Mining and the Environment 2001

Brazilian Mining Sector

Environmental Highlights

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Brazilian Mining Sector

- Mineral Economics Profile
- Legal Framework
- Selected Topics

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Mineral Economics Profile

Ranking in World Reserves

Reservas Mundiais

Posição	Mineral	Participação (%)
1º	Nióbio	88,0
	Tantalita	56,9
2º	Caulim	28,2
	Grafita	21,0
3º	Talco	19,0
	Vermiculita	8,2
4º	Magnesita	5,2
5º	Estanho	8,0
	Alumínio	7,7
	Ferro	6,4
6º	Lítio	1,9
	Manganês	1,0

Source: DNPM/DIDEM

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Mineral Economics Profile

Ranking in World Production

	Posição	Mineral	Participação (%)
Produção Mundial	1º	Nióbio	94,5
	2º	Tantalita	29,5
		Ferro	20,0
		Caulim	6,7
	3º	Alumínio	10,4
		Grafita	8,1
	4º	Crisotila	10,4
		Magnesita	8,4
		Estanho	6,3
		Vermiculita	4,8
	5º	Manganês	11,2
		Rochas Ornamentais	4,6
	6º	Talco	5,6

Source: DNPM/DIDEM

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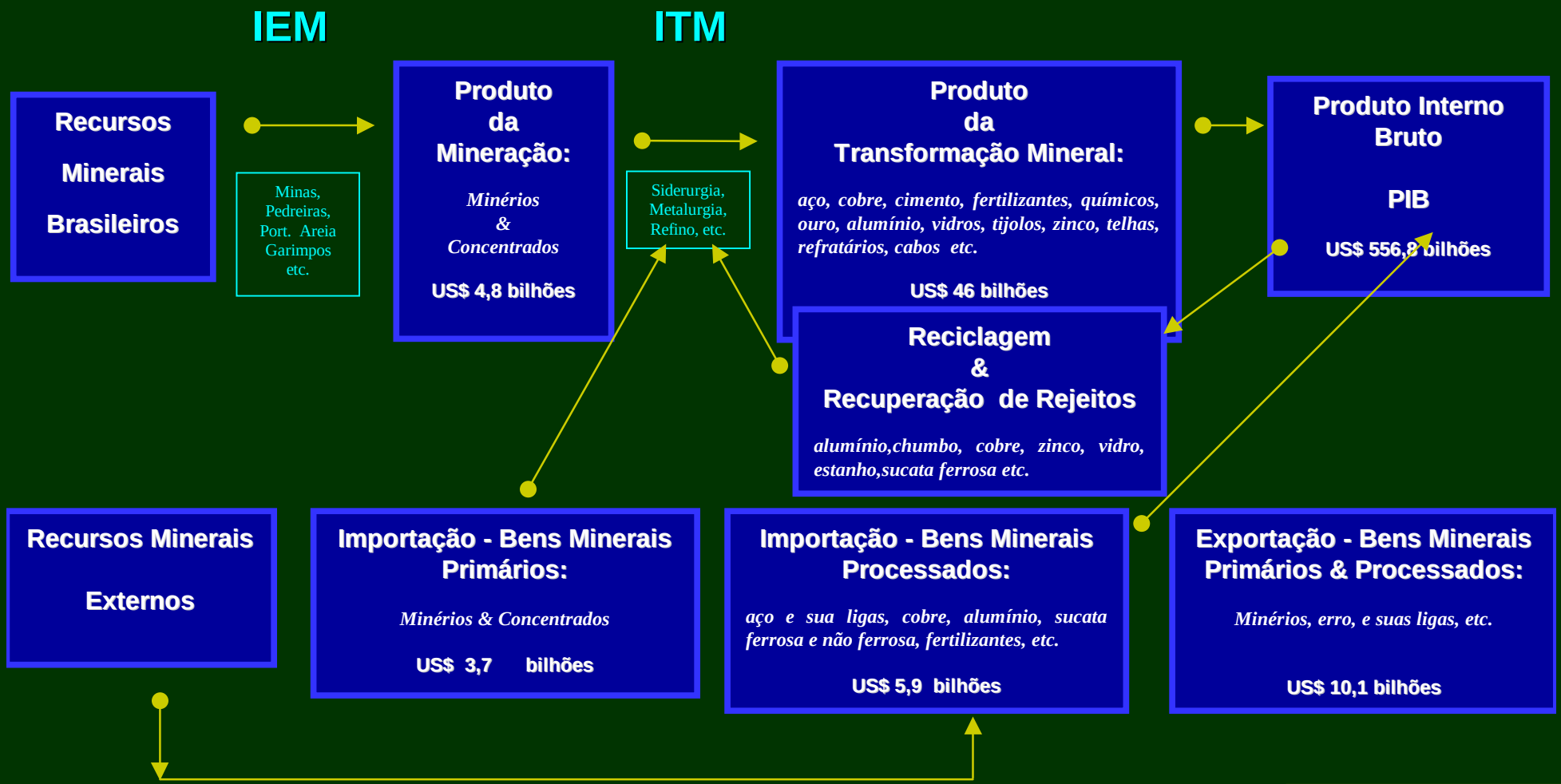
Brazilian Mineral Sector - 1998



