraná rivers.

Samarco

We own 50.0% of Samarco, which operates an integrated system comprised of a mine, pipeline, three pellet plants and a port. Samarco's Alegria mine complex, located in Mariana, Minas Gerais, is in the same region as our Mariana complex in the Southeastern System.

Table of Contents

1.1.2 Production

The following table sets forth information about our iron ore production.

Mine/Plant	Type	Production for the year ended December 31, 2008	2009	2010	Recovery rate
		(million metric tons)			(%)
Southeastern System					
Itabira					
Cauê(1)	Open pit	21.5	13.8	19.3	68.0
Conceição(1)	Open pit	20.3	17.3	19.4	75.2
Minas Centrais					
Água Limpa/Cururu(2)	Open pit	4.7	1.4	5.0	52.9
Gongo Soco	Open pit	5.0	2.7	6.8	90.1
Brucutu	Open pit	26.4	23.6	29.7	79.1
Andrade(3)	Open pit	1.4	0.7		
Mariana					
Alegria	Open pit	12.3	12.1	13.6	81.8
Fábrica Nova(4)	Open pit	14.0	13.7	12.5	66.9
Fazendão(5)	Open pit	9.8	3.1	10.6	100
Timbopeba	Open pit				
Total Southeastern System		115.4	88.5	116.9	
Southern System					
Minas Itabirito					
Segredo/João Pereira(6)	Open pit	12.1	8.4	12.4	73.5
Sapecado/Galinheiro(7)	Open pit	15.1	9.8	17.7	67.0
Vargem Grande					
Tamanduá(8)	Open pit	9.8	7.3	8.6	83.4
Capitão do Mato(8)	Open pit	9.7	8.0	8.2	83.4
Abóboras	Open pit	4.2	5.4	5.2	100
Paraopeba					
Jangada	Open pit	4.3		3.5	98.9
Córrego do Feijão	Open pit	8.4	5.6	6.8	79.3
Capão Xavier(9)	Open pit	13.5	10.9	9.3	82.3
Mar Azul	Open pit	3.5		3.0	100
Total Southern System		80.5	55.2	74.7	
Midwestern System					
Corumbá	Open pit		0.4	2.8	62.9
Urucum	Open pit	1.0	0.5	1.4	55.3
Total Midwestern System		1.0	1.0	4.2	
Northern System					
Serra Norte(10)					
N4W	Open pit	44.3	31.0	30.2	92.4
N4E	Open pit	13.2	16.9	34.0	92.4
N5	Open pit	39.1	36.8	37.0	92.4
Total Northern System		96.5	84.6	101.2	
Vale		293.4	229.3	297.0	
Samarco(11)		8.3	8.6	10.8	57.2
Total		301.7	238.0	307.8	

(1)

The run-of-mine from the Minas do Meio and Conceição mines is sent to the Cauê and Conceição concentration plants.

(2) Água Limpa/Cururu mines and plants are owned by Baovale, in which we own 100% of the voting shares and 50% of the total shares. Production figures for Água Limpa/Curucu have not been adjusted to reflect our ownership interest.

(3) The lease for the Andrade mine was terminated in 2009.

(4) Fábrica Nova ore is sent to the Alegria and Fábrica Nova plants.

(5) Fazendão ore is sent to the Alegria plant and Samarco.

(6) Segredo and João Pereira ore is processed at the Fábrica plant.

(7) Galinheiro and Sapecado ore is processed at the Pico plant.

(8) Tamanduá and Capitão do Mato ores are processed at the Vargem Grande plant.

(9) Capão Xavier ore is processed at the Mutuca plant.

(10) All Serra Norte ores are processed at the Carajás plant.

(11) Production figures for Samarco, in which we have a 50% interest, are adjusted to reflect our ownership interest.

Table of Contents

1.2 Iron ore pellets

1.2.1 Operations

Directly and through joint ventures, we produce iron ore pellets in Brazil, Oman and China, as set forth in the following table. Our total estimated nominal capacity is 45.3 Mtpy, not including the nominal capacity of our joint ventures of 22.2 Mtpy from Samarco, 4.5 Mtpy from Hispanobras, 1.2 Mtpy from Zhuhai and 1.2 Mtpy from Anyang. After ramping up our pellet plants in Oman, we will add 9.0 Mtpy of nominal capacity.

		Our share of capital		
Company	**Site of operation**	**Voting (%)**	**Total**	**Partners**
	Brazil:			
Vale	Tubarão, Fábrica, Vargem Grande and São Luís			
Hispanobras	Tubarão	51.0	50.9	Arcelor Mittal
Samarco	Mariana and Anchieta	50.0	50.0	BHP Billiton
	China:			
Zhuhai YPM	Zhuhai, Guangdong	25.0	25.0	Zhuhai Yueyufeng Iron and Steel Co. Ltd. Pioneer Iron and Steel Group Co. Ltd.
Anyang Yu Vale Yongtong Pellet Co. Ltd.	Anyang, Henan	25.0	25.0	Anyang Iron & Steel Co. Ltd.
	Oman:			
Vale Oman Pelletizing Company LLC (VOPC)	Sohar industrial complex	100.0	100.0(1)	

(1) We entered into an agreement to sell 30% of our voting shares and total capital to the Oman Oil Company S.A.O.C. (OOC).

In the Tubarão port area, in the Brazilian state of Espírito Santo, we operate our wholly owned pellet plants, Tubarão I and II, four plants we lease under operating leases and our jointly-owned plant, Hispanobras. We send iron ore from our Southeastern System mines to these plants and use our logistics infrastructure to distribute their final products.

Our São Luís pellet plant, located in the Brazilian state of Maranhão, is part of the Northern System. We send Carajás iron ore to this plant and ship its production to customers through our Ponta da Madeira maritime terminal.

The Fábrica and Vargem Grande pellet plants, located in the Brazilian state of Minas Gerais, are part of the Southern System. We send some of the iron ore from the Fábrica mine to the Fábrica plant, and iron ore from the Pico mine to the Vargem Grande plant. We transport pellets from the Vargem Grande plant using MRS, and pellets from the Fábrica plant using both MRS and EFVM.

We started up a pelletizing operation in the Sohar industrial complex in Oman, in the Middle East. The two pellet plants will each have production capacity of 4.5 Mtpy, totaling 9 Mtpy of direct reduction pellets. The pellet plants are located in an area where we will have a distribution center with capacity to handle 40 Mtpy.

Samarco operates three pellet plants in two operating sites with nominal capacity of 22.2 Mtpy. The pellet plants are located in the Ponta Ubu unit, in Anchieta, Espírito Santo. Iron ore from Alegria and our Southeastern System mine Fábrica Nova supplies the Samarco pellet plants using a 396-kilometer pipeline, the longest pipeline in the world for the conveyance of iron ore. Samarco has its own port facilities to transport its production.

The Zhuhai YPM pellet plant, in China, is part of the Yueyufeng Steelmaking Complex. It has port facilities, which we use to send feed from our mines in Brazil. Zhuhai YPM's main customer is Yueyufeng Iron & Steel ("YYF"), which is also located in the Yueyufeng Steelmaking Complex. We also own a 25% interest in Anyang Yu Vale Yongtong Pellet Co. Ltd, which is a pelletizing operation in China with the capacity to produce 1.2 Mtpy that started production in March 2011.

Table of Contents

We sell pellet feed to our pelletizing joint ventures at market prices. Historically, we have supplied all of the iron ore requirements of our wholly owned production pellet plants and joint ventures, except for Samarco and Zhuhai YPM, to which we supply only part of their requirements. Of our total 2010 pellet production, 73.2% was blast furnace pellets, and the remaining 26.8% was direct reduction pellets, which are used in steel mills that employ the direct reduction process rather than blast furnace technology.

We sell iron ore to our pelletizing joint ventures. In 2010, we sold 4.2 million metric tons to Hispanobras, 12.0 million metric tons to Samarco and 1.1 metric tons to Zhuhai.

1.2.2 Production

The following table sets forth information about our main iron ore pellet production.

	Production for the year ended December 31,		
Company	**2008**	**2009**	**2010**
		(million metric tons)	
Vale(1)	26.6	15.3	36.3
Hispanobras(5)	1.9	0.6	1.9
Itabrasco(2)	2.9		
Kobrasco(3)	2.1		
Nibrasco(4)	2.7		
Samarco(5)	8.6	8.0	10.8
Zhuhai(5)	0.2	0.3	0.3
Total	45.0	24.2	49.3

(1) Figure includes actual production, including production from the four pellet plants we leased in 2008.

(2) Production through September 2008. We signed a 10-year operating lease contract for Itabrasco's pellet plant in October 2008.

(3) Production through May 2008. We signed a five-year operating lease contract for Kobrasco's pellet plant in June 2008.

(4) Production through April 2008. We signed a 30-year operating lease contract for Nibrasco's two pellet plants in May 2008.

(5) Production figures for Hispanobras, Samarco and Zhuhai have been adjusted to reflect our ownership interest.

1.3 Iron ore and iron ore pellets

1.3.1 Customers, sales and marketing

We supply all of our iron ore and iron ore pellets (including our share of joint-venture pellet production) to the steel industry. Prevailing and expected levels of demand for steel products affect demand for our iron ore and iron ore pellets. Demand for steel products is influenced by many factors, such as global manufacturing production, civil construction and infrastructure spending. For further information about demand and prices, see *Operating and financial review and prospects Demand and prices.*

In 2010, China accounted for 42.9% of our iron ore and iron ore pellet shipments, and Asia as a whole accounted for 60.7%. Europe accounted for 20.7%, followed by Brazil with 13.7%. Our 10 largest customers collectively purchased 130.2 million metric tons of iron ore and iron ore pellets from us, representing 44% of our 2010 iron ore and iron ore pellet shipments and 45% of our total iron ore and iron ore pellet revenues. In 2010, no individual customer accounted for more than 10.0% of our iron ore and iron ore pellet shipments.

In 2010, the Asian market (mainly Japan and South Korea) and the European market were the primary markets for our blast furnace pellets, while North America, the Middle East and North Africa were the primary markets for our direct reduction pellets.

We strongly emphasize customer service in order to improve our competitiveness. We work with our customers to understand their main objectives and to provide them with iron ore solutions to meet specific customer needs. Using our expertise in mining, agglomeration and iron-making processes, we search for technical solutions that will balance the best use of our world-class mining assets and the satisfaction of

our

Table of Contents

customers. We believe that our ability to provide customers with a total iron ore solution and the quality of our products are very important advantages helping us to improve our competitiveness in relation to competitors who may be more conveniently located geographically. In addition to offering technical assistance to our customers, we operate sales support offices in Tokyo (Japan), Seoul (South Korea), Singapore, Dubai (UAE) and Shanghai (China), which support the sales made by our wholly owned subsidiary located in St. Prex, Switzerland. These offices also allow us to stay in close contact with our customers, monitor their requirements and our contract performance, and ensure that our customers receive timely deliveries.

1.3.2 Competition

The global iron ore and iron ore pellet markets are highly competitive. The main factors affecting competition are price, quality and range of products offered, reliability, operating costs and shipping costs.

Our biggest competitors in the Asian market are located in Australia and include subsidiaries and affiliates of BHP Billiton plc and Rio Tinto Ltd. Although the transportation costs of delivering iron ore from Australia to Asian customers are generally lower than ours as a result of Australia's geographical proximity, we are competitive in the Asian market for two main reasons. First, steel companies generally seek to obtain the types (or blends) of iron ore and iron ore pellets that can produce the intended final product in the most economic and efficient manner. Our iron ore has low impurity levels and other properties that generally lead to lower processing costs. For example, in addition to its high grade, the alumina grade of our iron ore is very low compared to Australian ores, reducing consumption of coke and increasing productivity in blast furnaces, which is particularly important during periods of high demand. When market demand is very strong, our quality differential is in many cases more valuable to customers than a freight differential. Second, steel companies often develop sales relationships based on a reliable supply of a specific mix of iron ore and iron ore pellets. We have a customer-oriented marketing policy and place specialized personnel in direct contact with our customers to help determine the blend that best suits each particular customer.

In terms of reliability, our ownership and operation of logistics facilities in the Northern and Southeastern Systems help us ensure that our products are delivered on time and at a relatively low cost. In addition, we are developing a low-cost freight portfolio, aimed at enhancing our ability to offer our products in the Asian market at competitive prices and to increase our market share. To support this strategy, we ordered new ships, purchased used vessels and entered into medium- and long-term freight contracts.

Our principal competitors in Europe are Kumba Iron Ore Limited, Luossavaara Kiirunavaara AB ("LKAB"), Société Nationale Industrielle et Minière ("SNIM"), Rio Tinto Ltd. and BHP Billiton. We are competitive in the European market not only for the same reasons we are competitive in Asia, but also due to the proximity of our port facilities to European customers.

The Brazilian iron ore market is also competitive. There are several small iron ore producers and new companies with developing projects, such as Anglo Ferrous Brazil, MMX, MHAG and Bahia Mineração. Some steel companies, including Companhia Siderúrgica Nacional ("CSN"), V&M do Brasil S.A. ("Mannesmann") and Usiminas, also have iron ore mining operations. Although pricing is relevant, quality and reliability are important competitive factors as well. We believe that our integrated transportation systems, high-quality ore and technical services make us a strong competitor in the Brazilian market.

The demand for iron ore is seasonally stronger in the months of December, March and April. Demand also tends to be moderately weaker in the first half of each year relative to the second half.

With respect to pellets, our major competitors are LKAB, Cleveland-Cliffs Inc., Quebec Cartier Mining Co., Iron Ore Company of Canada (a subsidiary of Rio Tinto Ltd.) and Gulf Industrial Investment Co.

Table of Contents

1.4 Manganese ore

We conduct our manganese mining operations in Brazil through our wholly owned subsidiaries Vale Manganês S.A. ("Vale Manganês") and Urucum.

Company	Location	Our share of capital	
		Voting	Total
		(%)	
	Brazil:		
Vale Manganês	Pará and Minas Gerais	100.0	100.0
Urucum	Mato Grosso do Sul	100.0	100.0

Our mines produce three types of manganese ore products:

- metallurgical ore, used primarily for the production of ferroalloys;
- natural manganese dioxide, suitable for the manufacture of electrolytic batteries; and
- chemical ore, used in several industries for the production of fertilizer, pesticides and animal feed, and used as a pigment in the ceramics industry.

We operate on-site beneficiation plants at our Azul mine and at the Urucum mines, which are accessible by road. The Azul and Urucum mines have high-grade ores (at least 40% manganese grade), while our Morro da Mina mine has low-grade ores. All of these mines obtain electrical power at market prices from regional electric utilities. The following table sets forth information about our manganese production.

Mine	Type	Production for the year ended December 31,			Recovery rate
		2008	2009	2010	
		(million metric tons)			(%)
Azul	Open pit	2.0	1.4	1.6	65.03
Morro da Mina	Open pit	0.1	0.1	0.1	88.88
Urucum	Underground	0.2	0.2	0.2	78.76
Total		2.4	1.7	1.8	

1.5 Ferroalloys

The following table sets forth the subsidiaries through which we conduct our ferroalloys business.

Company	Location	Our share of capital	
		Voting	Total
		(%)	
Vale Manganês	Minas Gerais and Bahia, Brazil	100.0	100.0
Urucum	Mato Grosso do Sul, Brazil	100.0	100.0
Vale Manganèse France	Dunkerque, France	100.0	100.0
Vale Manganese Norway AS	Mo I Rana, Norway	100.0	100.0

We produce several types of manganese ferroalloys, such as high carbon and medium carbon ferro-manganese and ferro-silicon manganese. Our facilities have nominal capacity of 651,000 metric tons per year. The production of ferroalloys consumes significant amounts of electricity, representing 4.8% of our total consumption in 2010. The electricity supply for our ferroalloy plant in Dunkerque, France and Mo I Rana, Norway are provided through long-term contracts. For information on the risks associated with potential energy shortages, see *Risk factors*.

30

Table of Contents

The following table sets forth information about our ferroalloys production.

Company	Production for the year ended December 31, 2008	2009	2010
		(thousand metric tons)	
Vale Manganês(1)	288	99	207
Urucum(2)	20	0	0
Vale Manganèse France(3)	55	45	138
Vale Manganese Norway AS	112	79	106
Total	475	223	451

(1) Vale Manganês has five plants in Brazil: Santa Rita, Barbacena and Ouro Preto in the state of Minas Gerais; and Simões Filho in the state of Bahia.

(2) Urucum has one plant in Corumbá in the Brazilian state of Mato Grosso do Sul.

(3) We shut down our furnace at Vale Manganèse France in August 2008 due to technical problems, and it was restarted in September 2009.

1.6 Manganese ore and ferroalloys: sales and competition

The markets for manganese ore and ferroalloys are highly competitive. Competition in the manganese ore market takes place in two segments. High-grade manganese ore competes on a global seaborne basis, while low-grade ore competes on a regional basis. For some ferroalloys, high-grade ore is mandatory, while for others high- and low-grade ores are complementary. The main suppliers of high-grade ores are located in South Africa, Gabon, Australia and Brazil. The main producers of low-grade ores are located in Ukraine, China, Ghana, Kazakhstan, India and Mexico.

