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InBrief

# The mining sector in Brazil: building institutions for sustainable development

Mining Partnerships for Development – Spotlight series 17  
June 2012



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## Introduction

**Mining creates many impacts in host countries; on foreign direct investment, export earnings, government revenues, household and national incomes (Gross Domestic Product/GDP) and employment. But in low and middle income countries especially, two questions always arise when new mines are in prospect:**

- **why have some countries – but not others – leveraged their natural resource endowments to create a better life for their people?**
- **what specific policies and practices should the mining industry, governments, local communities and development agencies adopt to promote broader economic and social development?**

ICMM's Mining Partnerships for Development (MPD) work has investigated these questions through a series of country case studies, of which Brazil is the sixth. The study covers the macroeconomic impacts of the mining sector as a whole, with a particular focus on the local-level impacts of mining in Pará State in northern Brazil. Brazilian national, state and local government agencies and a range of mining stakeholders participated in this and earlier studies under the MPD work (including the World Bank, International Finance Corporation, UNCTAD, Harvard Kennedy's School Corporate Social Responsibility Initiative, Inter-American Development Bank and UN Economic Commission for Africa).

ICMM presented draft findings of the Brazil study to representatives from federal and state government agencies, companies, civil society organizations, academia and labour groups at a one-day workshop on 29 February 2012 in Brasilia.

## About Mining Partnerships for Development

Some 50 countries are economically dependent on mining, and its employment and other benefits are critical for millions of the world's poorest people. Yet mineral wealth does not always result in positive economic growth locally or even nationally.

ICMM's Mining Partnerships for Development (MPD) project supports the formal commitment by ICMM member companies to leverage the wealth of mining into broader economic and social development in the countries in which they operate.

In 2004, MPD's predecessor, the Resource Endowment initiative, in collaboration with UNCTAD and the World Bank Group and overseen by an international advisory body, began investigating why some countries were able to leverage mining into broader development benefits and some were not. Pilot country case studies of Chile, Peru, Tanzania and Ghana established that:

- the so-called "resource curse" (including an overvalued exchange rate that penalizes other exporters and import-competing industries) is a possible, but not an inevitable, consequence of a large, mineral export sector
- mining investments can catalyze broader economic and social development, reduce poverty and improve living standards
- companies alone cannot unlock the development benefits from mining – governance is key and multi-stakeholder partnerships can help fill capacity gaps by:
  - integrating mining with government development policy at national, regional and local levels
  - building capacity in government agencies, NGOs and other partners.

ICMM has progressively developed these findings into a standardized toolkit to systematically and objectively identify and implement development partnerships.

The toolkit identifies six priority themes for partnership:

1. mining and poverty reduction
2. mining and revenue management
3. mining and regional development planning
4. mining and social investment
5. mining and local content
6. mining and dispute resolution.

In 2011, ICMM revised, extended and republished the toolkit as the *Mining Partnerships for Development Toolkit*. This latest version has been applied in Lao PDR and now in Brazil. The MPD Toolkit can be used by mine managers and those interested in promoting economic and social development (including host governments, development agencies and development-focused NGOs).

For more information, visit [www.icmm.com/mpd](http://www.icmm.com/mpd) or email us at [info@icmm.com](mailto:info@icmm.com).

## Country context

### The macroeconomy of Brazil

Brazil is well endowed with both renewable and non-renewable resources. A return to democratic government in 1985 and macroeconomic policy reforms in the 1990s have transformed Brazil into one of the world’s most successful market economies. Brazil today enjoys low formal sector unemployment, low budget deficits, manageable inflation and steady economic growth. In 2011, Brazil overtook the UK as the world’s sixth largest economy.

The effects of this economic turnaround since the 1990s are evident in a range of social indicators, such as improvements in sanitation and water supply, a significant reduction in infectious diseases and improved educational attainment. Brazil now ranks 84th out of 187 countries on the UN Human Development Index and is expected to have met most, if not all, of the UN Millennium Development Goals by 2015.

This strengthening of the economy has, in part, been supported by fast-growing exports of iron ore and other minerals (mining accounted for 18% of exports in 2010). Brazil’s expanding mining industry is large by world standards, and investment is expected to continue at around US\$12 billion per year to 2015. In 2010, investment by Vale (Brazil’s largest and the world’s second largest mining company) was the equivalent of almost 5% of the national investment total for all sectors.

To date the overall macroeconomic contributions of mining have not been well documented and debated. Mining clearly plays an important and growing role in Brazil’s macroeconomy: the sector’s rapid growth in absolute terms has helped to develop the economy and to reduce poverty. At the national level, mining represents one of many sectors that have supported the country’s outstanding economic performance, although the rapid growth of the mineral sector – in particular when viewed broadly to include oil and gas – may present risks of overvalued exchange rates unless carefully managed.

