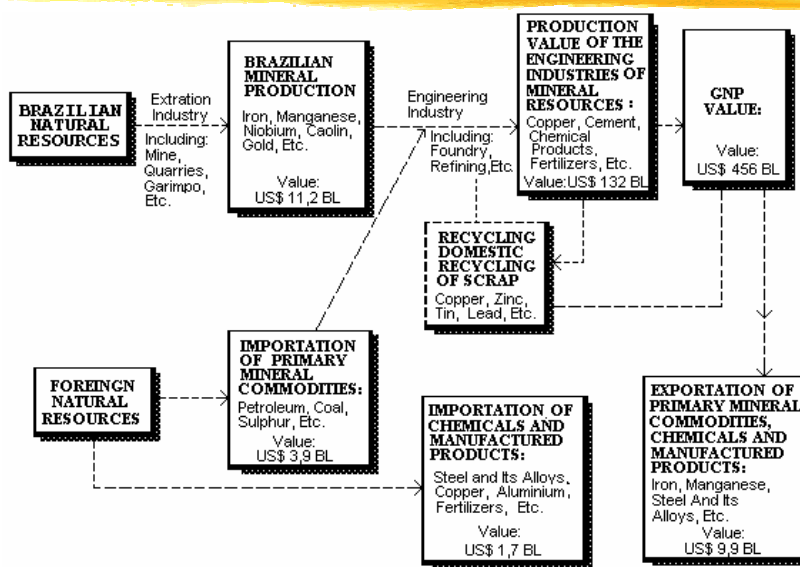


# Project ALFA Brazilian Mineral Production and Environmental Problems

## Gen. & Tech. Aspects

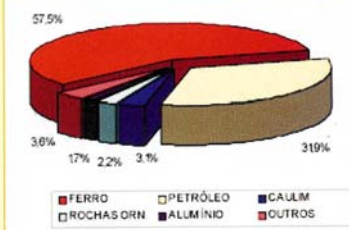
Roberto C. Villas-Bôas  
CETEM/MCT  
CYTED-XIII  
IMAAC/UNIDO