The ferroalloy market is characterized by a large number of participants who compete primarily on the basis of price. The principal competitive factors in this market are the costs of manganese ore, electricity and logistics and reductants. We compete both with stand-alone producers and integrated producers that also mine their own ore. Our competitors are located principally in countries that produce manganese ore or steel. For further information about demand and prices, see *Operating and financial review and prospects Demand and prices.*

1.7 Coal

1.7.1 Operations

We produce thermal and metallurgical coal through our subsidiary Vale Australia, which operates coal assets in Australia through wholly owned companies and unincorporated joint ventures, and thermal coal through our subsidiary Vale Colombia.

Table of Contents

We also have a minority interest in two Chinese companies, Henan Longyu Energy Resources Co., Ltd. ("Longyu") and Shandong Yankuang International Coking Company Ltd. ("Yankuang"), as set forth in the following table.

Company	Business	Location	Our share of capital (%)	Partners
Vale Australia		*Australia:*		
Integra Coal	Thermal and metallurgical coal	Hunter Valley, New South Wales	61.2	Nippon Steel ("NSC"), JFE Group ("JFE"), Posco, Toyota Tsusho Austrália, Chubu Electric Power Co. Ltd
Carborough Downs	Metallurgical coal	Bowen Basin, Queensland	80.0	NSC, JFE, Posco, Tata
Isaac Plains	Thermal and metallurgical coal	Bowen Basin, Queensland	50.0	Aquila
Broadlea	Thermal and metallurgical coal	Bowen Basin, Queensland	100.0	
Vale Colombia				
El Hatillo	Thermal coal	Colombia	100.0	
Longyu	Coal and other related products	Henan Province, China	25.0	Yongmei Group Co., Ltd. (former Yongcheng Coal & Electricity (Group) Co. Ltd.), Shanghai Baosteel International Economic & Trading Co., Ltd. and other minority shareholders
Yankuang	Metallurgical coke and methanol	Shandong Province, China	25.0	Yankuang Group Co. Limited, Itochu Corporation

Integra Coal Operations (underground and open-cut). The Integra Coal Operations are located 10 kilometers northwest of Singleton in the Hunter Valley of New South Wales, Australia. The operations are comprised of an underground coal mine that produces coal by longwall methods, and an open-cut mine. Coal from the mines is processed at a coal handling and processing plant ("CHPP") with a capacity of 1,200 metric tons per hour, loaded onto trains at a purpose-built rail loadout facility for transport to the port of Newcastle, New South Wales, Australia.

Carborough Downs. Carborough Downs is located in the Central Bowen Basin in central Queensland, Australia, 15 kilometers east of the township of Moranbah and 180 kilometers southwest of the coastal city of Mackay. Carborough Downs mining leases overlie the Rangal Coal Measures of the Bowen Basin with the economic seams of Leichardt and Vermont. Both seams have coking properties and can be beneficiated to produce coking and pulverized coal injection ("PCI") products. The Leichardt seam is currently our main target for development and constitutes 100% of the current reserve and resource base. Carborough Downs coal is processed at the Carborough Downs CHPP, which is capable of processing 1000 metric tons per hour, and which operates seven days per week. The product is loaded onto trains at a rail loadout facility and transported 160 kilometers to the Dalrymple Bay Coal Terminal, Queensland, Australia.

Isaac Plains. The Isaac Plains open-cut mine is located close to Carborough Downs in central Queensland. The mine is managed by Isaac Plains Coal Management on behalf of the joint venture parties. The coal is classified as a medium volatile bituminous coal with low sulfur content. Coal is processed at the Isaac Plains CHPP and railed 172 kilometers to the Dalrymple Bay Coal Terminal.

Broadlea. Broadlea is an open-cut operation located just north of Carborough Downs' underground mine, consisting of a collection of small economic coal deposits. Broadlea is mined using the truck-and-shovel method, and product coal is toll-washed at the Carborough Downs CHPP and railed 172 kilometers to the Dalrymple Bay Coal Terminal in Queensland, Australia. At the end of 2009, Broadlea ceased operations and underwent maintenance due to increasing unit costs. We will monitor the mine's economic viability to determine the potential recommencement of operations.

Table of Contents

El Hatillo. The El Hatillo coal mine in Colombia is located in the central portion of the Cesar Department, 210 kilometers southeast of Santa Marta. The concession area is adjacent to the town of La Loma and encompasses an area of 9,693 hectares. El Hatillo is mined with truck-and-shovel methodology and uses crushing and screening, to produce a thermal coal product that is loaded onto trains at a dedicated rail loading facility for transport to the port of SPRC. Most of the thermal coal product is exported to Europe and United States.

1.7.2 Production

The following table sets forth information on our coal production.

Operation	Mine type	Production for the year ended December 31, 2008	2009	2010
		(thousand metric tons)		
Thermal coal:				
Vale Colombia				
El Hatillo(1)	Open-cut		1,143	2,991
Vale Australia				
Integra Coal(2)	Open-cut	557	702	305
Isaac Plains(3)	Open-cut	147	551	371
Broadlea	Open-cut	582	497	165
Total thermal coal		1,286	2,892	3,832
Metallurgical coal:				
Vale Australia				
Integra Coal(3)	Underground and open-cut	1,747	1,184	1,151
Isaac Plains(3)	Open-cut	382	487	590
Carborough Downs(4)	Underground	429	604	1,216
Broadlea	Open-cut	249	252	101
Total metallurgical coal		2,808	2,527	3,057

(1) We acquired El Hatillo in the first quarter of 2009. Figures for 2009 include production from April to December only.

(2) These figures correspond to our 61.2% equity interest in Integra Coal, an unincorporated joint venture.

(3) These figures correspond to our 50.0% equity interest in Isaac Plains, an unincorporated joint venture.

(4) These figures correspond to our 80.0% equity interest in Carborough Downs, an unincorporated joint venture.

Operation	Mine type
El Hatillo(1)	Open-cut
Integra Coal(2)	Underground and open-cut
Isaac Plains(3)	Open-cut
Carborough Downs(4)	Underground
Broadlea	Open-cut

(1) We acquired El Hatillo in the first quarter of 2009. Figures for 2009 include production from April to December only.

(2) These figures correspond to our 61.2% equity interest in Integra Coal, an unincorporated joint venture.

(3) These figures correspond to our 50.0% equity interest in Isaac Plains, an unincorporated joint venture.

(4) These figures correspond to our 80.0% equity interest in Carborough Downs, an unincorporated joint venture.

Longyu produces coal and other related products. Yankuang, a metallurgical coke plant, has production capacity of 2.0 Mtpy of coke and 200,000 metric tons per year of methanol.

1.7.3 Customers and sales

The coal sales from our Australian operations are primarily focused on East Asia. In 2010, 32% of our sales were made to Japanese steel mills and power utilities. In 2010, our Chinese coal joint ventures directed their sales mainly to the Chinese domestic market. The coal sales from our Colombian operations are primarily destined for Europe and the United States.

Table of Contents

1.7.4 Competition

The global coal industry, which is primarily comprised of the markets for hard coal (metallurgical coal and thermal coal) and brown coal/lignite, is highly competitive. Growth in the demand for steel, especially in Asia, underpins strong demand for metallurgical coal. Major port and rail constraints in some of the countries in which major suppliers are located could lead to limited availability of incremental metallurgical coal production.

The global seaborne thermal coal market has significantly expanded in recent years. Growth in thermal coal demand is closely related to growth in electricity consumption, which will continue to be driven by global economic growth, particularly from emerging economies. Large existing fleets of coal-fired power plants with long life cycles take decades to replace or upgrade, keeping a high share of thermal coal in the electricity matrix of countries with high consumption. The cost of fuel is typically the largest variable cost involved in electricity generation and coal is currently the most competitively priced fossil fuel for this purpose.

Competition in the coal industry is based primarily on the economics of production costs, coal quality and transportation costs. We believe that our operations and project pipeline are competitive, and our key competitive strengths include the strategic geographic location of our current and future supply bases and our production cash costs relative to several other coal producers.

Major participants in the coal seaborne market are subsidiaries and affiliates of Xstrata plc, BMA (BHP Billiton Mitsubishi Alliance), PT Bumi Resources Tbk., Anglo Coal, Drummond Company, Inc., Rio Tinto Ltd., Teck Cominco, Peabody and the Shenhua Group.

2. Base metals

2.1 Nickel

2.1.1 Operations

We conduct our nickel operations primarily through our wholly owned subsidiary Vale Canada, which operates two nickel production systems, one in the North Atlantic and the other in the Asia Pacific. We have recently commissioned and started ramping up Onça Puma, a new nickel operation in the Brazilian state of Pará. The operations are set forth in the following table.

Table of Contents

System	Location	Operations
North Atlantic	Canada Sudbury, Ontario	Fully integrated mines, mill, smelter and refinery (producer of intermediates and finished nickel and by-products)
	Canada Thompson, Manitoba	Fully integrated mines, mill, smelter and refinery (producer of finished nickel and by-products)
	Canada Voisey Bay, Newfoundland and Labrador	Mine and mill (producer of nickel concentrates and by-products)
	U.K. Clydach, Wales	Stand-alone nickel refinery (producer of finished nickel)
Asia Pacific	Indonesia Sorowako, Sulawesi(1)	Mining and processing operations (producer of nickel matte, an intermediate product)
	New Caledonia Southern Province(2)	Mining and processing operations (producer of nickel oxide and cobalt carbonate)
	Japan Matsuzaka(3)	Stand-alone nickel refinery (producer of intermediate and finished nickel)
	Taiwan Kaoshiung(4)	Stand-alone nickel refinery (producer of finished nickel)
	China Dalian, Liaoning(5)	Stand-alone nickel refinery (producer of finished nickel)
	South Korea Onsan(6)	Stand-alone nickel refinery (producer of finished nickel)
South Atlantic	Brazil Ourilândia do Norte, Pará	Mining and processing operations (producer of ferro-nickel)

(1) Operations conducted through our 59.2%-owned subsidiary PT International Nickel Indonesia Tbk.

(2) Operations conducted though our 74.0%-owned subsidiary Vale Nouvelle-Calédonie S.A.S.

(3) Operations conducted through our 87.2%-owned subsidiary Vale Japan Limited.

(4) Operations conducted through our 49.9%-owned subsidiary Taiwan Nickel Refining Corporation.

(5) Operations conducted through our 98.3%-owned subsidiary Vale Nickel (Dalian) Co. Ltd.

(6) Operations conducted through our 25.0% interest in Korea Nickel Corporation.

North Atlantic

Sudbury operations

Our long-established mines in Sudbury, Ontario, are primarily underground operations with nickel sulfide ore bodies. These ore bodies also contain co-deposits of copper, cobalt, PGMs, gold and silver. We have integrated mining, milling, smelting and refining operations to process ore into finished nickel at Sudbury. We also smelt and refine nickel concentrates from our Voisey Bay operations. We ship a nickel intermediate product, nickel oxide, from our Sudbury smelter to our nickel refineries in Wales, Taiwan, China and South Korea for processing into finished nickel. In 2010, we produced 9% of the electric energy consumed in Sudbury at our hydroelectric power plants there. The remaining electricity was purchased from Ontario's provincial electricity grid.

In February 2011, we shut down one furnace at our Sudbury smelter due to an operational problem. The furnace will remain offline for a minimum of 16 weeks, which will result in the loss of approximately 15,000 metric tons of production of finished nickel.

In July 2010, new five-year collective bargaining agreements were ratified by the unions that represent production and maintenance employees at our Sudbury and Port Colborne operations. The settlements marked the end of a strike that began in July 2009. For more information about labor relations, see *Management and employees Employees*.

Thompson operations

Our long-established mines in Thompson, Manitoba, are primarily underground operations with nickel sulfide ore bodies. The ore bodies also contain co-deposits of copper and cobalt. We currently have integrated mining, milling, smelting and refining operations to process ore into finished nickel at Thompson. We also

Table of Contents

smelt and refine an intermediate product, nickel concentrate, from our Voisey Bay operations. Low-cost energy is available from purchased hydroelectric power at our Thompson operations.

We are transitioning our Thompson operations to a mining and milling business, and phasing out smelting and refining by 2015. This enables us to better align processing capacity with mineral reserves while meeting our environmental commitments. Mineral reserves in Thompson are not sufficient to operate the smelter and refinery at full capacity and do not support the investment of the significant capital that would be required under new pending federal sulfur dioxide emission standards that are expected to come into effect in 2015.

Voisey Bay operations

Our Voisey Bay operation in Newfoundland and Labrador is comprised of the Ovoid mine, an open-pit, and deposits with the potential for underground operations at a later stage. We mine nickel sulfide ore bodies, which also contain co-deposits of copper and cobalt. We mill Voisey Bay ore on site and ship it as an intermediate product (nickel concentrates) primarily to our Sudbury and Thompson operations for final processing (smelting and refining), while copper concentrate produced is sold in the market. The electricity requirements of our Voisey Bay operations are supplied through diesel generators.

On January 31, 2011, we ratified a new five-year collective agreement with unionized mine and mill operations employees at our Voisey Bay operations. The settlements marked the end of a strike that began in August 2009.

Clydach operations

Clydach is a stand-alone nickel refinery in Wales, U.K., that processes a nickel intermediate product, nickel oxide, supplied from our Sudbury operations to produce finished nickel in the form of powders and pellets.

Asia Pacific

Sulawesi operations

Our subsidiary PT International Nickel Indonesia Tbk ("PTI") operates an open cast mining area and related processing facility in Sorowako on the Island of Sulawesi, Indonesia. PTI mines nickel laterite saprolite ore and produces an intermediate product (nickel matte), which is shipped primarily to our nickel refinery in Japan. Pursuant to life-of-mine off-take agreements, PTI sells 80% of its production to our wholly owned subsidiary Vale Canada and 20% of its production to Sumitomo Metal Mining Co., Ltd. ("Sumitomo"). PTI is a public company whose shares are traded on the Indonesia Stock Exchange. We hold 59.2% of its share capital, Sumitomo holds 20.1%, 20.1% is publicly held and 0.6% is held by others.

Energy costs are a significant component of our nickel production costs for the processing of lateritic saprolitic ores at our PTI operations in Indonesia. A major part of the electric furnace power requirements of PTI is supplied at low cost by its two hydroelectric power plants on the Larona River, Larona and Balambano. PTI has thermal generating facilities in order to supplement its hydroelectric power supply with a source of energy that is not subject to hydrological factors. In 2010, the hydroelectric power plants provided 90% of the electric energy consumed at our Indonesian operations, and the thermal generators provided the remainder.

Asian refinery operations

Our 87.2%-owned subsidiary Vale Japan Limited ("Vale Japan") operates a refinery in Matsuzaka, which produces intermediate and finished nickel products, primarily using nickel matte sourced from PTI.

Table of Contents

Vale Japan is a privately-owned company controlled by Vale, with the minority interest held by Sumitomo (12.8%).

We also operate or have investments in nickel refining operations in Taiwan through our 49.9% stake in Taiwan Nickel Refining Corporation ("TNRC"), in China through our 98.3% interest in Vale Nickel (Dalian) Co. Ltd. ("VNDC") and in South Korea through our 25.0% stake in Korea Nickel Corporation ("KNC"). TNRC, VNDC and KNC produce finished nickel for the local stainless steel industry in Taiwan, China and South Korea, respectively, primarily using intermediate products containing about 75% nickel (in the form of nickel oxide) from Vale Japan and our Sudbury operations.

New Caledonian operations

We have almost completed the commissioning of our VNC nickel operation in New Caledonia in the South Pacific. VNC utilizes a High Pressure Acid Leach ("HPAL") process to treat laterite limonite ores. We expect to ramp up VNC over a three-year period to reach nominal production capacity of 60,000 metric tons per year of nickel contained in nickel oxide and 4,600 metric tons of cobalt, once nickel oxide production starts. In order to accelerate cash generation, the resulting nickel and cobalt solution from HPAL is currently sold to clients as an intermediate product, nickel hydroxide cake ("NHC").

South Atlantic

We have commissioned and are ramping up the Onça Puma project in Ourilândia do Norte, in the Brazilian state of Pará. The Onça Puma mine is built on lateritic nickel deposits of laterite saprolitic ore, and is expected to reach a nominal capacity of 53,000 tons per year of nickel contained in ferronickel, its final product.

Table of Contents

2.1.2 Production

The following table sets forth our annual mine production by operating mine (or on an aggregate basis for PTI because it has mining areas rather than mines) and the average percentage grades of nickel and copper. The mine production at PTI represents the product from PTI's dryer kilns delivered to PTI's smelting operations and does not include nickel losses due to smelting. For our Sudbury, Thompson and Voisey Bay operations, the production and average grades represent the mine product delivered to those operations' respective processing plants and do not include adjustments due to beneficiation, smelting or refining. The following table sets forth information about ore production at our nickel mining sites.