Despite the significant macroeconomic contributions to date, some argue that the country’s abundant mineral resources remain underdeveloped. Brazil relies to an unusual degree on local (as opposed to foreign direct) investment to develop its mineral resources. This may reflect foreign investment disincentives in the form of complex regulations and numerous and complex mining taxes. Taxes account for around 20% of gross iron ore sector revenues: a figure that compares unfavourably with competitor nations. Political debate about mining taxation has tended to focus on the “CFEM” royalty (amounting to around US\$580 million in 2010) although this represents only a small portion of the high overall tax burden.

At the local level, where mines operate in often rural and less developed areas, mining emerges as the dominant economic activity with far-reaching economic and social impacts. In these parts of Brazil, mining has a transformative impact. Capturing the full range of benefits requires integrating mining with other economic activities and addressing the pervasive institutional capacity deficits of municipal governments hosting multi-billion dollar mining projects.

### Pará: a growing mining investment destination

Brazil is a vast and diverse country, with wide variations in economic and social development. Pará, in the north of the country, is Brazil’s second largest state by area but one of its least developed, ranking 22nd out of 26 states in GDP per capita terms. The state is comprised of 144 municipalities (elected local governments) of which only a few currently contain large, modern mines. However, the region has enormous resources (the Carajás region boasts the richest reserves and concentrations of iron ore anywhere in the world) and data from the Brazilian Mining Association (IBRAM) indicates that a growing share of mining investment is destined for Pará State.

Although the size of Spain and France combined, Pará State is extremely sparsely populated, with many of its six million inhabitants concentrated in and around the capital, Belem. The north of Brazil has historically lagged behind the south in terms of economic and social development. Land redistribution and settlement by farmers, cattle ranchers and logging companies in the 1960s and 1970s, and the Serra Pelada *garimpeiro* (transient miners) gold rush in the 1980s created sometimes violent conflict over land between large ranchers, smallholders, small-scale miners and the indigenous populations of the region. Today, the region suffers from a severe lack of infrastructure, including water supply, sewage and waste collection, lighting, paving and drainage, road networks and public transportation. In addition, serious deficiencies exist in schooling and vocational training.

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## Local impacts of mining

Vale, Alcoa and Hydro have large-scale mining operations in Pará State. Between 2003 and 2008, Vale invested over US\$1 billion per annum into its operations in Southeast Pará. Given the maturity of the operation at Ferro Carajás - which began in 1985 - the project has paid significant tax revenues, of which some 85% are captured by the Federal government. However, 65% of the royalty ("CFEM") rates - at 2% for iron ore - are transferred directly to municipalities. Although a small component of the overall tax take from mining, this represents a massive revenue source for the municipalities where mining occurs. In addition, Vale's average annual procurement in Southeast Pará was R\$1.3 billion (US\$700 million) in the period 2004 to 2008, a figure that has since grown rapidly, boosted by some proactive partnership initiatives. It is predicted to grow further both in absolute numbers and relative to total mining procurement. Vale's procurement data from 2010 to 2012 (year to date) indicates that c.16% comes from manufacturing suppliers or agencies operating within Pará State.

Southeast Pará has experienced rapid population growth, driven primarily by the Ferro Carajás project. Today, mining municipalities in the region are the most advanced in terms of education, health, income and poverty levels<sup>1</sup>. Economic growth in these mining municipalities has raised average household incomes at rates well above the state averages (see Table 1 below) - yet indicators remain below national averages. Rates of illiteracy and inadequate sanitation have reduced most rapidly among mining municipalities, but at 12.2% and 16.7% respectively, these still remain high compared to figures for Brazil as a whole (9.6% and 8.1% respectively).

Within mining municipalities in Southeast Pará, it is estimated that one of every ten citizens already obtains their employment directly or indirectly from Vale. Accounting for the effects of employees' and suppliers' wages spending within the economy, each direct or indirect job gives rise to an additional three to four induced jobs elsewhere in Pará and the Brazilian economy.

### Box 1: Issues of economic and social development

The economic and social development situation in Southeast Pará gives rise to a series of policy and planning questions for stakeholders to address in a collaborative manner. These are discussed in more detail in the Brazil country case study:

**1. How does a relatively poor region, which has large infrastructure deficits and municipalities with limited capacity and experience, absorb the impact of the massive investments by large mining companies? These include:**

- impacts from inward migration and the need for increased urban housing, water, roads and schools
- impacts from environmental disruptions due to new mines.