Fonte: DNPM/DIDEM. Sumário Mineral, 1999

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Legal Framework

Constitutional Principles

Article 225 of the Constitution stipulates that it is the responsibility of public administration authorities to:

- "Demand a prior environmental impact assessment, to which publicity will be given, under the law, for any installation of work or activity which may be a potential cause of major environmental degradation , a prior environmental impact study, to which publicity will be given";

- "Control the production, marketing and use of techniques, methods and substances which endanger health, quality of life and the environment"; and

Source: DNPM/MME

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Legal Framework

Constitutional Principles

- "Whoever exploits mineral resources is obliged to rehabilitate the degraded environment, using a technical solution legally required requested by the competent public agency."

- As a result of such constitutional conditions, the exercise of the mining activity in Brazil is conditioned to three specific control instruments of the public authorities, concerning the potential risks of damage to the environment as a result of mining:

  - **Environmental Impact Assessment -EIA;**
  - **Environmental Licensing - LA; and**
  - **Plan for Recovery of Degraded Areas - PRAD.**

Source: DNPM/MME

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Legal Framework

Environmental Impact Assessment - EIA

- The EIA requirement applies to mining projects of every and any mineral substance. However, in the case of mineral substances for immediate use in civil construction, due to the characteristics of the project, presentation of the EIA may be waived.

- In this event, the mining company shall submit the **Environmental Control Report - RCA**, in accordance with the guidelines of the competent state environmental agency.

- The EIA, must be consolidated in the **Environmental Impact Report - RIMA**, which is submitted to the relevant state environmental agency, in the **National Environmental System - SISNAMA**, for analysis and approval.

Source: DNPM/MME

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Legal Framework

Environmental Impact Assessment - EIA

- The RIMA must be made public, so that the collective or any other interested party has access to the project and any of its eventual environmental impacts and can know and discuss them freely, even in open court.

- **EIA/RIMA** approval is the basic requirement for the mining company to be able to request **Environmental Licensing** for its mining project.

Source: DNPM/MME

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Legal Framework

Environmental Licensing - LA

- Obtaining Environmental Licensing (LA) is obligatory for locating, installing or expanding and operating any mining activity subject to the mining concessionconcession mining system or licensing.

- **Prior License - LP**. This belongs to the mining project's preliminary planning stage and contains the basic requirements to be met during the locating, installing and operating stages, in accordance with the municipal, state or federal plans for soil use.

Source: DNPM/MME

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Legal Framework

Environmental Licensing - LA

- **Installation License - LI**. Authorizes the start for of the mining project implementationinstalling the mining project, according to the specifications in the approved Environmental Control Plan.