	2008			2009			2010		
	(thousands of metric tons, except percentages)								
		Grade			Grade			Grade	
		%	%		%	%		%	%
	Production	Copper	Nickel	Production	Copper	Nickel	Production	Copper	Nickel
Ontario operating mines									
Copper Cliff North	1,165	1.01	1.01	524	0.96	1.06	326	1.13	1.13
Copper Cliff South(1)	771	1.67	1.48	78	1.45	1.40			
Creighton	1,001	1.56	2.14	395	1.57	1.82	426	2.65	3.10
Stobie	2,892	0.65	0.72	1,198	0.64	0.72	775	0.59	0.69
Garson	840	1.72	1.69	328	1.93	1.45	246	2.16	1.60
Coleman	1,425	2.66	1.62	624	3.28	1.64	786	2.74	1.73
Gertrude	124	0.29	0.72						
Ellen							86	0.56	0.75
Totten							16	2.54	1.74
Total Ontario operations	8,219	1.36%	1.26%	3,145	1.49%	1.19%	2,660	1.78%	1.53%
Manitoba operating mines									
Thompson	1,320		1.77	1,270		1.98	1,325		1.83
Birchtree	971		1.51	769		1.48	832		1.41
Total Manitoba operations	2,291		1.66%	2,040		1.79	2,158		1.67
Voisey Bay operating mines									
Ovoid	2,385	2.38	3.50	990	2.57	3.20	1,510	2.44	3.20
Total Voisey Bay operations	2,385	2.38%	3.50%	990	2.57%	3.20%	1,510	2.44%	3.20%
Sulawesi operating mining areas									
Sorowako	4,258		2.08	3,598		2.02	4,176		2.00
Pomalaa(2)	417		2.29						
Total Sulawesi operations	4,675		2.10%	3,598		2.02%	4,176		2.00%
New Caledonia operating mines									
VNC							326		1.31
Total New Caledonia operations							326		1.31%
Brazil operating mines									
Onça Puma							1,259		1.93
Total Brazil operations							1,259		1.93%

(1) This mine has been closed indefinitely since January 2009.

(2) This mine has been closed indefinitely since May 2008.

Table of Contents

The following table sets forth information about our nickel production, including: (i) nickel refined through our facilities, (ii) nickel further refined into specialty products, and (iii) intermediates designated for sale. The numbers below are reported on an ore-source basis.

Mine	Type	Production for the year ended December 31, 2008	2009	2010
		(thousand metric tons)		
Sudbury(1)	Underground	85.3	43.6	22.4
Thompson(1)	Underground	28.9	28.8	29.8
Voisey Bay(2)	Open pit	77.5	39.7	42.3
Sorowako(3)	Open cast	68.3	68.8	78.4
External(4)		15.4	5.8	5.9
Total(5)		275.4	186.7	178.7

(1) Primary nickel production only (i.e., does not include secondary nickel from unrelated parties).

(2) Includes finished nickel produced at our Sudbury and Thompson operations, as well as some finished nickel produced by unrelated parties under toll-smelting and toll-refining arrangements.

(3) We have a 59.2% interest in PTI, which owns the Sorowako mines, and these figures include the minority interests.

(4) Finished nickel processed at our facilities using feeds purchased from unrelated parties.

(5) Excludes finished nickel produced under toll-smelting and refining arrangements covering purchased intermediates with unrelated parties. Unrelated-party tolling of purchased intermediates was 7.5 thousand metric tons in 2008, 5.2 thousand metric tons in 2009 and none in 2010.

2.1.3 Customers and sales

Our nickel customers are broadly distributed on a global basis. In 2010, 71% of our total nickel sales were delivered to customers in Asia, 19% to North America, 9% to Europe and 1% to other markets. We have short-term fixed-volume contracts with customers for the majority of our expected annual nickel sales. These contracts generally provide stable demand for a significant portion of our annual production.

Nickel is an exchange-traded metal, listed on the London Metal Exchange ("LME"), and most nickel products are priced according to a discount or premium to the LME price, depending on the nickel product's physical and technical characteristics. Our finished nickel products represent what is known in the industry as "primary" nickel, meaning nickel produced principally from nickel ores (as opposed to "secondary" nickel, which is recovered from recycled nickel-containing material). Finished primary nickel products are distinguishable in terms of the following characteristics, which determine the product price level and the suitability for various end-use applications:

- nickel content and purity level: (i) intermediates with various levels of nickel content, (ii) nickel pig iron has 1.5-6% nickel, (iii) ferro-nickel has 10-40% nickel, (iv) standard LME grade nickel has a minimum of 99.8% nickel, and (v) high purity nickel has a minimum of 99.9% nickel and does not contain specific elemental impurities;
- shape (such as pellets, discs, squares, strips and foams); and
- size.

In 2010, the principal end-use applications for nickel were:

- austenitic stainless steel (64% of global nickel consumption);

non-ferrous alloys, alloy steels and foundry applications (18% of global nickel consumption);

Table of Contents

nickel plating (9% of global nickel consumption); and

specialty applications, such as batteries, chemicals and powder metallurgy (9% of global nickel consumption).

In 2010, 65% of our refined nickel sales were made into non-stainless steel applications, compared to the industry average for primary nickel producers of 36%, bringing more stability to our sales volumes. As a result of our focus on such higher-value segments, our average realized nickel prices for refined nickel have typically exceeded LME cash nickel prices.

We offer sales and technical support to our customers on a global basis. We have a well-established global marketing network for finished nickel, based at our head office in Toronto, Canada. We also have sales offices in St. Prex (Switzerland), Saddle Brook, New Jersey (United States), Tokyo (Japan), Hong Kong, Shanghai (China), Kaohsiung (Taiwan), Bangkok (Thailand) and Bridgetown (Barbados). For information about demand and prices, see below *Operating and financial review and prospects Demand and prices*.

2.1.4 Competition

The global nickel market is highly competitive. Our key competitive strengths include our long-life mines, our low cash costs of production relative to other nickel producers, sophisticated exploration and processing technologies, and a diversified portfolio of products. Our global marketing reach, diverse product mix, and technical support direct our products to the applications and geographic regions that offer the highest margins for our products.

Our nickel deliveries, which were impacted by strikes in our Canadian operations, represented 12% of global consumption for primary nickel in 2010. In addition to us, the largest suppliers in the nickel industry (each with its own integrated facilities, including nickel mining, processing, refining and marketing operations) are Mining and Metallurgical Company Norilsk Nickel, Jinchuan Nonferrous Metals Corporation, BHP Billiton plc and Xstrata plc. Together with us, these companies accounted for about 53% of global finished primary nickel production in 2010.

While stainless steel production is a major driver of global nickel demand, stainless steel producers can use nickel products with a wide range of nickel content, including secondary nickel (scrap). The choice between primary and secondary nickel is largely based on their relative prices and availability. In recent years, secondary nickel has accounted for about 42-49% of total nickel used for stainless steels, and primary nickel has accounted for about 51-58%. In 2006, a new primary nickel product entered the market, known as nickel pig iron. This is a low-grade nickel product made in China from imported lateritic ores (primarily from the Philippines and Indonesia) that is suitable primarily for use in stainless steel production. With higher nickel prices and strong demand from the stainless steel industry, Chinese domestic production of nickel pig iron and ferro-nickel continues to expand. In 2010, Chinese nickel pig iron and ferro-nickel production is estimated to have been greater than 150,000 metric tons, representing 11% of world primary nickel supply.

Competition in the nickel market is based primarily on quality, reliability of supply and price. We believe our operations are competitive in the nickel market because of the high quality of our nickel products and our relatively low production costs.

Table of Contents

2.2 Copper

2.2.1 Operations

We conduct our copper operations at the parent-company level in Brazil and through our wholly owned subsidiaries in Canada and Chile.

Company	Location	Our share of capital	
		Voting	Total
		(%)	
Vale	Brazil		
Vale Canada	Canada	100.0	100.0
Tres Valles	Chile	100.0	90.0

Brazilian operations

Our Sossego copper mine in Carajás, in the state of Pará, has two main copper ore bodies, Sossego and Sequeirinho. The copper ore is mined by open-pit method, and the run-of-mine is processed by means of standard primary crushing and conveying, SAG milling (a semi-autogenous mill that uses a large rotating drum filled with ore, water and steel grinding balls to transform the ore into a fine slurry), ball milling, copper concentrate flotation, tailings disposal, concentrate thickening, filtration and load out. We truck the concentrate to a storage terminal in Parauapebas and then transport it via the EFC railroad to the Ponta da Madeira maritime terminal in São Luís, in the state of Maranhão.

We constructed an 85-kilometer road to link Sossego to the Carajás air and rail facilities and a power line that allows us to purchase electrical power at market prices. We have a long-term energy supply contract with Eletronorte.

Canadian operations

In Canada, we recover copper in conjunction with our nickel operations, principally at Sudbury and Voisey Bay. At Sudbury, we produce two intermediate copper products, copper concentrates and copper anodes, and we also produce electrowon copper cathode as a by-product of our nickel refining operations. At Voisey Bay, we produce copper concentrates. For information about strikes affecting some of our Canadian nickel operations in 2010, see *Management and employees Employees*.

Chilean operations

In December 2010, we started the ramp-up of the Tres Valles copper operation, our first project in Chile. Located in Salamanca, in the Coquimbo region, the plant has an estimated annual production capacity of 18,500 metric tons of copper cathode (metal plate), and is our first industrial-scale cathode plant using a hydrometallurgical process. The Tres Valles operations include two copper oxide mines: Don Gabriel, an open-pit mine, and Papomono, an underground mine, as well as an SX-EW plant that produces copper cathodes.

Table of Contents

2.2.2 Production

The following table sets forth information on our copper production.

Mine	Type	Production for the year ended December 31, 2008	2009	2010
		(thousand metric tons)		
Brazil:				
Sossego	Open pit	126	117	117
Canada:				
Sudbury	Underground	115	42	34
Voisey Bay	Open pit	55	24	33
Thompson	Underground	1	1	1
External(1)		14	14	22
Total		312	198	207

(1) We process copper at our facilities using feed purchased from unrelated parties.

2.2.3 Customers and sales

Copper concentrates from Sossego are sold under medium- and long-term contracts to copper smelters in South America, Europe and Asia. We have long-term off-take agreements to sell the entire production of copper concentrates from the first phase of the Salobo project to smelters. We have long-term copper supply agreements with Xstrata Copper Canada for the sale of copper anodes and most of the copper concentrates produced in Sudbury. Copper concentrates from Voisey Bay are sold under medium-term contracts to customers in Europe. Electrowon copper from Sudbury is sold in North America under short-term sales agreements.

2.2.4 Competition

The global copper cathode market is highly competitive. Producers are integrated mining companies and custom smelters, covering all regions of the world, while consumers are principally wire, rod and copper-alloy producers. Competition occurs mainly on a regional level and is based primarily on production costs, quality, reliability of supply and logistics costs. The world's largest copper cathode producers are Codelco, Aurubis, Freeport-McMoRan, Jiangxi and Xstrata, operating at the parent-company level or through subsidiaries. Our participation in the global copper cathode market is marginal.

Copper concentrate and copper anode are intermediate products in the copper production chain. Both the concentrate and anode markets are competitive, having numerous producers but fewer participants and smaller volumes than in the copper cathode market due to high levels of integration by the major copper producers.

In the copper concentrate market, the main producers are mining companies located in South America and Indonesia, while consumers are custom smelters located in Europe and Asia. Competition in the copper concentrate market occurs mainly on a global level and is based on production costs, quality, logistics costs and reliability of supply. The largest competitors in the copper concentrate market are Freeport-McMoRan, BHP Billiton, Rio Tinto and Xstrata, operating at the parent-company level or through subsidiaries. Our market share in 2010 was about 2.6% of the total custom copper concentrate market.

Table of Contents

The copper anode/blister market has very limited trade within the copper industry; generally, anodes are produced to supply each company's integrated refinery. The trade in anodes/blister is limited to those facilities that have more smelting capacity than refining capacity or to those situations where logistics cost savings provide an incentive to source anodes from outside smelters. The largest competitors in the copper anode market are Codelco, Anglo American and Xstrata, operating at the parent-company level or through subsidiaries.

Among the base metals produced by Vale, there is seasonality in the demand for nickel and copper. Demand for nickel is usually weaker in the third quarter and demand for copper is unfavorable throughout the second half of the year.

2.3 Aluminum

Through 2010, we engaged in alumina refining through our subsidiary Alunorte and aluminum smelting through our subsidiary Albras as part of our aluminum business. Alunorte produced alumina by refining bauxite supplied by MRN and the Paragominas mine. Albras produced aluminum using alumina supplied by Alunorte. Our aluminum production facilities were located in the Brazilian state of Pará. In addition, we had participation in a project to build a new alumina refinery through our subsidiary CAP. In several related transactions that closed in February 2011, we transferred our interests in Albras, Alunorte and CAP, among other items, to Hydro. We remain connected to these aluminum operations by way of the 22.0% interest in Hydro that we received as part of the consideration.

2.3.1 Bauxite

We also conduct bauxite operations through a 40.0% interest in MRN and a 40.0% interest in Paragominas, both of which are located in Brazil.

MRN. MRN, which is located in the northern region of the Brazilian state of Pará, is one of the largest bauxite operations in the world, operating four open-pit bauxite mines that produce high quality bauxite. In addition, MRN controls substantial additional high quality bauxite resources, which will be converted into reserves after environmental licenses are fully obtained. MRN also operates ore beneficiation facilities at its mines, which are connected by rail to a loading terminal and port facilities on the Trombetas River, a tributary of the Amazon River, that can handle vessels of up to 60,000 deadweight tons ("DWT"). MRN owns and operates the rail and the port facilities serving its mines. The MRN mines are accessible by road from the port area and obtain electricity from their own thermal power plant.

Paragominas. Operations at the Paragominas mine, in the Brazilian state of Pará, began in the first quarter of 2007 to supply Alunorte's alumina refinery. The first expansion of Paragominas was concluded in the second quarter of 2008. The mine produces a wet 12% moisture bauxite, and the bauxite quality is similar to that of MRN. The Paragominas site has a beneficiation plant with milling and a 244-kilometer slurry pipeline. Electricity for the Paragominas site is obtained from Eletronorte, a state-owned power generation company in Brazil. In 2010, we transferred the Paragominas bauxite mine and all of our other Brazilian bauxite mineral rights (apart from rights owned through our stake in MRN) into a new company, 60.0% of which we transferred to Hydro in exchange for US$578 million in cash, in February 2011. We will transfer the remaining 40.0% of the company in two equal tranches in 2013 and 2015, each in exchange for US$200 million in cash.

Table of Contents

The following table sets forth information about bauxite ore production at our mining sites.

		Production for the year ended December 31,			
Mine(1)	**Type**	**2008**	**2009**	**2010**	**Recovery rate**
			(million metric tons)		**(%)**
MRN					
Almeidas	Open pit	3.6	2.2	1.3	
Aviso	Open pit	14.5	13.5	15.2	
Saracá V	Open pit	2.3	0.9	0.7	
Saracá W	Open pit	3.9	4.1	4.2	
Bacaba	Open pit			0.4	
Total MRN		24.2	20.7	21.8	72 - 77
Paragominas					
Miltonia 3	Open pit	7.3	10.1	10.8	60

(1) These figures represent run-of-mine production.

The following table sets forth information about our bauxite production.

		Production for the year ended December 31,			
Mine	**Type**	**2008**	**2009**	**2010**	**Recovery rate**
			(million metric tons)		**(%)**
MRN	Open pit	18.1	15.6	17.0	72 - 77
Paragominas	Open pit	4.4	6.2	7.5	60 - 64

2.4 PGMs and other precious metals

As by-products of our Sudbury nickel operations in Canada, we recover significant quantities of PGMs, as well as small quantities of gold and silver. We operate a processing facility in Port Colborne, Ontario, which produces PGMs, gold and silver intermediate products. We have a refinery in Acton, England, where we process our intermediate products, as well as feeds purchased from unrelated parties and toll-refined materials. In 2010, PGM concentrates from our Sudbury operations supplied about 8% of our PGM production, which also includes precious metals purchased from unrelated parties and toll-refined materials. Our base metals marketing department sells our own PGMs and other precious metals, as well as products from unrelated parties and toll-refined products, on a sales agency basis. For information about strikes affecting some of our Canadian operations in 2010, see *Management and employees Employees*.

The following table sets forth information on our precious metals production.

Mine(1)	**Type**	**2008**	**2009**	**2010**
			(thousand troy ounces)	
Sudbury:				
Platinum	Underground	166	103	35
Palladium	Underground	231	152	60
Gold	Underground	85	49	42

(1) Production figures exclude precious metals purchased from unrelated parties and toll-refined materials.

2.5 Cobalt

We recover significant quantities of cobalt as a by-product of our Canadian nickel operations. In 2010, we produced 438 metric tons of refined cobalt metal at our Port Colborne refinery and 499 metric tons of cobalt in a cobalt-based intermediate at our Thompson nickel operations in Canada. Our remaining cobalt production consisted of 129 metric tons of cobalt contained in other intermediate products (such as nickel concentrates). For information about strikes affecting some of our Canadian operations in 2010, see *Management and employees Employees*. We expect to increase our production of cobalt as we increase nickel

Table of Contents

production in New Caledonia at the VNC operations, because the nickel laterite ore at this location contains significant co-deposits of cobalt.

We sell cobalt on a global basis. Our cobalt metal, which is electro-refined at our Port Colborne refinery, has very high purity levels (99.8%). Cobalt metal is used in the production of various alloys, particularly for aerospace applications, as well as the manufacture of cobalt-based chemicals.

The following table sets forth information on our cobalt production.