**2. How can a relatively poor region take advantage of new mining activity to build a diversified and sustainable economy to enhance living standards for its expanding populations? For example:**

- can it attract new industries to complement and eventually replace the impetus from mining?
- can it enhance the quality of government institutions to support economically sustainable communities?

In Brazil, municipalities have major responsibilities for public service provision, yet often lack the technical and human resources to effectively apply for funds, and subsequently implement public services. Although the data indicates rates of improved socio-economic performance in mining regions that compare favourably to other parts of Pará State, municipal governments face the challenge of low institutional capacity, which limits the potential developmental contribution of mining. Partnerships can play a critical role in addressing such capacity gaps.

**Table 1: Household per capita incomes (constant 2000 prices) 2000-2010**

	Income (real R\$)		
	2000	2010	Change
<b>Brazil</b>	<b>297.2</b>	<b>349.8</b>	<b>17.7</b>
<b>Pará</b>	<b>168.6</b>	<b>200.6</b>	<b>19.0</b>
<b>Southeast Pará</b>	<b>149.5</b>	<b>175.8</b>	<b>22.9</b>
<b>Mining municipalities</b>	<b>167.6</b>	<b>221.8</b>	<b>33.9</b>
<b>Non-mining municipalities</b>	<b>146.7</b>	<b>168.0</b>	<b>20.8</b>

Source: Brazilian Institute of Geography and Statistics (IBGE) Census data

<sup>1</sup> Southeast Pará contains 39 municipalities, separated in our analysis into "mining municipalities" with large-scale mining operations (Canaã dos Carajás, Curionópolis, Marabá, Ourilândia do Norte, Parauapebas and Paragominas) and "non-mining municipalities".

**“The multi-generational profile of mines in Pará could drive the long-term perspective that education and capacity building demand.”**

## Mining and partnerships for development

### Basis and principles

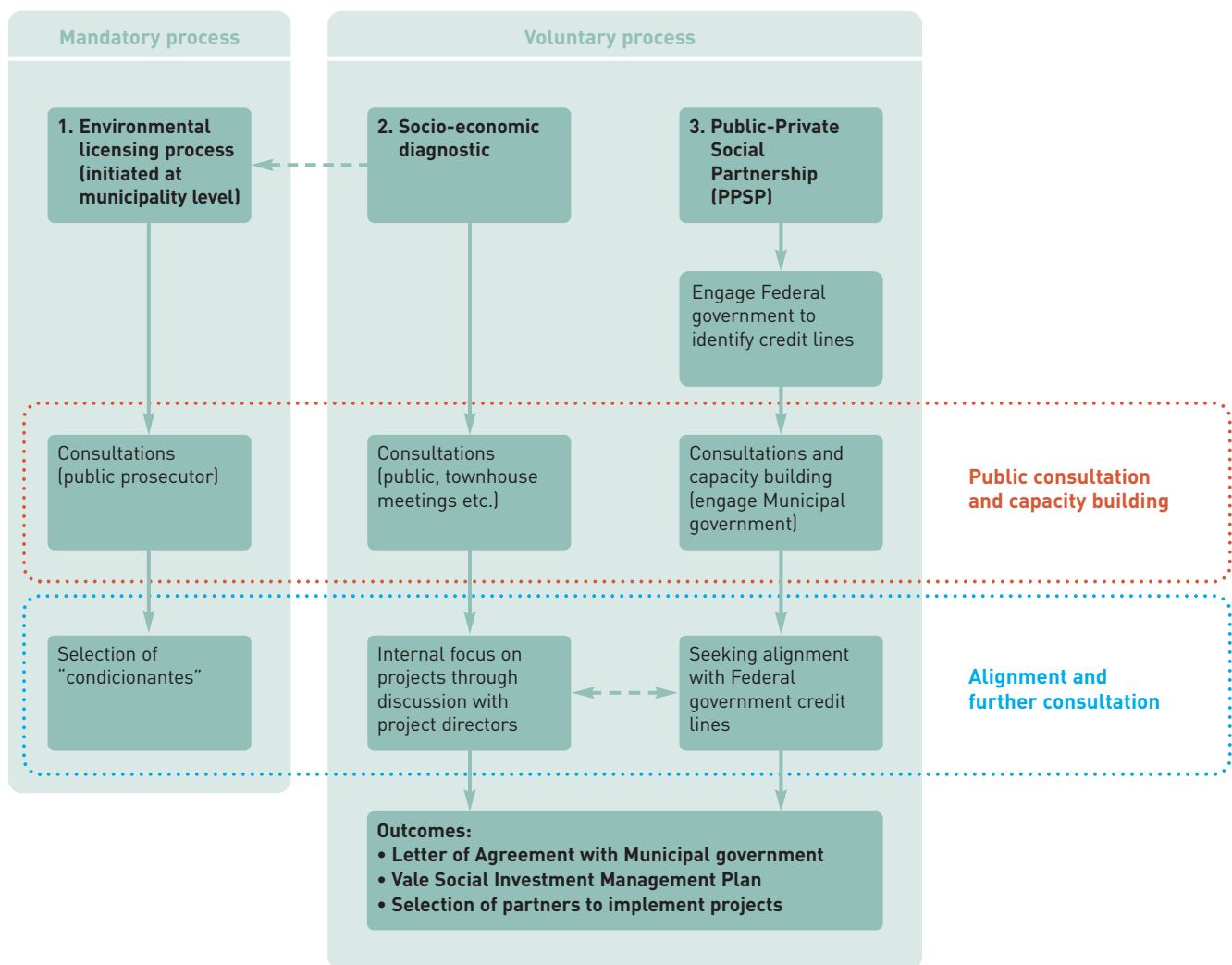
Given the large and growing influence of mining in the rural north of Brazil, in a context of pervasive municipal capacity constraints, this Spotlight identifies some of the features of successful partnerships in Pará as well as the challenges of implementation and scaling up.