- **Operating License - LO**. Authorizes, the start of the licensed activity and functioning of its pollution control equipment and installations, according to that set out in the Prior and Installation Licenses.

Source: DNPM/MME

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Legal Framework

Plan for Recovery of Degraded Areas - PRAD

- Mining projects, when presenting the EIA and Environmental Impact Report - RIMA, are obliged to submit the Plan for Recovery of Degraded Areas for approval by the competent state environmental agency.

- This plan considers the suitable technical solution visualized by the mining company, to rehabilitate the soil, eventually degraded by the mining activity, for future use.

- The approved PRAD can be reviewed or altered later, with the agreement of the competent environmental agency, to incorporate technological innovations or more suitable alternatives as a result of the development of the mining work.

Source: DNPM/MME

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Legal Framework

Other Aspects

- The Mining Plan , the Plan for Recovery/Rehabilitation Plan for of Degraded Areas (PRAD) and the EIA/RIMA are technical documents required to for obtaining the Prior License.This legal procedure is concurrent with the request for a mining concession.

- In cases of mining projects with a major environmental impact on a national or regional scale, the **Brazilian Institute for the Environment and Renewable Resources - IBAMA,** a federal agency linked to the Ministry for the Environment, is responsible for the issue of the license.

Source: DNPM/MME

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Legal Framework

Environmental Licensing - LA

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Source: DNPM/MME

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Selected Topics

Aboriginal Lands

Source: ISO

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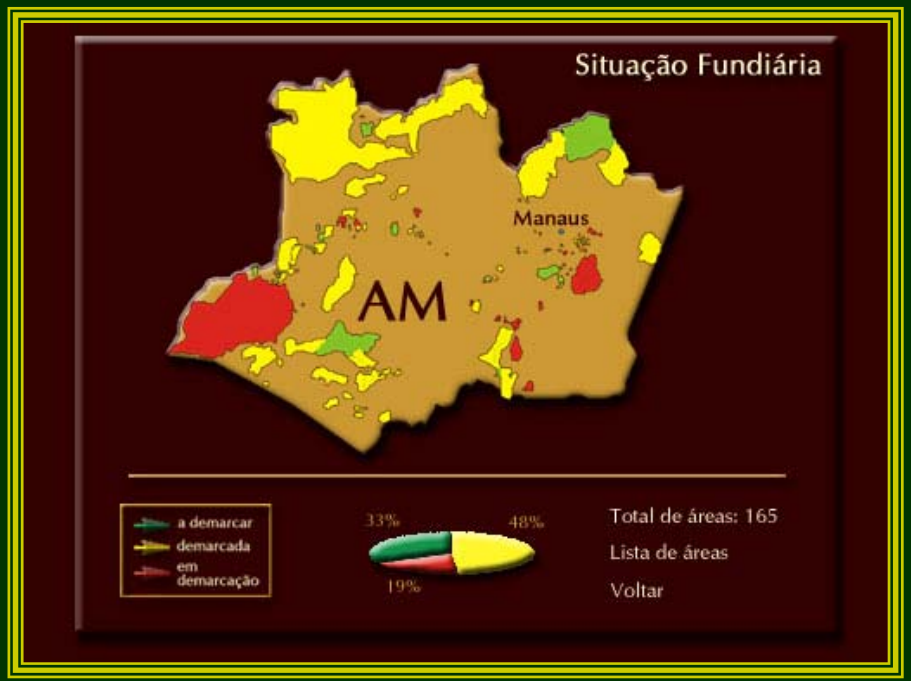
Selected Topics