Mine	Type	Production for the year ended December 31, 2008	2009	2010
			(metric tons)	
Sudbury	Underground	804	359	302
Thompson	Underground	168	181	189
Voisey Bay	Open pit	1,695	971	524
External(1)		161	64	51
Total		2,828	1,575	1,066

(1) These figures do not include tolling of feeds purchased from unrelated parties.

3. Fertilizer nutrients

3.1 Phosphates

During 2010, we acquired fertilizer assets in Brazil that are now consolidated under Vale Fertilizantes and started phosphate rock operations in Peru through our subsidiary MVM Resources International, B.V. We operate our phosphates business through subsidiaries and joint ventures, as set forth in the following table.

Company	Location	Our share of capital Voting	Total	Partners
		(%)		
Vale Fertilizantes	Uberaba, Brazil	99.9%	84.3%	
MVM Resources International, B.V.	Bayóvar, Peru	51.0	40.0	Mosaic, Mitsui

See *Significant changes in our business*. Vale Fertilizantes is a producer of phosphate rock, phosphate fertilizers ("P") (e.g., monoammonium phosphate ("MAP"), diammonium phosphate ("DAP"), triple superphosphate ("TSP") and single superphosphate ("SSP")) and nitrogen ("N") fertilizers (e.g., ammonium nitrate and urea). It is the largest producer of phosphate and nitrogen crop nutrients in Brazil. Vale Fertilizantes operates the following phosphate rock mines: Catalão, in the state of Goiás, and Tapira, Patos de Minas and Araxá, all in the state of Minas Gerais, and Cajati, in the state of São Paulo, in Brazil. In addition, Vale Fertilizantes has nine processing plants for the production of phosphate and nitrogen nutrients, located at Catalão, Goiás; Araxá and Uberaba, Minas Gerais; Guará, Cajati and three plants in Cubatão, São Paulo; and Araucária, Paraná.

Table of Contents

Besides the phosphate and nitrogen operations of Vale Fertilizantes, since 2010 we have also operated the Bayóvar phosphate rock mine in Peru, which is expected to reach nominal capacity of 3.9 Mtpy by 2014. Bayóvar is a world-class resource with a low mining cost of phosphate rock production.

The following table sets forth information about our phosphate rock production.

Mine	Type	Production for the year ended December 31, 2010 (thousand metric tons)
Bayóvar	Open pit	791
Catalão	Open pit	626
Tapira	Open pit	2,068
Patos de Minas	Open pit	43
Araxá	Open pit	1,182
Cajati	Open pit	545
Total		5,255

The following table sets forth information about our phosphate and nitrogen nutrients production.

Company/product	Production for the year ended December 31, 2010 (thousand metric tons)
Monoammonium phosphate (MAP)	898
Triple superphosphate (TSP)	788
Single superphosphate (SSP)	2,239
Dicalcium phosphate (DCP)	491
Ammonia	508
Urea	511
Nitric acid	454
Ammonium nitrate	447

3.2 Potash

We conduct potash operations in Brazil at the parent-company level. We lease Taquari-Vassouras, the only potash mine in Brazil (in Rosario do Catete, in the state of Sergipe), from Petrobras Petróleo Brasileiro S.A., the Brazilian state-owned oil company. The lease, signed in 1991, became effective in 1992 for a period of 25 years. The following table sets forth information on our potash production.

Mine	Type	Production for the year ended December 31, 2008	2009	2010	Recovery rate
		(thousand metric tons)			(%)
Taquari-Vassouras	Underground	607	717	662	85.7

3.3 Customers and sales

All potash sales from the Taquari-Vassouras mine are to the Brazilian market. In 2010, our production represented approximately 9% of total potash consumption in Brazil. We have a strong presence and long-standing relationships with the major players in Brazil, with more than 66% of our sales generated from four traditional customers.

Our phosphate products are sold to fertilizer blenders and cooperatives. In 2010, our production represented approximately 34% of total phosphate consumption in Brazil, with imports representing 44% of total supply. In the high-concentration segment, our production supplied more than 36% of total Brazilian consumption, with products like MAP, DAP and TSP. In the low-concentration phosphate nutrients segment, our production represented approximately 45% of total Brazilian consumption.

Table of Contents

3.4 Competition

Fertilizers have strong demand growth potential, which is anchored on market fundamentals similar to those underlying the global demand for minerals, metals and energy. Rapid per capita income growth of emerging economies causes diet changes towards an increasing intake of proteins that ultimately contribute to boost fertilizer use. More recently, global output of biofuels has started to boom as they emerged as an alternative source of energy to reduce world reliance on sources of climate-changing greenhouse gases. Given that key inputs for the production of biofuels sugar cane, corn and palm are intensive in the use of fertilizers, they are becoming another major driver of the global demand for crop nutrients.

The industry is divided into three major nutrients: potash, phosphate and nitrogen. There are limited resources of potash around the world with Canada, Russia and Belarus being the most important sources. Due to the lack of resources, the high level of investment and the long time required for a project to mature, it is unlikely that other regions will emerge as major potash producers over the next few years. In addition, the potash industry is highly concentrated, with the 10 major producers accounting for more than 95% of total world production capacity. While potash is a very scarce resource, phosphate is more available, but all major exporters are located in the northern region of Africa (Morocco, Algeria and Tunisia) and in the United States. The top five phosphate rock producers (China, United States, Morocco, Russia and India) account for 80% of global production, of which roughly 20% is exported. However, higher value-added products such as MAP and DAP are usually traded instead of phosphate rock due to cost efficiency.

Brazil is one of the largest agribusiness markets in the world due to its high production and consumption of grains and biofuels. It is the fourth-largest consumer of fertilizers in the world and one of the largest importers of phosphates, potash, urea and phosphoric acid. Brazil imports 91% of its potash consumption, which amounted to 5.2 Mtpy of KCl (potassium chloride) in 2010, 52% higher than 2009, from Russian, Belarussian, Canadian and German producers, in descending order. In terms of global consumption, the United States, Brazil, China and India represent 62% of the total. Our projects portfolios are highly competitive in terms of cost and logistics with these regions.

Most phosphate rock concentrate is consumed locally by downstream integrated producers, with the seaborne market corresponding to 16% of total phosphate rock production. Major phosphate rock exporters are concentrated in North Africa, mainly through state-owned companies, with Moroccan OCP Group holding 39% of the total seaborne market. Brazil imports 19% of its total phosphate nutrients it needs through both phosphate fertilizer products and phosphate rock. The phosphate rock imports supply non-integrated producers of phosphate fertilizers products such as SSP, TSP and MAP.

Nitrogen-based fertilizers are derived primarily from ammonia (NH_3), which, in turn, is made from nitrogen present in the air and natural gas, making this an energy-intensive nutrient. Ammonia and urea are the main inputs for nitrogen-based fertilizers. Consumption of nitrogen-based fertilizers has a regional profile due to the high cost associated with transportation and storage of ammonia, which requires refrigerated and pressurized facilities. As a result, only 12% of the ammonia produced worldwide is traded. North America is the main importer, accounting for 40% of global trade. Main exporting regions are the Middle East, North Africa, and Russia.

Table of Contents

4. Infrastructure

4.1 Logistics services

We have developed our logistics business based on the transportation needs of our mining operations and we also provide transportation services for other customers. We conduct logistics businesses at the parent-company level, through subsidiaries and through joint ventures, as set forth in the following table.

Company	Business	Location	Our share of capital (%) Voting	Total	Partners
Vale	Railroad (EFVM and EFC), port and maritime terminal operations	Brazil	100.0	100.0	
FCA	Railroad operations	Brazil	100.0	99.9	
FNS(1)	Railroad operations	Brazil	100.0	100.0	
MRS	Railroad operations	Brazil	37.9	41.5	CSN, Usiminas and Gerdau
CPBS	Port and maritime terminal operations	Brazil	100.0	100.0	
Log-In	Port and maritime terminal operations and intermodal logistics services	Brazil	31.3	31.3	Mitsui, public investors
PTI	Port and maritime terminal operations	Indonesia	59.2	59.2	Sumitomo, public investors
SPRC	Port and maritime terminal operations	Colombia	100.0	100.0	
FENOCO	Railroad operations	Colombia	8.4	8.4	Drummond, Glencore and Comercializadora Internacional Colombian Natural Resources I S.A.S.
Vale Logística Argentina	Port operations	Argentina	100.0	100.0	
SDCN	Railroad and maritime terminal operations	Mozambique	51.0	51.0	NCI and GESTRA Gestão e Transportes, SARL; Consórcio de Cabo Delgado, SARL; GEDENA Gestão e Desenvolvimento, SARL; STP Sociedade de Tecnologias e Participações, SARL; Niassa Desenvolvimento, SARL; and Moçambique Gestores, SARL
VBG Logistics (Vale BSGR Logistics) Corp.	Railroad and port operations	Liberia	51.0	51.0	BSG Resources (Guinea)
Transbarge Navigación	Paraná and Paraguay Waterway System (Convoys)	Paraguay	100.0%	100.0%	

(1) BNDESPAR holds debentures of FNS that, beginning in 2018, can be exchanged at its option for a number of FNS common shares representing a minority position in the company, as determined by a formula provided for in the instruments governing the debentures.

4.1.1 Railroads

Brazil

Vitória a Minas railroad ("EFVM"). The EFVM railroad links our Southeastern System mines in the Iron Quadrangle region in the Brazilian state of Minas Gerais to the Tubarão Port, in Vitória, in the Brazilian state of Espírito Santo. We operate this 905-kilometer railroad under a 30-year renewable concession, which expires in 2027. The EFVM railroad consists of two lines of track extending for a distance of 601 kilometers to permit continuous railroad travel in opposite directions, and single-track branches of 304 kilometers. Industrial manufacturers are located in this area and major agricultural regions are also accessible to it. The EFVM railroad has a daily capacity of 342,000 metric tons of iron ore. In 2010, the EFVM railroad carried a total of 78.9 billion ntk of iron ore and other cargo, of which 16.8 billion ntk, or 21.3%, consisted of cargo

48

Table of Contents

transported for customers, including iron ore for Brazilian customers. The EFVM railroad also carried 1.0 million passengers in 2010. In 2010, we had a fleet of 331 locomotives and 18,967 wagons at EFVM.

Carajás railroad ("EFC"). We operate the EFC railroad under a 30-year renewable concession, which expires in 2027. EFC is located in the Northern System, beginning at our Carajás iron ore mines in the Brazilian state of Pará and extending 892 kilometers to our Ponta da Madeira maritime terminal complex facilities located near the Itaqui Port in the Brazilian state of Maranhão. Its main cargo is iron ore, principally carried for us. It has a daily capacity of 313,970 metric tons of iron ore. In 2010, the EFC railroad carried a total of 90.4 billion ntk of iron ore and other cargo, 3.0 billion ntk of which was cargo for customers, including iron ore for Brazilian customers. EFC also carried 341,583 passengers in 2010. EFC supports the largest capacity train in Latin America, which measures 3.4 kilometers, weighs 42,300 gross metric tons when loaded and has 330 cars. In 2010, EFC had a fleet of 220 locomotives and 10,701 wagons.

Ferrovia Centro-Atlântica ("FCA"). Our subsidiary FCA operates the central-east regional railway network of the Brazilian national railway system under a 30-year renewable concession, which expires in 2026. The central east network has 8,023 kilometers of track extending into the states of Sergipe, Bahia, Espírito Santo, Minas Gerais, Rio de Janeiro and Goiás and Brasília, the Federal District of Brazil. It connects with our EFVM railroad near the cities of Belo Horizonte, in the state of Minas Gerais and Vitória, in the state of Espírito Santo. FCA operates on the same track gauge as our EFVM railroad and provides access to the Santos Port in the state of São Paulo. In 2010, the FCA railroad transported a total of 11.4 billion ntk of cargo for customers. In 2010, FCA had a fleet of 500 locomotives and 12,000 wagons.

Ferrovia Norte-Sul railroad ("FNS"). We have a 30-year renewable subconcession for the commercial operation of a 720-kilometer stretch of the FNS railroad in Brazil. Since 1989, we have operated a segment of the FNS, which connects to the EFC railroad, enabling access to the port of Itaqui, in São Luís, where our Ponta da Madeira maritime terminal is located. A 452-kilometer extension was concluded in December 2008. In 2010, the FNS railroad transported a total of 1.52 billion ntk of cargo for customers. This new railroad creates a new corridor for the transportation of general cargo, mainly for the export of soybeans, rice and corn produced in the center-northern region of Brazil. In 2010, FNS had a fleet of six locomotives and 440 wagons.

The principal items of cargo of the EFVM, EFC, FCA and FNS railroads are:

- iron ore and iron ore pellets, carried for us and customers;
- steel, coal, pig iron, limestone and other raw materials carried for customers with steel mills located along the railroad;
- agricultural products, such as soybeans, soybean meal and fertilizers; and
- other general cargo, such as building materials, pulp, fuel and chemical products.

We charge market prices for customer freight, including iron ore pellets originating from joint ventures and other enterprises in which we do not have a 100% equity interest. Market prices vary based on the distance traveled, the type of product transported and the weight of the freight in question, and are regulated by the Brazilian transportation regulatory agency, ANTT (*Agência Nacional de Transportes Terrestres*).

MRS Logística S.A. ("MRS"). The MRS railroad is 1,643 kilometers long and links the Brazilian states of Rio de Janeiro, São Paulo and Minas Gerais. In 2010, the MRS railroad carried a total of 144.9 million metric tons of cargo, including 60.8 million metric tons of iron ore and other cargo from Vale.

Table of Contents

Colombia

Ferrocarriles del Norte de Colombia S.A. ("FENOCO"). We own an 8.4% equity stake in FENOCO, a company that owns a concession to restore and operate the Chiriguana Santa Marta tranche (220 kilometers) of the Atlantic Railroad, which connects the Cesar coal-producing region with various ports in the Atlantic Ocean.

Argentina

On August 24, 2010, through our subsidiary Potasio Río Colorado S.A., we executed an agreement with Ferrosur Roca S.A. for partial assignment, subject to governmental approvals, of a 756-kilometer railroad administrative concession. This concession is important to the support of the Rio Colorado potash project and our strategy to become a leading global player in the fertilizer business.

Africa

On September 2010, we exercised an option to purchase a 51% stake in SDCN for US$21 million. This acquisition will allow the expansion of Moatize and facilitate the creation of a world-class logistics infrastructure to support our operations in Central and Eastern Africa. We will invest in the capacity expansion of the Nacala logistics corridor through the rehabilitation of the existing SDCN railroads in Malawi and Mozambique and the construction of railway links needed to carry the output of Moatize to a new deep water maritime terminal in Nacala, which will also be built by Vale.

We are currently negotiating contracts with the government of Liberia for the construction of an integrated railway-port system for transporting iron ore output from Simandou, in Guinea. Simandou is one of the best undeveloped iron ore deposits in the world in terms of size and quality, and the logistics corridor will allow the transportation of up to 50 Mtpy of iron ore by the end of the decade to our maritime terminal in the coast of Liberia.

4.1.2 Ports and maritime terminals

Brazil

We operate a port and six maritime terminals principally as a means to complete the delivery of our iron ore and iron ore pellets to bulk carrier vessels serving the seaborne market. See *Bulk materials Iron ore pellets Operations*. We also use our port and terminals to handle customers' cargo. In 2010, 12% of the cargo handled by our port and terminals represented cargo handled for customers.

Tubarão Port. The Tubarão Port, which covers an area of 18 square kilometers, is located near the Vitória Port in the Brazilian state of Espírito Santo and contains four maritime terminals: (i) the iron ore maritime terminal, (ii) Praia Mole Terminal, (iii) Terminal de Produtos Diversos, and (iv) Terminal de Granéis Líquidos.

The iron ore maritime terminal has two piers. Pier I can accommodate two vessels at a time, one of up to 170,000 DWT on the southern side and one of up to 200,000 DWT on the northern side. Pier II can accommodate one vessel of up to 365,000 DWT at a time, limited at 20 meters draft plus tide. In Pier I there are two ship loaders, which can load up to a combined total of 14,000 metric tons per hour. In Pier II there are two ship loaders that work alternately and can each load up to 16,000 metric tons per hour. In 2010, 100.4 million metric tons of iron ore and iron ore pellets were shipped through the terminal for us. The iron ore maritime terminal has a stockyard capacity of 2.8 million metric tons.

Table of Contents

Praia Mole terminal is principally a coal terminal and handled 10.7 million metric tons in 2010. See *Additional information Legal proceedings*.

Terminal de Produtos Diversos handled 6.6 million metric tons of grains and fertilizers in 2010.

Terminal de Granéis Líquidos handled 1.0 million metric tons of bulk liquid in 2010.

Ponta da Madeira maritime terminal. The Ponta da Madeira maritime terminal is located near the Itaqui Port in the Brazilian state of Maranhão. The terminal facilities can accommodate four vessels. Pier I can accommodate vessels displacing up to 420,000 DWT. Pier II can accommodate vessels of up to 155,000 DWT. Pier I has a maximum loading rate of 16,000 tons per hour. Pier II has a maximum loading rate of 8,000 tons per hour. Pier III, which has two berths and three shiploaders, can accommodate vessels of up to 220,000 DWT at the south berths and 180,000 DWT at the north berths and has a maximum loading rate of 8,000 metric tons per hour in each shiploader. Cargo shipped through our Ponta da Madeira maritime terminal consists principally of our own iron ore production. Other cargo includes manganese ore, copper concentrate and pig iron produced by us and pig iron and soybeans for unrelated parties. In 2010, 94.2 million metric tons were handled through the terminal for us and 5.4 million metric tons for customers. The Ponta da Madeira maritime terminal has a stockyard capacity of 6.2 million metric tons.