Vale’s total social investment in Pará was US\$103 million in 2010. A large part of this was implemented through the Vale Foundation, the focus of which has expanded from education to human and economic development, infrastructure and housing and public administration capacity building. Vale’s approach to economic and social development of the regions in which it operates is formalized and involves all levels of government.

Priorities for social investment are set in a matrix of intersecting processes (see Figure 1) that include:

- consultation and agreement regarding the mandatory social obligations that emerge from the environmental licensing process
- voluntary socio-economic diagnostic studies conducted to provide regular forward projections of demand based on expected future mining investment, the induced future demand for public services and the deficits in government or private capacity to meet these demands
- connecting municipal government agencies with federal government funding agencies through a “Public-Private Social Partnership” framework.

**Figure 1: Vale and Vale Foundation’s Social Investment Framework**



## Mining partnerships in Pará

Through the framework of the Vale Foundation, various partnership initiatives have been developed to address socio-economic and environmental issues. Other mining companies in Pará – namely Alcoa and Hydro, also engage in innovative partnerships. Together, these initiatives act as a catalyst for economic and social development in the state. Selected case studies prepared for the country case study are listed in Table 2.

Vale has also worked with government, civil society and the private sector to reduce deforestation. In 2007, a cross-ministerial initiative led by the Ministry of Environment was set up to stop funding municipalities on a “red list” where deforestation was rampant. The “red list” was supported by formal monitoring and enforcement institutions: a federal government law prevented the Central Bank from lending to municipalities registered on the “red list”. The Municipality of Paragominas engaged the NGO – Imazon – to produce publicly available maps on a monthly basis that are linked to the land registry (environmental cadastre). This enables the municipal government to sanction the owners of the land where deforestation is taking place. As a result, Paragominas reduced deforestation by 92% and was removed from the “red list”. Based on this success, the State Governor of Pará adopted this same monitoring system as part of a “Green Municipalities” initiative across 89 municipalities, for which performance is now tracked and monitored by Imazon, supported by the Vale Fund and other NGOs. Through partnerships, Vale has also supported the protection of about 12,400km<sup>2</sup> of natural areas in Brazil, in the Amazon and in other biomes, including its own reserves and government areas. There is an opportunity for lessons from these environmental partnerships to be generalized and applied in order to enhance the social and economic impacts of mining.

Analysis of mining partnerships initiated by Vale, Alcoa and Hydro in Pará identified the following distinguishing features that were discussed at the multi-stakeholder workshop in Brasilia in February 2012:

- strong focus on training and capacity building of government officials in public administration roles (revenue management, fundraising and implementation of infrastructure) and service delivery (education and health)
- active engagement with federal government agencies leading to significant federal government funding. In particular, this is facilitated by Vale’s diagnostic surveys of public infrastructure and service needs, as well as assistance to municipalities to access federal government funding
- while the multi-generational profile of mines in Pará could drive the long-term perspective that education and capacity building demand, workshop participants identified a disconnect between the long time horizon of many mines (fifty years and more) and those of locally elected politicians (around four years)
- interdependencies between partnerships (e.g. migration management provides a basis for urban and infrastructure planning, which reduces speculative real estate bubbles and the potential for rent-seeking).