Aboriginal Lands



Source: FUNAI

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Selected Topics

Aboriginal Lands

Source: FUNAI

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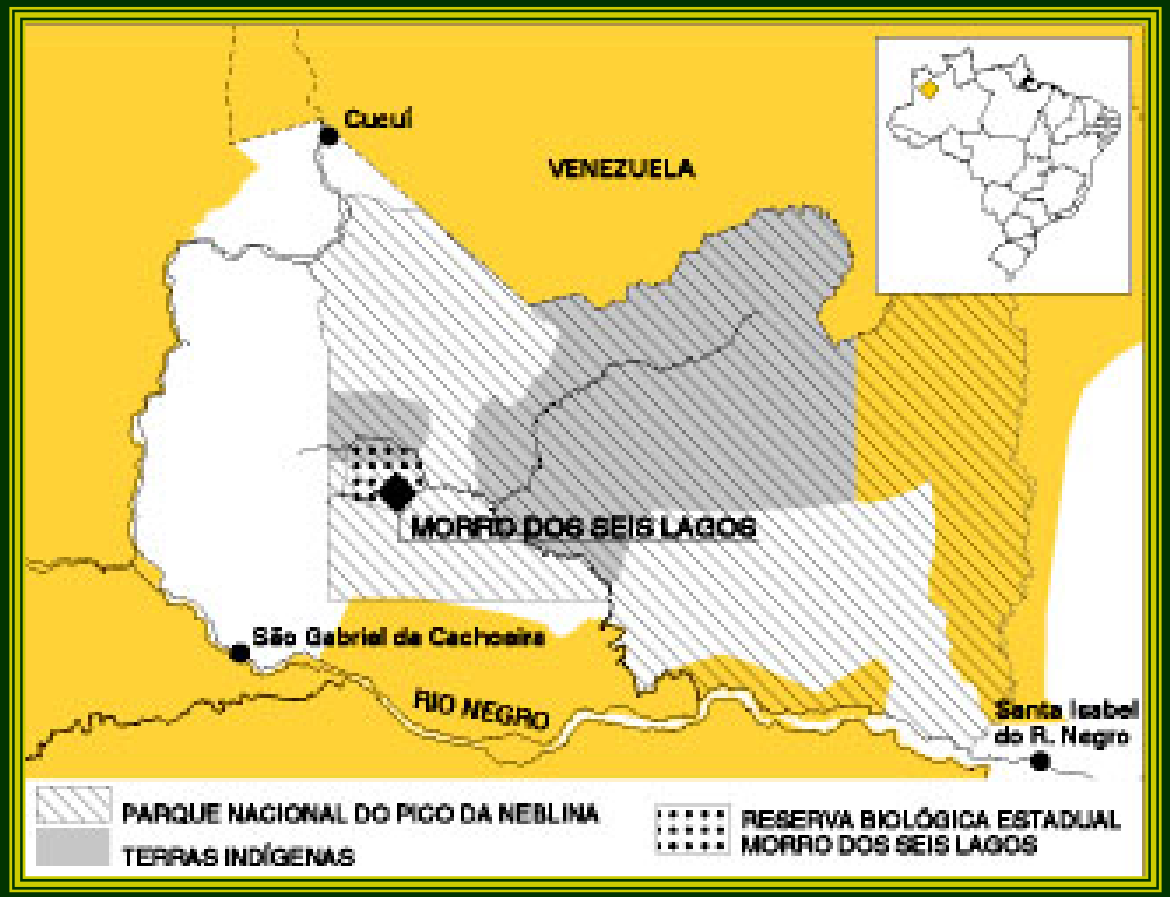
Selected Topics