Itaguaí maritime terminal Cia. Portuária Baía de Sepetiba ("CPBS"). CPBS is a wholly owned subsidiary that operates the Itaguaí terminal, in the Sepetiba Port, in the Brazilian state of Rio de Janeiro. Itaguaí's maritime terminal has a pier that allows the loading of ships up to 18 meters of draft and up to 230,000 DWT. In 2010, the terminal uploaded 22.6 million metric tons of iron ore.

Guaíba Island maritime terminal. We operate a maritime terminal on Guaíba Island in the Sepetiba Bay, in the Brazilian state of Rio de Janeiro. The iron ore terminal has a pier that allows the loading of ships of up to 300,000 DWT. In 2010, the terminal uploaded 37.9 million metric tons of iron ore.

Inácio Barbosa maritime terminal ("*TMIB*"). We operate the Inácio Barbosa maritime terminal, located in the Brazilian state of Sergipe. The terminal is owned by Petrobras. Vale and Petrobras entered into an agreement in December 2002, which allows Vale to operate this terminal for a period of 10 years. In 2010, 0.6 million metric tons of fuel and agricultural and steel products were shipped through TMIB.

Santos maritime terminal ("TUF"). We operate a maritime terminal, through our subsidiary Vale Fertilizantes, in Santos, in the Brazilian state of São Paulo. The terminal has a pier that is equipped to receive ships of up to 67,000 DWT. In 2010, the terminal handled 2.1 million metric tons of ammonia and bulk solids, 10.2% higher than 2009.

Colombia

Sociedad Portuaria Rio Cordoba ("SPRC"). SPRC is a seaport facility wholly owned by Vale and used to export coal from the El Hatillo operation, as well as other nearby mines. The port is located in Cienaga, on the Caribbean coast of Colombia, in the Magdalena Department, about 67 kilometers from Barranquilla and 31 kilometers from Santa Marta.

Argentina

Vale Logística Argentina S.A. ("Vale Logística Argentina") operates a terminal at the San Nicolas port located in the province of Buenos Aires, Argentina, where Vale Logística Argentina has a permit to use a stockyard of 20,000 square meters until October 2016 and an agreement with third parties for an extra stockyard of 27,000 square meters. We expect to handle 2 million metric tons of iron and manganese ore through this port in 2011, which will come from Corumbá, Brazil, through the Paraguay and Paraná rivers, for

Table of Contents

shipment to Asian and European markets. The loading rate of this port is 17,000 tons per day and the unloading rate is 12,000 tons per day.

Indonesia

PTI owns and operates two ports in Indonesia to support its nickel mining activities.

The Balantang Special Port is located in Balantang Village, South Sulawesi, and has a pier that can accommodate vessels displacing up to 6,000 DWT.

The Harapan Tanjung Mangkasa Special Port is located in Harapan Tanjung Mangkasa Village, South Sulawesi, and has a pier that can accommodate vessels displacing up to 39,000 DWT.

4.1.3 Shipping

In addition to the iron ore seaborne shipping conducted to support our iron ore and pellets business (See *Bulk Materials Iron Ore Operations*), and the shipping and loading in the Paraná and Paraguay waterway system conducted to support our bulk material operations, we also operate tug boat services.

We continue to develop and operate a low-cost fleet of vessels, comprised of our own ships and ships hired pursuant to medium and long-term contracts, to support our bulk materials business. Over the last few years, we purchased 22 used capesize vessels. At the end of 2010, 14 of our own vessels were in operation. We have also placed orders with shipyards for the construction of 19 very large ore carriers, each with a capacity of 400,000 DWT, and four additional capesize vessels, each with a capacity of 180,000 DWT. The first very large ore carrier was delivered in March 2011. We expect this service to enhance our ability to offer our iron ore products in the Asian market at competitive prices and to increase our market share in China and the global seaborne market. In 2010, we shipped 72.1 million metric tons of iron ore and pellets on a CFR basis to China.

In the Paraná and Paraguay waterway system, we transport iron ore and manganese ores through our wholly owned subsidiary Transbarge Navigación, which transported 1,335,210 tons through the waterway system in 2010, and our wholly owned subsidiary Vale Logística Argentina, which loaded 1,629,000 tons of ore at Saint Nicolas Port into ocean-going vessels in 2010. In 2010, we also purchased two new convoys (two pushers and 32 barges) that will begin operations in 2011.

We operate a fleet of 28 tug boats (23 owned and five freighted) in maritime terminals in Brazil, specifically in Vitória (in the state of Espírito Santo), Trombetas and Vila do Conde (in the state of Pará), São Luís (in the state of Maranhão) and Aracaju (in the state of Sergipe).

We own 31.3% of Log-In, which conducts intermodal logistics services. Log-In offers port handling and container transportation services, by sea or rail, as well as container storage. It operates owned and chartered ships for coastal shipping, a container terminal (Terminal Vila Velha, or TVV) and multimodal terminals. In 2010, Log-In's coastal shipping service transported 159,856 twenty-foot equivalent units ("teus"), TVV handled 249,072 teus and its express train service moved 38,684 teus.

4.2 Energy

4.2.1 Electric power

We have developed our energy assets based on the current and projected energy needs of our mining operations, with the goal of reducing our energy costs and minimizing the risk of energy shortages.

Table of Contents

Brazil

Energy management and efficient supply in Brazil are priorities for us, given the uncertainties associated with changes in the regulatory environment, and the risk of rising electricity prices and electric energy shortages (as experienced in Brazil in the second half of 2001). We currently have eight hydroelectric power plants and four smaller hydroelectric power plants in operation. In addition, in December 2010, we obtained the operating license for the Estreito power plant, Vale's first hydroelectric power plant in the Northern region, which started generating power in March 2011. In 2010, our installed capacity in Brazil was 818 MW, which is similar to the previous year. We use the electricity produced by these plants for our internal consumption needs. As a large consumer of electricity, we expect that investing in power projects will help us reduce costs and will protect us against energy supply and price volatility. However, we may experience delays in the construction of certain generation projects due to environmental and regulatory issues, which may lead to higher costs.

Canada

In 2010, our wholly owned and operated hydroelectric power plants in Sudbury generated 9% of the electricity requirements of our Sudbury operations. The power plants consist of five separate generation stations with an installed generator nameplate capacity of 56 MW. The output of the plants is limited by water availability, as well as constraints imposed by a water management plan regulated by the provincial government of Ontario. Over the course of 2010, the power system operator distributed electrical energy at the rate of 117 MW to all surface plants and mines in the Sudbury area.

In 2010, diesel generation provided 100% of the electric requirements of our Voisey Bay operations. We have six diesel generators on-site, of which normally only four are in operation, producing 12 MW.

Indonesia

Energy costs are a significant component of our nickel production costs for the processing of lateritic saprolitic ores at PTI operations in Indonesia. A major portion of PTI's electric furnace power requirements are supplied at low-cost by its two hydroelectric power plants on the Larona River: (i) the Larona plant, which generates an average of 165 MW, and (ii) the Balambano plant, which generates an average of 110 MW. PTI has thermal generating facilities with 78 MW, which includes 54 MW from 24 Caterpillar diesel generators with capacity of 1 MW each and five Mirrlees Blackstone diesel generators, as well as a 24 MW high sulphur fuel oil burning steam turbine generator located in Sorowako. In addition, we are building the Karebbe plant, which will be the third hydropower plant on the Larona River, with 90 MW of average generating capacity. The plant will reduce production costs by substituting oil used for power generation with hydroelectric power.

4.2.2 Oil and natural gas

The use of natural gas in our energy matrix in Brazil is expected to increase from 1.7 million cubic meters per day ("Mm3/day") in 2010 to 11.6 Mm3/day in 2020. In order to mitigate supply and price risks we started investing in natural gas exploration. Since 2007, we have developed a significant hydrocarbon exploration portfolio in Brazilian onshore and offshore basins. In 2009, two discoveries were made that are currently under appraisal. We believe that natural gas will play an important role in the global energy matrix in the future, given its advantages of lower carbon emissions and greater flexibility with regard to power generation.

5. Other investments

We own a 50.0% stake in California Steel Industries, Inc. ("CSI"), a producer of flat-rolled steel and pipe products located in the United States. The remainder is owned by JFE Steel. CSI has annual production capacity of 1.8 million metric tons of flat rolled steel and pipe. CSI successfully concluded the commissioning of a second reheating furnace with state-of-the-art environmental technology at a cost of US$71.0 million,

Table of Contents

which will increase CSI's annual production capacity to approximately 2.8 million metric tons of flat rolled steel and pipe. The furnace is expected to be fully operational during the second quarter of 2011.

We have a 26.9% stake in the TKCSA integrated steel slab plant in the Brazilian state of Rio de Janeiro. The plant started operations during the third quarter of 2010, and will have a production capacity of 5.0 Mtpy. The plant will consume 8.5 million metric tons of iron ore and iron ore pellets per year, supplied exclusively by Vale.

We have a 61.5% stake in CADAM S.A. ("CADAM"), located on the border of the states of Pará and Amapá, in the Amazon area in northern Brazil. CADAM produces kaolin for paper coating and also conducts research into other uses for kaolin products in order to develop a more diversified portfolio. CADAM's reserves are principally concentrated in the open-pit Morro do Felipe mine, in Vitória do Jari, in the state of Amapá. The beneficiation plant and private port facilities are situated on the west bank of the Jari River, in Munguba, in the state of Pará. CADAM produces the following products: Amazon SB, Amazon Premium and Amazon Plus. They are sold mainly in the European, Asian and Latin American markets. CADAM obtains electricity from its own thermal power plant. In 2010, CADAM produced 403,000 metric tons of kaolin.

We conduct a pig iron operation in northern Brazil. This operation was conducted through our wholly owned subsidiary Ferro-Gusa Carajás S.A. ("FGC") until April 2008, when FGC was merged into Vale. We utilize two conventional mini-blast furnaces to produce 350,000 metric tons of pig iron per year, using iron ore from our Carajás mines in northern Brazil.

RESERVES

Presentation of information concerning reserves

The estimates of proven and probable ore reserves at our mines and projects and the estimates of mine life included in this annual report have been prepared by our staff of experienced geologists and engineers, unless otherwise stated, and calculated in accordance with the technical definitions established by the SEC. Under the SEC's Industry Guide 7:

> Reserves are the part of a mineral deposit that could be economically and legally extracted or produced at the time of the reserve determination.
>
> Proven (measured) reserves are reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, working or drill holes; grade and/or quality are computed from the results of detailed sampling; and (b) the sites for inspection, sampling and measurement are spaced so closely and the geologic character is so well defined that size, shape, depth and mineral content of reserves are well-established.
>
> Probable (indicated) reserves are reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation.

We periodically revise our reserve estimates when we have new geological data, economic assumptions or mining plans. During 2010, we performed an analysis of our reserve estimates for certain projects, which is reflected in new estimates as of December 31, 2010. Reserve estimates for each operation are for 100% of the operation and assume that we either have or will obtain all of the necessary rights to mine, extract and process ore reserves at each mine. Where we own less than 100% of the operation, reserve estimates have not been adjusted to reflect our ownership interest. Certain figures in the tables, discussions and notes have been rounded. For a description of risks relating to reserves and reserve estimates, see *Risk factors*.

Table of Contents

Iron ore reserves

In preparing iron ore reserve data, we used price assumptions that did not exceed the three-year (2008 to 2010) realized average prices for iron ore of US$76.31 per metric ton for pellet feed and US$68.57 per metric ton for sinter feed in the Southeastern System, US$74.52 per metric ton for pellet feed and US$73.67 per metric ton for sinter feed in the Southern System, US$93.48 per metric ton per for lump ore in the Midwestern System, and US$79.00 per metric ton for sinter feed in the Northern System. All prices are reported on a wet basis. For Samarco, the price assumption used did not exceed the three-year (2008 to 2010) realized average price for iron ore pellets of US$126.03 per dry metric ton.

The following tables set forth our iron ore reserves and other information about our iron ore mines. Our iron ore reserve estimates are of in-place material after adjustments for mining depletion, with no adjustments made for metal losses due to processing. Iron ore reserves increased slightly from 2009 to 2010.

Summary of total iron ore reserves(1)

	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Southeastern System	2,220.0	50.9	1,279.0	50.2	3,499.0	50.6	3,398.9	50.6
Southern System	1,459.9	52.2	1,811.4	48.8	3,271.3	50.3	3,373.0	50.5
Midwestern System	7.8	62.7	27.6	62.1	35.4	62.2	36.7	62.3
Northern System	4,948.9	66.7	2,311.1	66.7	7,260.0	66.7	7,098.5	66.7
Vale Total	8,636.6	60.2	5,429.1	56.9	14,065.7	58.9	13,907.1	58.8
Samarco(2)	1,134.0	42.4	934.9	39.8	2,068.9	41.2	2,111.2	41.3
Total	9,770.6	58.1	6,364.0	54.3	16,134.6	56.6	16,018.2	56.5

(1) Tonnage is stated in millions of metric tons of wet run-of-mine. Grade is % of Fe.

(2) Reserves of Samarco's Alegria iron ore mines. Our equity interest in Samarco is 50% and the reserve figures have not been adjusted to reflect our ownership interest.

Iron ore reserves per mine in the Southeastern System(1)

	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Itabira complex								
Conceição	269.0	51.3	26.5	58.9	295.5	51.9	320.0	52.0
Minas do Meio	303.9	53.9	167.7	55.9	471.6	54.6	501.6	54.6
Minas Centrais complex								
Água Limpa(2)	39.2	41.7	5.9	41.9	45.1	41.7	50.8	41.8
Gongo Soco	42.6	65.7	12.2	64.4	54.8	65.4	71.1	63.0
Brucutu	401.5	50.1	250.7	47.1	652.2	49.0	682.1	49.3
Baú(3)							37.1	55.7
Apolo	292.4	57.4	339.7	55.1	632.1	56.1	278.7	58.3
Mariana complex								
Alegria	152.0	49.7	26.9	46.8	178.9	49.2	220.5	49.7
Fábrica Nova	478.7	45.9	352.3	44.1	830.9	45.2	828.8	45.5
Fazendão	240.8	49.8	97.1	50.1	337.8	49.9	334.9	49.8
Timbopeba(3)							73.2	55.2
Total Southeastern	2,220.0	50.9	1,279.0	50.2	3,499.0	50.6	3,398.8	50.6

System

(1) Tonnage is stated in millions of metric tons of wet run-of-mine. Grade is % of Fe. Approximate drill hole spacing used to classify the reserves were: 100m × 100m to proven reserves and 200m × 200m to probable reserves.

(2) Vale's equity interest in Água Limpa is 50% and the reserve figures have not been adjusted to reflect our ownership interest.

(3) Timbopeba and Baú reserves are under review.

Table of Contents

Iron ore reserves per mine in the Southern System(1)

	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Minas Itabiritos complex								
Segredo	137.1	51.7	162.3	48.2	299.4	49.8	303.9	49.9
João Pereira	227.3	42.4	300.4	41.5	527.6	41.9	551.1	42.0
Sapecado	116.4	53.7	115.3	52.4	231.7	53.0	250.2	53.1
Galinheiro	123.5	54.5	188.2	54.0	311.8	54.2	320.6	54.3
Vargem Grande complex								
Tamandu	256.2	54.4	246.3	51.2	502.5	52.9	515.4	53.1
Capitão do Mato	200.1	55.6	561.2	50.7	761.3	52.0	771.6	52.1
Abóboras	229.2	45.5	217.6	43.5	446.8	44.5	453.4	44.6
Paraopeba complex								
Jangada	38.3	66.7	14.5	66.3	52.8	66.6	58.8	66.5
Córrego do Feijão	28.6	67.0	3.3	63.5	31.9	66.6	33.6	66.6
Capão Xavier	85.9	65.0	0.6	63.2	86.5	65.0	93.8	65.0
Mar Azul	17.4	58.1	1.6	58.2	19.0	58.1	20.6	58.6
Total Southern System	1,459.9	52.2	1,811.4	48.8	3,271.3	50.3	3,373.0	50.5

(1) Tonnage is stated in millions of metric tons of wet run-of-mine. Grade is % of Fe. Approximate drill hole spacing used to classify the reserves were: 100m × 100m to proven reserves and 200m × 200m to probable reserves.

Iron ore reserves per mine in the Midwestern System(1)(2)(3)

	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Urucum	7.8	62.7	27.6	62.1	35.4	62.2	36.7	62.3
Total Midwestern System	7.8	62.7	27.6	62.1	35.4	62.2	36.7	62.3

(1) The Midwestern System is comprised of the Urucum mine (formerly within the Southeastern System) and Corumbá (acquired by Vale in 2009).

(2) We are conducting a review of Corumbá's reserve model.

(3) Tonnage is stated in millions of metric tons of wet run-of-mine. Grade is % of Fe. Approximate drill hole spacings used to classify the reserves were: 100m × 100m to proven reserves and 200m × 200m to probable reserves.