Three challenges to the ability of public institutions to scale up and replicate company-initiated partnerships were also discussed at the workshop. First, Brazil has a complex system of public revenue management at all three tiers of government, with overlapping responsibilities between these three tiers. The main beneficiaries of the post-1988 fiscal decentralization have been the municipalities, leading to huge revenue variations between municipalities (Southeast Pará is a clear example). Second, securing access to funding for social development is only part of the challenge – municipal government capacity to allocate and spend funds effectively was identified by workshop participants as the critical constraint. It was noted that sharp increases in access to funds can often exacerbate rather than reduce problems. Third, mining’s role in the social and economic development of a poor region must be supported by government policies that view mining as part of a bigger regional economic integration picture, which requires clearly defined public and private sector roles. For example, the public sector education system’s chronic undersupply of scientists and engineers constrains participation in the opportunities that mining creates. Though Brazil’s education sector is not short of funding, there is limited social mobility and vocational training. Both are important for large-scale modern industries. Taxation incentives which encourage companies to establish their own education and training programs, can only be a “sticking plaster” on an overall system of education in need of reform.

“Vale, Alcoa and Hydro engage in innovative partnerships which act as a catalyst for economic and social development.”

**Table 2: Examples of mining partnerships in Pará**

MPD partnership theme	Case study examples
<b>Mining and revenue management</b>	<ul style="list-style-type: none"> <li>• Sustainable Juruti Fund which collects CFEM revenues with spending priorities agreed through the multi-stakeholder Sustainable Juruti Council (Alcoa and municipalities)</li> <li>• Public management strengthening program to build administrative municipal government capacity in Southeast Pará (Vale Foundation and government agencies)</li> </ul>
<b>Mining and regional development planning</b>	<ul style="list-style-type: none"> <li>• Municipality master-planning initiative to develop and implement city planning processes (Vale and municipalities)</li> <li>• Migrant assistance program to support migrants arriving in search for jobs (Vale and Canaã dos Carajás municipality)</li> <li>• Migrant assistance program to monitor and manage migration (Hydro Paragominas and City Hall – through Social Assistance Department of Paragominas municipality)</li> </ul>
<b>Mining and social investment</b>	<ul style="list-style-type: none"> <li>• Strategic social investment initiative (the “Sustainable Juruti” model) with three components: the Sustainable Juruti Council, Sustainable Development Indicators and a Sustainable Juruti Fund (Alcoa and government agencies)</li> <li>• Public-Private Social Partnerships initiative to connect municipalities to federal government agencies with aim of identifying and helping municipalities apply for funds (Vale Foundation and government agencies)</li> </ul>
<b>Mining and poverty reduction</b>	<ul style="list-style-type: none"> <li>• Higher education initiative to establish mining degree courses at the Federal University of Pará (Vale and Federal University of Pará – UFPA)</li> <li>• Vale Alfabetizar initiative to train teachers (Vale and municipality)</li> <li>• Escola que Vale initiative focused on primary education (Vale, City Hall and City Department of Education)</li> <li>• Ação Educação initiative to build cross-municipality education administration capacity (Vale, City Hall, an NGO and City Department of Education)</li> <li>• Income support and recycling program where packaging and other materials from the mine site are donated to local artisan groups (Hydro Paragominas, Moving Talents association – “Talentos em Movimento” and the Amazon Design Center – Centro de Design Amazonico)</li> </ul>
<b>Mining and local content</b>	<ul style="list-style-type: none"> <li>• Initiative to promote establishment of supplier companies in close proximity to mining operations (Alcoa and the Confederation of Brazilian Industry)</li> <li>• INOVE supplier development program (Vale, training institutions, trade associations and banks)</li> <li>• Professional training initiative to build skills needed by mining and other sectors, including industrial mechanics, electricians, maintenance, automation and IT (Hydro, City Hall and SENAI – National Service for Industrial Training)</li> </ul>

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2012-3

ICMM would like to thank all of the individuals and organizations that contributed to the Brazil country case study, full details of which are included in the main report. In particular, ICMM appreciates the co-operation and support of IBRAM (the Brazilian Chamber of Mines) and the Government of Brazil, including staff at the Ministry of Finance, the Ministry of Environment, the Ministry of Mines and Energy and DNPM as well as representatives from Pará State and Municipal governments. Staff from Vale, Alcoa, and Hydro, provided a wealth of useful data and material. The Brazil country case study was written by Oxford Policy Management (OPM).

Cover photograph: "Where there are mines there are forests." Protected area in the National Forest of Carajás where Vale mining operations are located – seen adjacent to degraded land resulting from other economic activities.

Cover photograph credits: 2009 – National Forest of Carajás, Pará Estate, Brazil. Photographer: João Marcos Rosa.

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