Deposit of Niobium



Source: ISO

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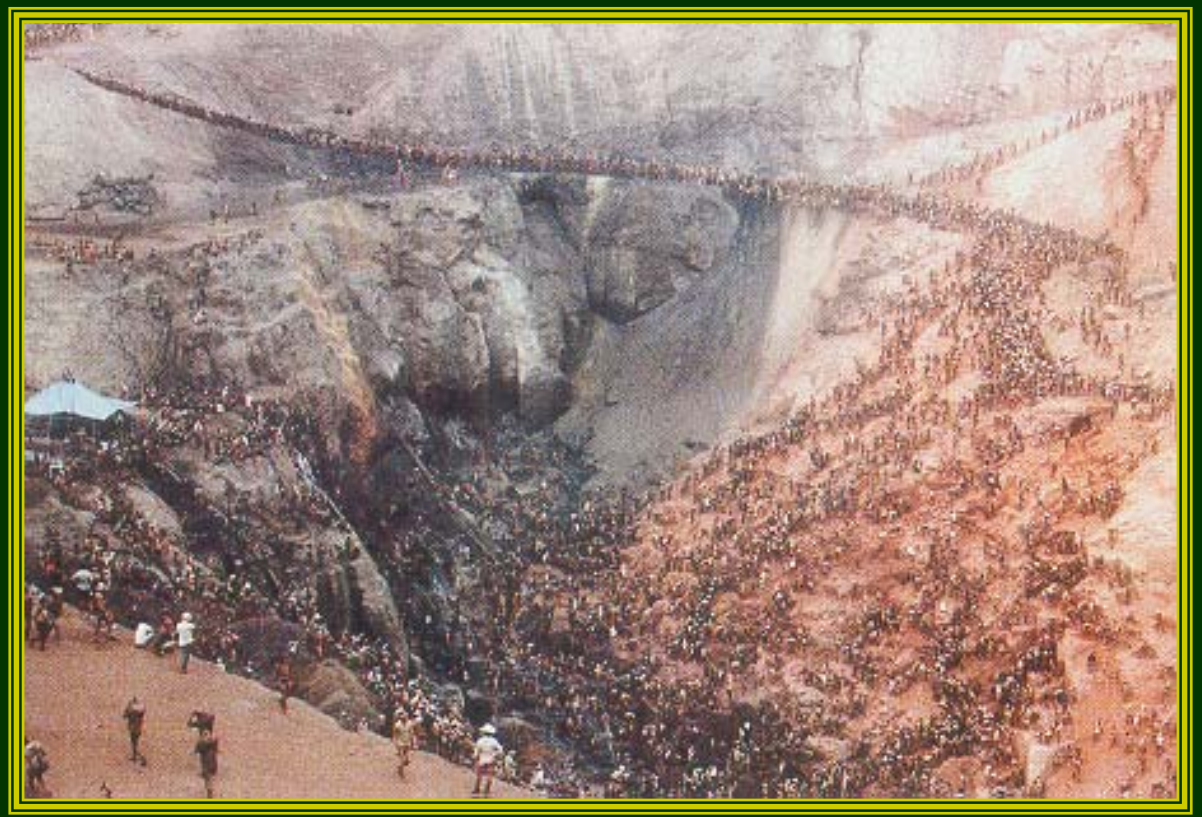
Selected Topics