Iron ore reserves per mine in the Northern System(1)

	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Serra Norte complex								
N4W	1,205.6	66.5	281.1	66.1	1,486.7	66.5	1,527.3	66.5
N4E	294.5	66.5	90.1	66.0	384.6	66.4	408.0	66.4

N5	347.2	66.8	741.0	67.2	1,088.2	67.1	862.7	67.1
Serra Sul								
S11	3,045.8	66.8	1,193.7	66.7	4,239.6	66.7	4,239.6	66.8
Serra Leste								
SL1	55.7	66.2	5.2	66.4	60.9	66.2	60.9	66.2
Total Northern System	4,948.9	66.7	2,311.1	66.7	7,260.0	66.7	7,098.5	66.7

(1) Tonnage is stated in millions of metric tons of wet run-of-mine. Grade is 66.7% of Fe. Approximate drill hole spacings used to classify the reserves are: 150m × 100m to proven reserves and 300m × 200m to probable reserves, except SL1 which is 100m × 100m to proven reserves and 200m × 200m to probable reserves.

Iron ore reserves per Samarco(1)(2)

	Proven	**2010**	**Probable**	**2010**	**Total**	**2010**	**Total**	**2009**
	Tonnage	**Grade**	**Tonnage**	**Grade**	**Tonnage**	**Grade**	**Tonnage**	**Grade**
Samarco								
Alegria Norte/Centro	698.6	44.1	553.5	40.7	1,252.1	42.6	1,276.3	42.7
Alegria Sul	435.4	39.7	381.4	38.5	816.8	39.1	835.0	39.2
Total Samarco	1,134.0	42.4	934.9	39.8	2,068.9	41.2	2,111.2	41.3

(1) Tonnage is stated in millions of metric tons of wet run-of-mine. Grade is % of Fe. Approximate drill hole spacings used to classify the reserves are: Alegria Norte/Centro, 150m × 100m to proven reserves and 200m × 300m to probable reserves; Alegria Sul, 100m × 100m to proven reserves and 200m × 200m to probable reserves.

(2) Vale's equity interest in Samarco mines is 50.0% and the reserve figures have not been adjusted to reflect our ownership interest.

Table of Contents

Total iron ore reserves increased slightly from 2009 to 2010, as the effect of mining production during 2010 was offset by updated geological models or pit designs and reserve classification at several mines.

Other mine data: Southeastern System iron ore mines

	Type	Operating since	Projected exhaustion date	Vale interest (%)
Itabira complex				
Conceição	Open pit	1957	2023	100.0
Minas do Meio	Open pit	1976	2023	100.0
Minas Centrais complex				
Água Limpa	Open pit	2000	2020	50.0
Gongo Soco	Open pit	2000	2018	100.0
Brucutu	Open pit	1994	2024	100.0
Apolo	Open pit		2039	100.0
Mariana complex				
Alegria	Open pit	2000	2021	100.0
Fábrica Nova	Open pit	2005	2033	100.0
Fazendão	Open pit	1976	2045	100.0

Other mine data: Southern System iron ore mines

	Type	Operating since	Projected exhaustion date	Vale interest (%)
Minas Itabiritos complex				
Segredo	Open pit	2003	2034	100.0
João Pereira	Open pit	2003	2034	100.0
Sapecado	Open pit	1942	2042	100.0
Galinheiro	Open pit	1942	2045	100.0
Vargem Grande complex				
Tamanduá	Open pit	1993	2039	100.0
Capitão do Mato	Open pit	1997	2040	100.0
Abóboras	Open pit	2004	2029	100.0
Paraopeba complex				
Jangada	Open pit	2001	2018	100.0
Córrego do Feijão	Open pit	2003	2014	100.0
Capão Xavier	Open pit	2004	2022	100.0
Mar Azul	Open pit	2006	2017	100.0

Other mine data: Midwestern System iron ore mines

	Type	Operating since	Projected exhaustion date	Vale interest (%)
Urucum	Open pit	1994	2024	100.0

Other mine data: Northern System iron ore mines

	Type	Operating since	Projected exhaustion date	Vale interest (%)
Serra Norte				
N4W	Open pit	1994	2029	100.0
N4E	Open pit	1984	2023	100.0
N5	Open pit	1998	2030	100.0
Serra Sul				
S11	Open pit		2061	100.0
Serra Leste				
SL1	Open pit		2039	100.0

Table of Contents

	Other mine data: Samarco iron ore mines			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Samarco				
Alegria Norte/Centro	Open pit	2000	2052	50.0
Alegria Sul	Open pit	2000	2052	50.0

Manganese ore reserves

No new manganese ore reserves were added in 2010. In preparing manganese reserve data, we used price assumptions that did not exceed the three-year (2008 to 2010) historical price for manganese of US$427.78 per metric ton (published by CRU, CIF China, 44% manganese grade). We have adjusted ore reserve estimates for extraction losses and metallurgical recoveries during extraction.

	Manganese ore reserves(1)							
	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Azul	40.3	41.0	8.4	39.5	48.7	40.7	51.8	40.9
Urucum	0.0	0.0	6.6	45.0	6.6	45.0	6.9	45.1
Morro da Mina	9.1	24.3	6.0	24.3	15.1	24.3	15.2	24.3
Total	49.4	37.9	21.0	36.9	70.4	37.6	73.9	37.9

(1) Tonnage is stated in millions of metric tons of wet run-of-mine. Grade is % of Mn.

The operating lifetime and projected exhaustion date of the manganese mines is shown below.

	Other mine data: manganese ore mines			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Azul	Open pit	1985	2022	100.0
Urucum	Underground	1976	2020	100.0
Morro da Mina	Open pit	1902	2045	100.0

Coal reserves

In preparing coal reserve data, we used price assumptions that did not exceed the three-year (2008 to 2010) average price (based on realized sales or reference prices): for Australian reserves, realized prices of US$176 per metric ton of hard metallurgical coal and US$118 per metric ton of PCI; realized prices of US$71.5 per metric ton for the El Hatillo reserves; and for hard metallurgical coal for Moatize reserves, US$175.0 per metric ton (standard hard coking coal).

Our coal reserve estimates have been provided on an in-place material basis after adjustments for mining depletion, moisture content, anticipated mining losses and dilution, but excluding any adjustment for losses associated with beneficiation of raw coal mined to meet saleable product requirements. Our coal reserve estimates were prepared by the following independent consultants: IMC Mining Group (Integra Coal Open Cut), IMC Mining Solutions (Integra Underground), SRK Consulting (Carborough Downs),

Table of Contents

Echelon Mining Services (Isaac Plains), Snowden Mining Industry Consultants Pty Ltd. (Moatize) and John T. Boyd Company (El Hatillo), each of whom has consented to the inclusion of these estimates herein.

		Coal ore reserves(1)					
	Coal type	Proven 2010 (tonnage)	Probable 2010 (tonnage)	Total 2010 (tonnage)	Total 2010 (calorific value)	Total 2009 (tonnage)	Total 2009 (calorific value)
Integra Coal:							
Integra Open-cut	Metallurgical & thermal	19.4	5.8	25.2	29.9	1.0	28.5 (thermal)
Integra Underground Middle Liddell Seam	Metallurgical	1.1	11.4	12.5		14.3	
Integra Underground Hebden Seam	Metallurgical	0.0	30.8	30.8		Not reported	Not reported
Total Integra Coal		20.5	48.0	68.5		15.3	
Carborough Downs Underground	Metallurgical & PCI	37.1	5.2	42.3	31.7 (PCI)	44.3	31.7 (PCI)
Isaac Plains North Open Cut	Metallurgical, PCI & thermal	21.3	2.1	23.4	31.0 (PCI) 27.8 (thermal)	23.7	31.0 (PCI) 27.8 (thermal)
El Hatillo	Thermal	46.7	0.0	46.7	25.8	50.0	25.4 (thermal)
Moatize	Metallurgical & thermal	422.0	532.0	954.0	32.0	954.0	32.0
Total		547.6	587.3	1,134.9		1,087.3	

(1) Tonnage is stated in millions of metric tons. Reserves are reported on a variable basis in regard to moisture : Integra Open Cut on in-situ estimated basis, Integra Underground on in-situ estimated basis + 2%, Carborough Downs on air dried basis, and Isaac plains North on in-situ estimated basis + 2%. Calorific value of product coal derived from beneficiation of ROM coal is typically stated in MJ/kg. Calorific value is used in marketing thermal and PCI coals. Marketable coal quality reported is based on typical 2010 sales contract specifications, except for Moatize.

(2) The reserves stated above by deposit are on a 100% shareholding basis. Vale's ownership interest in accordance with the table below should be used to calculate the portion of reserves directly attributable to Vale.

Reserves at Integra Open Cut increased overall as depletion of the South Pit reserves were offset by an increase in reserves following the grant of mining licenses and completion of new reserve estimates as part of the studies for the North Open Cut and Western extension to the South Pit area. Reserves of the Middle Liddell Seam for Integra Underground decreased in 2010 due to depletion. Reserves were reported for the Hebden Seam for Integra Underground after the grant of the legal right to mine and completion of studies and reserve estimates. Reserves at Carborough Downs decreased as a result of mining depletion. Reserves at Isaac Plains decreased mainly due to mining depletion, which was offset by a small increase resulting from an updated reserve estimate at El Hatillo. The decrease was also due to mining depletion in accordance with ROM production in 2010. Reserves at Moatize remain at previously reported quantities and classifications, as the mine is not yet in production and, since no additional material drilling exploration information was acquired, a reserve estimation update was not performed in 2010.

	Other mine data: coal mines			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Integra Coal:				
South Open-cut	Open pit	1999	2011	61.2
Middle Liddell Seam	Underground	1999	2014	61.2
Carborough Downs	Underground	2006	2022	80.0
Isaac Plains	Open pit	2006	2016	50.0
El Hatillo	Open pit	2007	2021	100.0

Moatize	Open pit	2046	100.0

Nickel ore reserves

In preparing nickel reserve data, we used price assumptions that did not exceed the three-year (2008 to 2010) average LME spot price for nickel of US$19,180.22 per metric ton. Our nickel reserve estimates are

Table of Contents

of in-place material after adjustments for mining depletion and mining losses (or screening and drying in the cases of Sulawesi and VNC) and recoveries, with no adjustments made for metal losses due to processing.

	Nickel ore reserves(1)							
	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Canada								
Sudbury	66.1	1.23	46.2	1.15	112.3	1.20	116.9	1.20
Thompson	8.2	1.79	18.5	1.69	26.7	1.72	26.1	1.72
Voisey Bay	21.0	2.87	3.1	0.65	24.1	2.58	25.0	2.71
Indonesia(2)								
Sulawesi	75.4	1.83	38.3	1.71	113.7	1.79	121.1	1.79
New Caledonia(2)								
VNC	101.9	1.34	24.5	1.85	126.4	1.44	124.3	1.46
Brazil								
Onça Puma	55.1	1.79	27.6	1.62	82.7	1.73	82.7	1.73
Total	327.7	1.62	158.2	1.53	485.9	1.59	496.1	1.60

(1) Tonnage is stated in millions of dry metric tons. Grade is % of nickel.

(2) We have rights to other properties in Indonesia, New Caledonia and in other locations, which have not yet been fully explored.

In Canada, reserves at our Sudbury operations decreased due primarily to mining depletion and reclassification of mineral reserves to mineral resources at the Copper Cliff mines and Stobie mine deposits. Reserves at our Thompson operations increased slightly due to resources-to-reserves conversion. Reserves at our Voisey Bay operations decreased primarily due to mining depletion. This reduction is supported by the reconciliation of production data with the life-of-mine plan estimates.

Reserves at Sulawesi decreased as a result of adjustments for mining depletion, changes in plant feed chemistry operational targets, changes to the duration of the life-of-mine plan (in accordance with the new mining law) and reclassification of mineral reserves to mineral resources.

Reserves at Onça Puma remained unchanged from 2009 estimates since there was virtually no production at this mine in 2010. At VNC, there was a slight increase in the reserve estimates from 2009 due to bedrock dilution that was not accounted for in the 2009 reserve estimates.

	Other mine data: nickel ore mines			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Canada				
Sudbury	Underground	1885	2038	100.0
Thompson	Underground	1961	2026	100.0
Voisey Bay	Open pit	2005	2023	100.0
Indonesia				
Sulawesi	Open cast	1977	2035	59.2
New Caledonia				
VNC	Open pit		2040	74.0
Brazil				
Onça Puma	Open pit		2044	100.0

Table of Contents

Copper ore reserves

In preparing copper reserve data, we used price assumptions that did not exceed the three-year (2008 to 2010) average LME spot price for copper of US$6,547.73 per metric ton. Our copper reserve estimates are of in-place material after adjustments for mining depletion and mining losses and recoveries, with no adjustments made for metal losses due to processing.

	Copper ore reserves(1)							
	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Canada								
Sudbury	66.1	1.51	46.2	1.55	112.3	1.53	116.9	1.51
Thompson	8.2	0.11	18.5	0.10	26.7	0.10	26.1	0.12
Voisey Bay	21.0	1.65	3.1	0.36	24.1	1.48	25.0	1.58
Brazil								
Sossego	124.2	0.84	41.5	0.84	165.7	0.84	161.3	0.91
Salobo	507.8	0.74	545.2	0.64	1,116.0	0.69	928.5	0.77
Total	727.3	0.84	654.5	0.70	1,444.8	0.77	1,257.9	0.86

(1) Tonnage is stated in millions of dry metric tons. Grade is % of copper.

In Canada, our copper ore reserve estimates decreased for the reasons discussed above in connection with nickel reserves since these deposits are of polymetallic ore.

In Brazil, reserves at Sossego and Salobo increased due primarily to a review of pit optimization with an updated economic model that incorporates increased price assumptions. The Salobo mine is currently in the pre-operating phase.

	Other mine data: copper ore mines			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Canada				
Sudbury	Underground	1885	2038	100.0
Thompson	Underground	1961	2026	100.0
Voisey Bay	Open pit	2005	2023	100.0
Brazil				
Sossego	Open pit	2004	2021	100.0
Salobo	Open pit		2046	100.0

PGMs and other precious metals reserves

In preparing PGMs and other precious metals reserves data, we used price assumptions that did not exceed the three-year (2008 to 2010) average NYMEX price for platinum of US$1,430.75 per troy ounce and the average Comex price for gold of US$1,068.87 per troy ounce. We expect to recover significant quantities of precious metals as by-products of our Canadian operations, Sossego and from the Salobo project. Our

Table of Contents

reserve estimates are of in-place material after adjustments for mining depletion and mining losses and recoveries, with no adjustments made for metal losses due to processing.

	Precious metals reserves(1)							
	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Canada								
Sudbury								
Platinum	66.1	0.7	46.2	1.2	112.3	0.9	116.9	0.9
Palladium	66.1	0.8	46.2	1.4	112.3	1.1	116.9	1.0
Gold	66.1	0.3	46.2	0.5	112.3	0.4	116.9	0.4
Brazil								
Sossego								
Gold	124.2	0.3	41.5	0.2	165.7	0.3	161.4	0.3
Salobo								
Gold	570.8	0.5	545.2	0.4	1,116.0	0.4	928.5	0.5
Total Gold	761.1	0.4	632.9	0.4	1,394.0	0.4	1,206.8	0.4

(1) Tonnage is stated in millions of dry metric tons. Grade is grams per dry metric ton.

In Canada, our mineral reserve estimates for platinum, palladium and gold fluctuated for the reasons discussed above in connection with nickel reserves. In Brazil, reserves at Sossego and Salobo increased, primarily as a result of a recent review of pit optimization that employed an updated economic model that incorporated increased price assumptions.

	Other mine data: precious metals mines			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Canada				
Sudbury	Underground	1885	2038	100.0
Brazil				
Sossego	Open pit	2004	2021	100.0
Salobo	Open pit		2046	100.0

Cobalt ore reserves

In preparing cobalt reserve data, we used price assumptions that did not exceed the three-year (2008 to 2010) average realized sales price for cobalt of US$22.82 per pound. We expect to recover significant quantities of cobalt as a by-product of our Canadian operations and from the VNC project. Our cobalt reserve estimates are of in-place material after adjustments for mining depletion and mining losses (or screening and drying in the case of VNC) and recoveries, with no adjustments made for metal losses due to processing.

	Cobalt ore reserves(1)							
	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Canada								
Sudbury	66.1	0.04	46.2	0.03	112.3	0.04	116.9	0.04
Voisey Bay	21.0	0.14	3.1	0.03	24.1	0.12	25.0	0.13
New Caledonia								
VNC	101.9	0.12	24.5	0.08	126.4	0.11	124.3	0.11
Total	189.0	0.09	73.8	0.05	262.8	0.08	266.3	0.08

(1) Tonnage is stated in millions of metric tons. Grade is % of cobalt.

Table of Contents

Our cobalt reserve estimates decreased in 2010 for the reasons discussed above in connection with nickel reserves.