## Brazilian Mineral Production - 2002

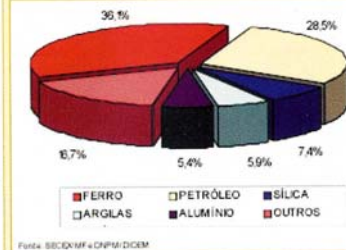


## Brazilian Commodities: Exports

EXPORTAÇÕES DO SETOR MINERAL 2002 - Bens Primários

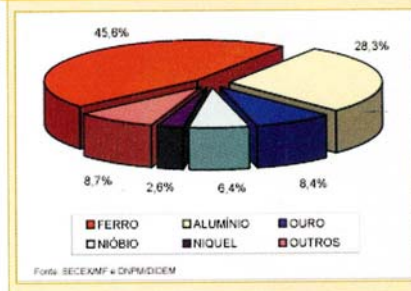


EXPORTAÇÕES DO SETOR MINERAL 2002 - Manufaturados

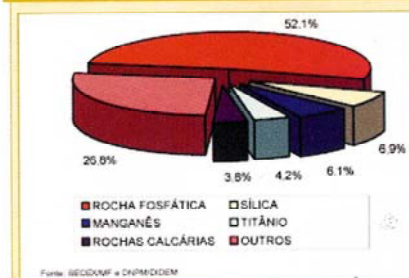


## Brazilian Commodities: Exports

EXPORTAÇÕES DO SETOR MINERAL 2002 - Semimanufaturados

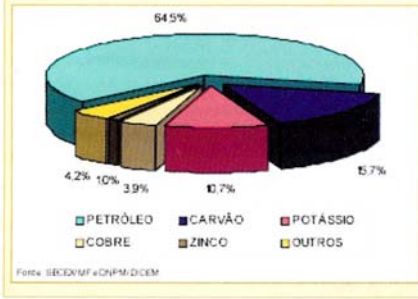


EXPORTAÇÕES DO SETOR MINERAL 2002 - Compostos Químicos

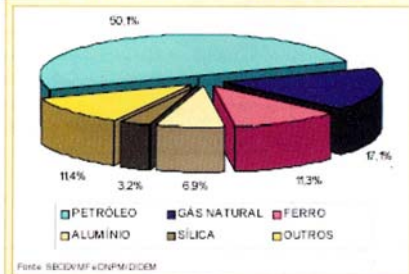


## Brazilian Commodities: Imports

IMPORTAÇÕES DO SETOR MINERAL 2002 - Bens Primários

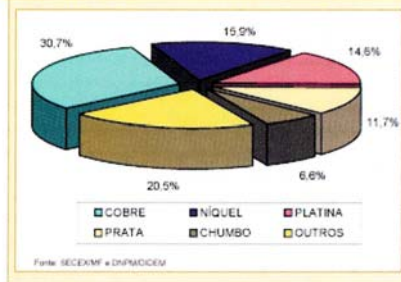


IMPORTAÇÕES DO SETOR MINERAL 2002 - Manufaturados

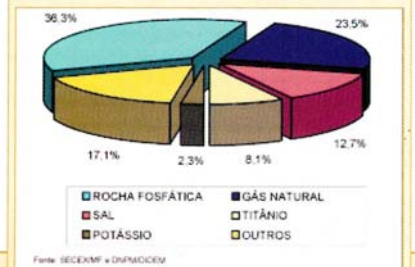


## Brazilian Commodities: Imports

IMPORTAÇÕES DO SETOR MINERAL 2002 - Semimanufaturados



IMPORTAÇÕES DO SETOR MINERAL 2002 - Compostos Químicos





## Brazilian Mines : Types

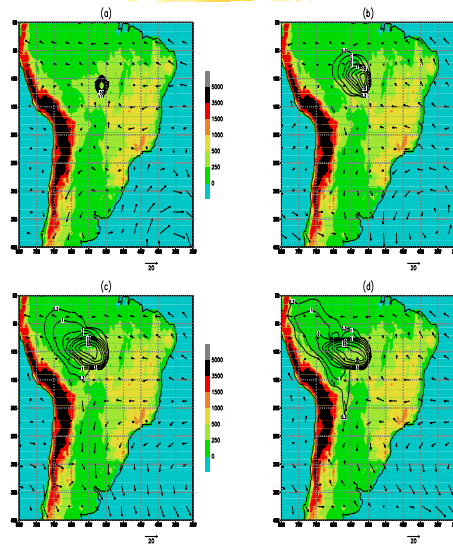
### ⌘ Mining Industry :

- formal operations regulated by the mining laws

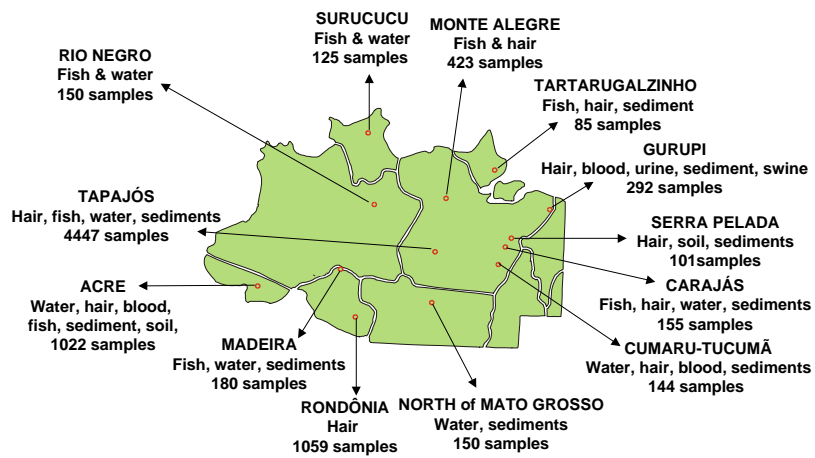
### ⌘ Garimpo :

- formal ( few ) and informal ( most common ) operations , dealing with gold, gemstones and industrial minerals

## Hg emission in Brazil



## Hg in Brazilian Amazon



### ⌘ *Unit Operation in Mining :*

- ✉ Access
- ✉ Loading
- ✉ Transport
- ✉ Reclaiming

### ⌘ Reclaiming

- 📄 correct
- 📄 civilize
- 📄 ask in devolution
- 📄 recovery

### ⌘ Reclaiming

- 🏢 Engng/Technology
- 🏢 Disposition to
- 🏢 Legislation
- 🏢 Social Presure





## ⌘ Engng/Tecnology

- 📁 Evolving & available
- 📁 But, CUSTS
- 📁 Grass & trees, a first option : it was green and green turned back !



- ⌘ COSTS
  - ⌘ externalities
  - ⌘ internalities
- ⌘ PROBLEMS
  - ☑ abandoned mines
  - ☑ orphan mines



## ⌘ What is in discussion today ?

- 👉 Contracts: old and new !
- 👉 Recovering... reclaiming

## ⌘ Reclaiming :what was it , again ?

- 👉 correct
- 👉 civilize
- 👉 ask in devolution

**Ah !**





⌘ Closure as a  
Process , as a Unit  
Operation:  
BeDuFinal

✉ At the mine plan ;

✉ RV00;RV01;..RV78C!



⌘ Engng/Tecnology =

⌘ (Mining Method;  
Geodinâmics; Sites; Co  
mmunities; land Use;  
Legislation)



⌘ THUS : paramount to have maps of land use , soil use,..., as tools for planning



- ⌘ Future Uses :
- ✗ Destroy whatever was built ?
  - ✗ Mining Heritage!
  - ✗ Real Estate
  - ✗ Aquiculture
  - ✗ Tourism
  - ✗ UNESCO
  - ✗ Sanitary Dumps !



⌘ Exemples

(might be used as standards)

- ➡ Aguas Claras
- ➡ Camaquã
- ➡ Serra do Navio
- ➡ RTZ
- ➡ Pedreira Curitiba