Artesanal Mining: gold



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Selected Topics

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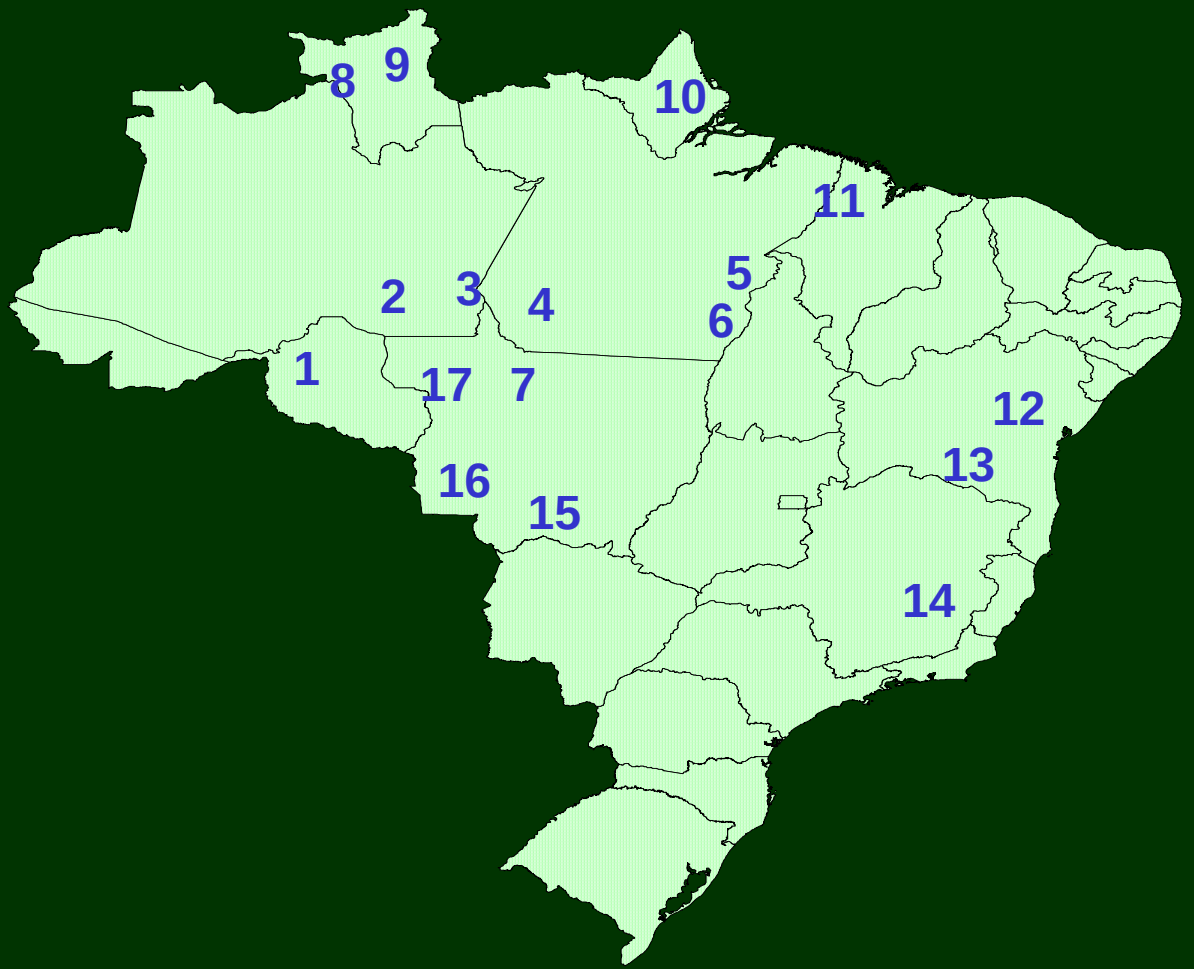

1 - Rio Madeira (RO)
2 - Sul do Amazonas (AM)
3 - Parauari / Amana (AM / PA)
4 - Rio Tapajós (PA)
5 - Serra Pelada (PA)
6 - Cumaru (PA)
7 - Alta Floresta / Peixoto de Azevedo (MT)
8 - Parima (RR)
9 - Santa Rosa / Quinô / Maú / (RR)
10 - Lourenço (AP)
11 - Gurupi (PA / MA)
12 - Serra de Jacobina (BA)
13 - Chapada Diamantina (BA)
14 - Quadrilátero Ferrífero (MG)
15 - Cuiabá / Poconé (MT)
16 - Pontes e Lacerda (MT)
17 - Aripuanã (MT)

Fonte: VALE, Eduardo (1998)

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Selected Topics

Industrial Sands Pit Reclaimed

Source: Areia & Brita. Jul-Setembro, 1998.

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Granite Pit Reclaimed

Source: Areia & Brita. Jul-Set., 2000.

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Selected Topics

Granite Operation

Source: Areia & Brita. Jul-Set., 2000.

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Selected Topics

Carajás: pig iron production

Source: ASICA

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