	Other mine data: cobalt ore mines			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Canada				
Sudbury	Underground	1885	2038	100.0
Voisey Bay	Open pit	2005	2023	100.0
New Caledonia				
VNC	Open pit		2040	74.0

Phosphate reserves

In preparing phosphate reserve data, we used price assumptions that did not exceed the three year (2008 to 2010) average benchmarking prices for phosphate concentrate of US$132 per metric ton (average between value published by Fertecon and CRU BSC FOB Marocco). Our phosphate reserve estimates are of in-place material after adjustments for mining dilution, with no adjustments made for process recovery. The increase in our phosphate reserve estimates reflects the acquisition of fertilizer assets in Brazil.

	Phosphate reserves(1)							
	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Bayóvar	237.1	17.3	1.9	15.9	239.0	17.2	239.0	17.2
Catalão	59.1	10.4	7.6	10.2	66.7	10.4		
Tapira	271.0	7.0	461.6	6.6	732.6	6.7		
Araxá	151.0	11.7	4.9	9.8	155.9	11.6		
Cajati	81.5	5.6	49.0	4.5	130.5	5.2		
Salitre	0.0	0.0	206.0	11.4	206.0	11.4		
Total	799.7	11.0	730.7	7.9	1,530.4	9.5	239.0	17.2

(1) Tonnage is stated in millions of dry metric tons. Grade is % of P_2O_5.

	Other mine data: phosphate ore mine			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Bayóvar	Open pit	2010	2037	40.0
Catalão	Open pit	1982	2020	84.3
Tapira	Open pit	1979	2054	84.3
Araxá	Open pit	1977	2027	84.3
Cajati	Open pit	1970	2035	84.3
Salitre	Open pit		2033	84.3

Potash ore reserves

In preparing potash reserve data, we used price assumptions that did not exceed the three-year (2008 to 2010) average benchmark price for potash of US$483 per metric ton (average between the value published by Fertecon and CRU BSC FOB Vancouver). Our reserve estimates are of in-place material after

Table of Contents

adjustments for mining depletion and mining losses and recoveries, with no adjustments made for metal losses due to processing.

	Potash ore reserves(1)							
	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Taquari-Vassouras	10.3	28.0	3.1	28.0	13.4	28.0	7.6	28.0
Rio Colorado	0.0	0.0	360.8	34.2	360.8	34.2	360.8	34.2
Total	10.3	28.0	363.9	34.1	374.2	34.0	368.4	34.0

(1) Tonnage is stated in millions of dry metric tons. Grade is % of KCl.

Our potash reserves increased in 2010 mainly due to new reserves accessed from drilling in 2009 and 2010.

	Other mine data: potash ore mines			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Taquari-Vassouras(1)	Underground	1986	2016	100.0
Rio Colorado	Solution mining		2039	100.0

(1) We have a 25-year lease, which was signed in 1991, with Petrobras.

Kaolin ore reserves

In preparing kaolin reserve data, we used price assumptions that did not exceed the three-year (2008 to 2010) average realized sales price for kaolin of US$237 per metric ton. Our reserve estimates are of in-place material after adjustments for mining depletion and mining losses and recoveries, with no adjustments made for metal losses due to processing.

	Kaolin ore reserves(1)							
	Proven	2010	Probable	2010	Total	2010	Total	2009
	Tonnage	Brightness	Tonnage	Brightness	Tonnage	Brightness	Tonnage	Brightness
Morro do Felipe	8.1	86.6	23.0	86.8	31.2	86.7	32.1	86.7

(1) Tonnage is stated in millions of metric tons. Brightness is stated in percentage terms.

Reserves at Morro do Felipe decreased from 32.1 to 31.2 million metric tons primarily reflecting mining depletion in 2010 and, to a lesser extent, a reduction in estimates to reflect differences between actual recoveries and amounts predicted by our reserve model.

	Other mine data: kaolin ore mines			
	Type	Operating since	Projected exhaustion date	Vale interest (%)
Morro do Felipe	Open pit	1976	2030	86.2

Table of Contents

CAPITAL EXPENDITURES AND PROJECTS

Capital expenditures

We have an extensive program of investments in the organic growth of our businesses. During 2010, we made capital expenditures and other investments of US$12.705 billion, of which US$9.375 billion was on organic growth, while US$3.330 billion was invested in maintaining existing operations. As previously disclosed, the 2011 investment budget approved by our Board of Directors in October 2010 is US$24 billion. The capital expenditures, including R&D expenses, are reported on the basis of financial disbursements. A large part of the capital expenditures budget will be invested in Brazil (US$15.318 billion, or 63.8%) and in Canada (US$1.959 billion, or 8.2%). The remainder is allocated to investments in Argentina, Australia, Chile, China, Guinea, Indonesia, Malaysia, Mozambique, Oman and Peru, among other countries.

	2010 expenditures	2011 budget	
	(US$ million)	(US$ million)	(% of total)
Organic growth	US$9,375	US$19,521	81.3%
Project execution	8,239	17,535	73.0
Research and development	1,136	1,986	8.3
Investments to sustain existing operations	3,330	4,479	18.7
Total	US$12,705	US$24,000	100.0%

The following table summarizes by major business area the breakdown of our capital expenditures in 2009 and 2010 and our investment budget for 2011.

	2009		2010		2011 budget	
	(US$ million)	(% of total)	(US$ million)	(% of total)	(US$ million)	(% of total)
Bulk materials	US$2,688	29.8%	US$4,441	35.0%	US$10,110	42.1%
Ferrous minerals	2,124	23.6	3,474	27.3	8,522	35.5
Coal	564	6.3	967	7.6	1,588	6.6
Base metals	3,053	33.9	2,973	23.4	4,310	18.0
Fertilizer nutrients	91	1.0	843	6.6	2,505	10.4
Logistics	1,985	22.0	2,852	22.4	5,014	20.9
Energy	688	7.6	656	5.2	794	3.3
Steel	184	2.0	186	1.5	677	2.8
Other	324	3.6	755	5.9	590	2.5
Total	US$9,013	100.0%	US$12,705	100.0%	US$24,000	100.0%

Table of Contents

The following table sets forth total expenditures in 2010 for our main investment projects and expenditures budgeted for those projects in 2011, together with estimated total expenditures for each project. The status of each project is described after the table.

Business area	Project	Actual 2010(1)	Budgeted 2011	Total(2)
		(US$ million)		
Bulk materials and logistics	Carajás Additional 20 Mtpy(4)	125	121	575
	Carajás Additional 40 Mtpy	361	481	2,968
	Vargem Grande Itabiritos	56	356	1,521
	Conceição Itabiritos	177	411	1,174
	Conceição Itabiritos II	9	153	1,188
	CLN 150 Mtpy	587	1,289	2,986
	Tubarão VIII	132	185	833
	Moatize	626	422	1,658
	Serra Leste	15	274	455
	Simandou(3)	31	861	1,260
	Apolo	7	377	*
	Carajás Serra Sul S11D	211	1,017	6,776
	CLN S11D	18	155	*
	Oman(4)	474	269	1,356
	Teluk Rubiah	43	148	1,371
	Moatize expansion		161	*
	Nacala Corridor	66	298	*
Base metals	Totten	84	112	362
	Long-Harbour	531	817	2,821
	Onça Puma(4)	435	146	2,841
	Tres Vales(4)	60	9	140
	Salobo	652	406	1,808
	Konkola North	18	80	200
	Salobo II	78	275	1,025
	Cristalino		267	*
Fertilizer nutrients	Bayóvar(4)	231		566
	Bayóvar expansion		100	*
	Rio Colorado	204	1,225	5,915
	Salitre	25	345	*
Energy	Estreito(4)	233	40	703
	Karebbe	119	96	410
	Biofuels	89	46	633

(1) All figures presented on a cash basis.

(2) Estimated total capital expenditure cost for each project.

(3) Budget approved Simandou phase 1 with estimated capacity of 15 Mtpy.

(4) Projects delivered in 2010 and 2011.

* Total capital expenditures for projects have not been approved by the Board of Directors.

Bulk materials and logistics projects

Iron ore and iron ore pellet projects:

Carajás Additional 40 Mtpy. The former Carajás Additional 30 Mtpy project was enlarged to 40 Mtpy and, as a result, the Board of Directors approved additional capital expenditures of US$490 million. Investments include expenditures for the construction of a dry processing plant. The investments for increasing the capacity of the Ponta da Madeira maritime

terminal were finalized in 2010. The permit for vegetation removal and the installation license have been granted by the environmental protection authorities. Start-up is planned for the end of 2012.

Table of Contents

Serra Leste. The project includes investments in mining equipment, a new processing plant and logistics to meet additional iron ore production of 6 Mtpy in 2013. The iron ore will be transported by the EFC railroad. Start-up is scheduled for the first half of 2013. The project was recently approved by the Board of Directors and is subject to us obtaining the required environmental licenses.

Vargem Grande Itabiritos. This project, in the Southern System, will add 10 Mtpy of pellet feed to our current capacity. It involves investment in a new iron ore treatment plant, which will be fed by low grade iron ore produced by the Abóboras mine and will be transported through the Andaime terminal, which we have invested in. Start-up is expected for the second half of 2013.

Conceição Itabiritos. This is a brownfield project aimed at increasing pellet feed capacity through the processing of low-grade itabirites. The project involves the construction of a concentration plant to add 12 Mtpy to the current nominal capacity of pellet feed, using as feed run-of-mine from the Conceição mine, in the Itabira complex in the Southeastern System. Start-up is expected for the second half of 2013.

Conceição Itabiritos II. This brownfield project will add 19 Mtpy of iron ore, 13 Mtpy of pellet feed and 6 Mtpy of sinter feed to current capacity through the processing of low-grade itabirites. The project involves the adaptation of current ore circuits for processing new run-of-mine from the Conceição mine in the Itabira complex in the Southeastern System, and investments in mine equipment. Start-up is expected for the first half of 2014. The project was recently approved by the Board of Directors.

Carajás Serra Sul S11D. This project, located in the Southern range of Carajás in the Brazilian state of Pará, is the largest greenfield project in our history and in the global iron ore industry. It comprises the development of a mine and beneficiation complex with capacity of 90 million metric tons of iron ore per year, using a truckless mining operation. Start-up is scheduled for the second half of 2014, subject to obtaining the required environmental licenses.

Simandou. The project involves the development of a mine-mill complex in Guinea in two phases, with total estimated production capacity of 50 million metric tons of iron ore per year, and construction of an integrated railroad and maritime terminal on the coast of Liberia, which will enable the transportation of Simandou's entire production capacity. Simandou phase 1 involves the development of the Zogota Mine, south of the Simandou district, the construction of a dry processing plant and approximately 100 kilometers of railway tracks to link mining operations with an existing railroad in Liberia. Production is scheduled to start in 2012 with 2 Mtpy of iron ore, and is expected to ramp-up to reach 15 million metric tons of iron ore per year in 2014. Simandou phase 2, subject to approval by the Board of Directors, may result in capacity reaching 50 Mtpy in 2020, stemming from the development of blocks 1 and 2 and the construction of an additional rail spur connecting them to the Zogota Mine.

Apolo. We expect this greenfield project, located in the Southeastern System, to have production capacity of 24 Mtpy and expected start-up in 2014. It encompasses a new mining-processing complex and a railway spur linking the EFVM railroad. The project is subject to approval by the Board of Directors.

Tubarão VIII. We are building a new pellet plant at our existing seven-plant complex at the Tubarão Port, in the Brazilian state of Espírito Santo. We expect the plant to have production capacity of 7.5 Mtpy. Start-up is scheduled for the second half of 2012.

Teluk Rubiah. The project, in Teluk Rubiah, near the Strait of Malacca, in the Malaysian state of Perak, comprises the construction of a maritime terminal with enough depth to receive 400,000 dwt

Table of Contents

vessels and a stockyard capable of handling up to 30 million metric tons of iron ore per year in an initial phase. There is potential for future expansion of up to 100 Mtpy. Start-up is scheduled for the first half of 2014.

Coal projects:

Moatize. We have obtained all of the required licenses from the government of Mozambique for the construction of the Moatize mine, which will have nominal production capacity of 11 Mtpy, comprising 8.5 million metric tons of metallurgical coal and 2.5 million metric tons of thermal coal. During the first phase, coal production will be transported by the Linha do Sena railway to the Beira port, which is receiving additional investments in one of its piers. Start-up is scheduled for the first half of 2011.

Moatize expansion. In 2011, we will start developing the second phase of Moatize under which we will open a new pit, duplicate the Moatize Coal Handling Preparation Plant (CHPP) and provide additional infrastructure, thereby increasing production capacity to 22 Mtpy. Start-up is scheduled for the second half of 2013. The project is still subject to approval by the Board of Directors.

Logistics projects:

CLN 150 Mtpy. The project includes investments in railway capacity in the Ponta da Madeira terminal in the Brazilian state of Maranhão, including construction of a fourth pier. This will increase the railway and port capacity to approximately 150 Mtpy. Start-up is scheduled for the second half of 2013.

CLN S11D. The project will expand the railway and the Ponta da Madeira terminal in the Northern System to increase capacity in line with the expansion in Carajás, as well as the construction of a rail branch connecting the EFC railroad to the Serra Sul S11D mine. Start-up is scheduled for the second half of 2014. The project is still subject to approval by the Board of Directors.

Nacala Corridor. The project involves the construction of a 63-kilometer railway connecting the Moatize mine to the Malawi border, construction of a 139-kilometer railway connecting the Malawi border to the existing line (CEAR), a new coal maritime terminal in Nacala, Mozambique, a 29-kilometer rail branch that will connect the existing railway to the new coal maritime terminal and the recovery of existing railways in Malawi and Mozambique. Start-up is scheduled for 2014. The project is still subject to approval by the Board of Directors.

Base metals projects

Nickel projects:

Totten. We are working on the re-opening of the Totten nickel mine in Sudbury, Ontario, which was closed in 1972. The mine will have an annual production capacity of 8,200 metric tons of nickel, with copper and precious metals (platinum, gold and silver) as by-products. Completion is expected in 2012.

Long-Harbour. We are building a nickel processing facility pursuant to a commitment with the government of the Province of Newfoundland and Labrador, Canada. The facility will have nominal production capacity of 50,000 metric tons per year of finished nickel, utilizing feed from the Ovoid mine at Voisey Bay site. Start-up is scheduled for the first half of 2013.

Table of Contents

Copper projects:

Salobo. In the first phase of development of the Salobo copper deposit in Carajás, annual nominal capacity will be 100,000 metric tons of copper in concentrates, with 130,000 ounces of gold per year as a by-product. Salobo is scheduled to come on stream in the second half of 2011.

Salobo II. The project will expand the Salobo mine's production capacity from 100,000 to 200,000 metric tons per year of copper in concentrates. The scope of the project contemplates the expansion of the industrial and support facilities, raising the height of the tailing dam and increasing mine movement. Start-up is scheduled for the second half of 2013.

Konkola North. Located in the Zambian Copperbelt, Konkola North is an underground mine project with estimated nominal production capacity of 45,000 metric tons per year of copper in concentrate. This project is part of our 50/50 joint venture with African Rainbow Minerals ("ARM") in Africa. The joint venture entity controls the project, currently with 100% of the equity. Zambia Consolidated Copper Mines Limited ("ZCCM"), the Zambian state-owned copper company, has options to acquire up to 20% of the equity interest in the project from the joint venture. The strategic partnership with ZCCM is consistent with our strategy to preserve long-term partnerships with key local players to support the implementation of greenfield projects. Project development started in August 2010, and start-up is scheduled for 2013.

Cristalino. This project, located in the Carajás region, has an expected nominal capacity of 90,000 tons per year of copper in concentrates. Start-up is scheduled for the second half of 2014. The project is still subject to approval by the Board of Directors.

Fertilizer nutrients projects

Rio Colorado. The Rio Colorado project in Argentina involves an initial phase with a nominal capacity of 2.1 Mtpy of potash (potassium chloride, KCl), and a second phase which will increase capacity to 4.3 Mtpy. The project is comprised of investments in a solution mining system, the renovation of 440 kilometers of railway tracks, the construction of a railway spur of 350 kilometers and a new maritime terminal. The supply of natural gas is already secured through a joint venture with Yacimientos Petroliferos Fiscales ("YPF") that will operate a facility dedicated to Rio Colorado. Start-up of the first phase is expected in the first half of 2014. The project was recently approved by the Board of Directors.

Salitre. The Salitre project in Minas Gerais is comprised of a phosphate rock mine with estimated capacity of 2.2 Mtpy of phosphate concentrates and the implementation of a fertilizer production plant with the capacity to produce 560,000 tons per year of phosphorus pentoxide, linked by an 18-kilometer pipeline. Start-up is scheduled for 2014. The project is subject to approval of the Board of Directors.

Bayóvar II. We are developing the expansion of the Bayóvar project in northern Peru, with nominal production capacity of 1.9 million metric tons of phosphate rock. Start-up is scheduled for the second half of 2014. The project is still subject to approval by the Board of Directors.

Energy projects

Karebbe. Karebbe hydroelectric power plant in Sulawesi, Indonesia is projected to add 90 megawatts of average generating capacity. The plant will supply power to our Indonesian operations, which will reduce our production costs and enable the potential expansion to 90,000 tons per year of nickel matte. The dam construction is in the final stage and the installation of turbines has begun. Start-up is scheduled for the second half of 2011.

Biofuels. Biopalma is implementing a project to produce approximately 500,000 tons per year of palm oil in the Northern region of Brazil, and is starting production in 2011. A significant amount of Biopalma's production will be sold to Vale and used as raw material to produce biodiesel from 2015

Table of Contents

onwards for the B20 mix (a blend of 20% biodiesel and 80% regular diesel) to power our fleet of locomotives, heavy-duty machinery and equipment for Vale's operations in Brazil.

Steel projects

We have the following steel projects, which will create additional demand for our iron ore and iron ore pellets.

Aços Laminados do Pará ("ALPA"). We expect to start the development of the ALPA project in 2011, which involves the construction of a steel plant in Marabá, in the Brazilian state of Pará. The plant will have a nominal production capacity of 1.8 Mtpy in slabs and 0.7 Mtpy in semi-finished steel. Start-up is expected for the first half of 2014, subject to approval by the Board of Directors.

Companhia Siderúrgica do Pecém ("CSP"). In partnership with Dongkuk Steel Mill Co. ("Dongkuk"), and Posco, two major steel producers in South Korea, we will start development of a steel slab plant in the Brazilian state of Ceará. During this phase, Vale will own 50% of the shares, Dongkuk will own 30%, and Posco 20%. The plant will have a nominal production capacity of 3.0 Mtpy, and total investments of US$4.2 billion, with potential for expansion to 6.0 Mtpy in a second stage. Start-up is expected to occur in 2014.

Companhia Siderúrgica Ubu ("CSU"). We are also evaluating the feasibility of constructing an integrated steel slab plant to be located in the Brazilian state of Espírito Santo, which would have a nominal production capacity of 5.0 Mtpy. In conjunction with the ongoing feasibility study, we are looking for potential partners for the project. If pursued, start-up would likely be scheduled for 2014. The project is subject to approval by the Board of Directors.

REGULATORY MATTERS

We are subject to a wide range of governmental regulation in all the jurisdictions in which we operate worldwide. The following discussion summarizes the kinds of regulation that have the most significant impact on our operations.

Mining rights

In order to conduct mining activities, we are generally required to obtain some form of governmental permits, which differ in form depending on the jurisdiction but may include concessions, licenses, claims, tenements, leases or permits (all of which we refer to below as "concessions"). Some concessions are of indefinite duration, but many have specified expiration dates, and may not be renewable. The legal and regulatory regime governing concessions differs among jurisdictions, often in important ways. For example in many jurisdictions, including Brazil, mineral resources belong to the State and may only be extracted pursuant to a concession. In other jurisdictions, including Canada, a substantial part of our mining operations is conducted pursuant to mining rights we own or pursuant to leases, often from government agencies.

Table of Contents

The table below summarizes our principal mining concessions and other similar rights. In addition to the concessions described below, we have exploration licenses covering 10.1 million hectares in Brazil and 17.8 million hectares in other countries.

Location	Concession or other right	Approximate area covered (in hectares)	Expiration date
Brazil	Mining concessions	664,627	Indefinite
Canada			
Ontario	Mineral Leases	14,026	2011-2028
	Patented Mineral Rights	82,805	Indefinite
	License of occupation	1,157	Indefinite
	Mining License of Occupation	2,952	Indefinite
Manitoba	Order in Council Leases	109,043	2011-2028
	Leases	4,903	2013
Newfoundland and Labrador	Mining lease	1,599	2027
	Surface lease	4,015	2027
Indonesia	Contract of Work	190,510	2025(1)
Australia	Mining tenements	22,281	2009-2039
New Caledonia	Mining concessions	20,332	2016-2051
	Mining Concessions Tiebaghi Nickel	936	2048
	Mining concessions (outside the VNC project area)	13,586	2016-2040
Peru	Mining concessions	146,887(2)	Indefinite
Colombia	El Hatillo concessions	9,695	2027
	Cerro Largo Sur concessions	1,092	2032
Argentina	Mining concessions	80,889(3)	Indefinite
Chile	Mining concessions	50,632(4)	Indefinite
Mozambique	Mining concessions	23,780	2030
Guinea	Mining concessions	102,400	2045

(1) The Contract of Work for our Indonesian mining operations expires in 2025. However, under the new Mining Law, we may be entitled to apply for at least one 10-year extension.

(2) The Peruvian mining regime comprises only one license type. For purposes of this report, only licenses involving mining activities were counted.

(3) Out of the 80,889 hectares in Argentina, only 40,274 hectares are associated with active mining projects.

(4) Out of the 50,332 hectares in Chile, only 23,657 have current mining activities.

Many concessions impose specific obligations on the concessionaire governing such matters as how operations are conducted and what investments are required to be made. Our ability to maintain our mineral rights depends on meeting these requirements, which often involve significant capital expenditures and operating costs.

Regulation of mining activities

Mining and processing are subject to extensive regulation, which differs in each jurisdiction in which we operate. Our major operations are subject to legislation and regulations that apply to mining activities, which in many countries include state or provincial law in addition to

national or federal law. In addition, many of our concessions, particularly for large operations, impose additional obligations on the concessionaire.

The jurisdictions in which we operate typically have government agencies that are charged with granting mining concessions and monitoring compliance with mining law and regulations. For example, mining activities in Brazil are supervised by the National Mineral Production Department (*Departamento Nacional de Produção Mineral*), or DNPM, an agency of the federal Ministry of Mines and Energy.

Table of Contents

Changes in mining legislation can have significant effects on our operations. Among the jurisdictions in which we currently have major operations, there are several proposed or recently adopted changes in mining legislation that could materially affect us. These include the following:

- The Brazilian Ministry of Mining and Energy is planning to propose changes to the Brazilian Mining Code, which if adopted may have important implications for mining operations in Brazil or require unexpected capital expenditures.

- In Indonesia, a new Mining Law came into effect in January 2009 that introduces a new licensing regime. In 2010, certain government regulations implementing the new Mining Law were promulgated, but some remain outstanding. PTI, in collaboration with its Indonesian legal advisors, is investigating the impacts that the new Mining Law and regulations may have on PTI's current operations and its future prospects in Indonesia. Until all of the implementing regulations are promulgated, we will be unable to assess how and to what extent PTI's Contract of Work and operations will be affected.

- In New Caledonia, a new mining law was passed in March 2009 requiring new mining projects to obtain formal authorization rather than a declaration. Our application for authorization (replacing a 2005 declaration) must be made by April 2012 and, once submitted, we should obtain the authorization by April 2015. We believe it is unlikely that the application for the authorization will be rejected, but there is a risk that new conditions will be imposed.

- In Guinea, the government has proposed a new mining code that would change some of the current provisions governing mining operations. In particular, it would extend to all mining projects a requirement for 15% State participation that is currently only applicable to projects involving diamonds, gold or precious stones.

Environmental regulations

We are also subject to environmental regulations that apply to the specific types of mining and processing activities we conduct. We require approvals, licenses, permits or authorizations from governmental authorities to operate, and in most jurisdictions the development of new facilities requires us to submit environmental impact statements for approval and often to make additional investments to mitigate environmental impacts. We must also operate our facilities in compliance with the terms of the approvals, licenses, permits or authorizations.

Environmental regulations affecting our operations relate, among other matters, to emissions into the air, soil and water; recycling and waste management; protection and preservation of forests, coastlines, natural caverns, watersheds and other features of the ecosystem; water use; and decommissioning and reclamation. In many cases, the mining concessions or environmental permits under which we operate impose specific environmental requirements on our operations. Environmental regulations can sometimes change and ongoing compliance can require significant costs for capital expenditures, operating costs, reclamation costs and compliance. For example, in Brazil, a suit challenging a Brazilian environmental decree that permits mining in certain subterraneous areas may adversely affect our ability to conduct some mining operations or even reserves.

Environmental legislation is becoming stricter worldwide, which could lead to greater costs for environmental compliance. For instance, if we are required to modify installations, develop new operational procedures or purchase new equipment, our environmental compliance costs could increase. In particular, we expect heightened attention from various governments to reducing greenhouse gas emissions as a result of concern over climate change. Some important environmental regulation and compliance initiatives are described below, but it is unclear whether additional operating or capital expenditures will be required to comply with enacted amendments or what effect these regulations will have on our business, financial results or cash flow from operations:

- Our operations in Canada and at PTI in Indonesia are subject to air emission regulations that address, among other things, sulfur dioxide ("SO2"), particulates and metals. We will be required to make significant capital expenditures to ensure compliance with these emissions standards. The imposition of more stringent standards in the future, especially for SO2 and nickel, could further increase our costs.

Table of Contents

The Canadian federal government's efforts to legislate Greenhouse Gas ("GHG") emission reduction targets for the industrial sectors have slowed down. The provinces of Manitoba, Ontario and Newfoundland have begun consulting various stakeholders with respect to climate change initiatives and are also focusing on adaptation strategies.

In Canada, a number of studies have been completed or are in progress in Sudbury and Port Colborne related to contamination of soil and water from past and continuing activities. We are taking steps, in partnership with other stakeholders, to remediate the ecological impact of our activities.

The Australian government is seeking to introduce an environmental scheme as part of an overall strategy to address climate change and reduce the output of greenhouse gas emissions in Australia. The Australian government has stated that it is committed to imposing mandatory targets to achieve reductions in greenhouse gas emissions by 2020.

In October 2009, Indonesia adopted new legislation on Environmental Protection and Management. It sets out a broad regulatory structure and provides that many important details will be clarified in later implementing regulations.

Brazil adopted a federal carbon emissions law (*Política Nacional de Mudanças Climáticas*) in December 2009 that contemplates specific limits on carbon emissions to be established in late 2011 and phased in through 2020. The law establishes a voluntary commitment to cut Brazil's GHG emissions between 36.1% and 38.9% by 2020, based on 2005 levels, and several regulated industries, including the steel, forestry, agriculture and power generation sectors, have designed plans to reduce their GHG emissions. By the end of 2011, the government plans to issue rules establishing specific limits on carbon emissions from other sectors of the economy, including mining activities.

Royalties and other taxes on mining activities

We are required in many jurisdictions to pay royalties or taxes on our revenues or profits from mineral extractions and sales. These payments are an important element of the economic performance of a mining operation. The following royalties and taxes apply in some of the jurisdictions in which we have our largest operations:

In Brazil, we pay a royalty known as the CFEM (*Compensação Financeira pela Exploração de Recursos Minerais*) on the revenues from the sale of minerals we extract, net of taxes, insurance costs and costs of transportation. The current rates on our products are: 2% for iron ore, kaolin, copper, nickel, fertilizers and other materials; 3% on bauxite, potash and manganese ore; and 1% on gold. The Brazilian government is preparing to propose changes in the CFEM regime. Any changes must be incorporated into a final proposal by DNPM, which is then subject to approval by the Brazilian National Congress. We are currently engaged in several administrative and legal proceedings alleging that we have failed to pay the proper amount of CFEM. See *Additional information Legal proceedings CFEM-related proceedings*.

The Canadian provinces in which we operate charge us a tax on profit from mining operations. Profit from mining operations is generally determined by reference to gross revenue from the sale of mine output and deducting certain costs, such as mining and processing costs and investment in processing assets. The statutory mining tax rates are 10% in Ontario; with graduated rates up to 17% in Manitoba; and a combined mining and royalty tax rate of 16% in Newfoundland and Labrador.

Table of Contents

In Indonesia, our subsidiary PTI pays a royalty fee on, among other items, its nickel production on the concession area and has made certain other commitments. Until March 2008 the royalty was equal to 1.1% of revenues from sales of nickel products. As of April 2008, the royalty payment was changed to equal an amount based on sales volume (US$78 per metric ton of contained nickel matte, based on total production).

In Australia, we pay a royalty on revenues from the sale of minerals we extract in accordance with state laws. In Queensland, a two-tier coal royalty schedule applies under which we pay 7% of the value up to A$100 per ton and 10% of the value thereafter. The price assumed is net of port charges and demurrage. In New South Wales, we pay coal ad valorem royalties on the value of production (total revenue less allowable deductions). The royalty rates are 6.2% for deep underground mines (coal extracted below 400 meters), 7.2% for underground mines and 8.2% for open cut mines. The assessable revenue is net of beneficiation costs and certain levies.

The Australian government is currently considering introducing a mineral resource rent tax ("MRRT"). The MRRT will tax profits generated from the exploitation of coal and iron ore resources in Australia. The proposed tax would be levied at an effective rate of 22.5% of assessable profit and would be deductible for company income tax purposes. The difference between the MRRT and royalties paid to each state government is that royalties are based on revenue, whereas the MRRT is based on profit. However, the government has indicated that companies will be given a credit for any state-based royalties paid where the MRRT is payable.

Regulation of other activities

In addition to mining and environmental regulation, we are subject to comprehensive regulatory regimes for some of our other activities, including rail transport, electricity generation, and oil and gas. We are also subject to more general legislation on workers' health and safety, safety and support of communities near mines, and other matters.

Our Brazilian railroad business is subject to regulation and supervision by the Brazilian Ministry of Transportation and the transportation regulatory agency (*Agência Nacional de Transportes Terrestres*), or ANTT, and operates pursuant to concession contracts granted by the federal government. The concession contracts impose certain shareholder ownership limitations. The concession contract for FCA limits shareholder ownership to 20% of the voting capital of the concessionaire, unless such limit is waived by ANTT. We own 99.9% of FCA, which ANTT has authorized. The 20% ownership limitation does not apply to our EFVM, EFC and FNS railroads. ANTT also sets different tariff ceilings for railroad services for each of the concessionaires and each of the different products transported. So long as these limits are respected, the actual prices charged can be negotiated directly with the users of such services.

The MRS concession contract provides that each shareholder can only own up to 20% of the voting capital of the concessionaire, unless otherwise permitted by ANTT. As a result of our acquisitions of CAEMI and Ferteco, our share in the voting capital of MRS surpassed this threshold. As a result, Vale waived its voting and veto rights with respect to MRS shares in accordance with a 2006 ANTT resolution. We continue to have some voting rights through the shareholdings of a subsidiary.

Our railroad concession contracts have a duration of 30 years and are renewable. The FCA and MRS concessions expire in 2026, and the concessions for EFC and EFVM expire in 2027. We also own the subconcession for commercial operation for 30 years of a 720-kilometer segment of the FNS railroad, in Brazil. This concession expires in 2037.

In connection with the approval in 2006 of our acquisition of Vale Canada, we made a number of undertakings to the Canadian Minister of Industry under the Investment Canada Act. We believe we are substantially in compliance with these undertakings, which include locating our global nickel business in

Table of Contents

Toronto, Canada; accelerating the Voisey Bay development project; enhancing investments in a number of areas in Canada; and honoring agreements with provincial governments, local governments, labor unions and aboriginal groups.

Some of our products are subject to regulations applicable to the marketing and distribution of chemicals and other substances. For example, the European Commission has adopted a European Chemicals Policy, known as REACH ("Registration, Evaluation, and Authorization of Chemicals"). Under REACH, manufacturers and importers were required to register new substances prior to their entry into the European market and in some cases may be subject to an authorization process. A company that fails to comply with the REACH regulation could face restrictions to commercialize its products in Europe. We have complied with registration requirements for the substances we import into or manufacture in the EU in 2010 and continue to take measures to manage our exposure to the authorization process.

II. OPERATING AND FINANCIAL REVIEW AND PROSPECTS

Overview

In 2010 we recorded the best annual results in our history, characterized by record figures for operating revenues, operating income, operating margin and net earnings. We also invested the largest amount in our history in capital expenditures to fund the creation of new platforms for future growth and to sustain high performance.

While 2009 was a transition year, marked by weaker but still robust performance, 2010 was a year of strong recovery and performance due to the combination of two powerful forces. On the one hand, the initiatives developed by the Company in response to the global economic downturn, embracing change and structural transformation, began to bear fruit. On the other hand, the global economy, led by emerging economies, the main drivers of the demand for minerals and metals, showed strong growth, rallying from the depressed levels of late 2008 and early 2009.

Our powerful cash generation and rigorous discipline in capital allocation allowed us to overcome once again the classical challenge posed to growth companies to finance growth, maintain a sound balance sheet and meet shareholders' aspirations for capital return.

Below are the main highlights of Vale's performance in 2010:

- Gross operating revenue of US$46.5 billion;
- Operating income of US$21.7 billion;
- Operating margin, measured as the ratio of operating income to net operating revenues, of 47.9%;
- Record return of capital to shareholders of US$5.0 billion, through cash dividends of US$3.0 billion, equal to US$0.57 per share, and the completion of a share repurchase program of US$2.0 billion;
- Net income of US$17.3 billion, or US$3.23 per preferred and common share on a fully diluted basis;
- Strong financial position, supported by large cash holdings of US$9.4 billion, availability of significant medium and long-term credit lines and a low-risk debt portfolio.

Table of Contents

Demand and prices

The following table sets forth our average realized prices for our principal products for each of the periods indicated.

	Year ended December 31,			
	2007	**2008**	**2009**	**2010**
	(US$ per metric ton, except where indicated)			
Iron ore	45.33	67.32	55.99	103.50
Iron ore pellets	78.62	131.76	73.75	161.29
Manganese	107.34	350.46	147.06	230.22
Ferroalloys	1,311.48	2,709.60	1,395.26	1,547.84
Nickel	37,442.28	21,662.14	14,596.55	21,980.19
Copper	6,611.27	6,331.07	5,229.39	