



# An Optimistic Outlook for Mining in Brazil

## MINING COMPANIES IN BRAZIL

According to consolidated annual mining reports provided by the mining companies for 2011, the National Mineral Production Department (DNPM) reported 8,870 mining companies operating in 2011. This includes both the Mining Concession Regime and the Licensing Regime. They are divided by region, as shown in the table below:

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### MINING COMPANIES IN BRAZIL

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Mining Companies in Brazil

	<b>Mid-West:</b> 1,075 companies
	<b>Northeast:</b> 1,606 companies
	<b>North:</b> 515 companies
	<b>Southeast:</b> 3,609 companies
	<b>South:</b> 2,065 companies

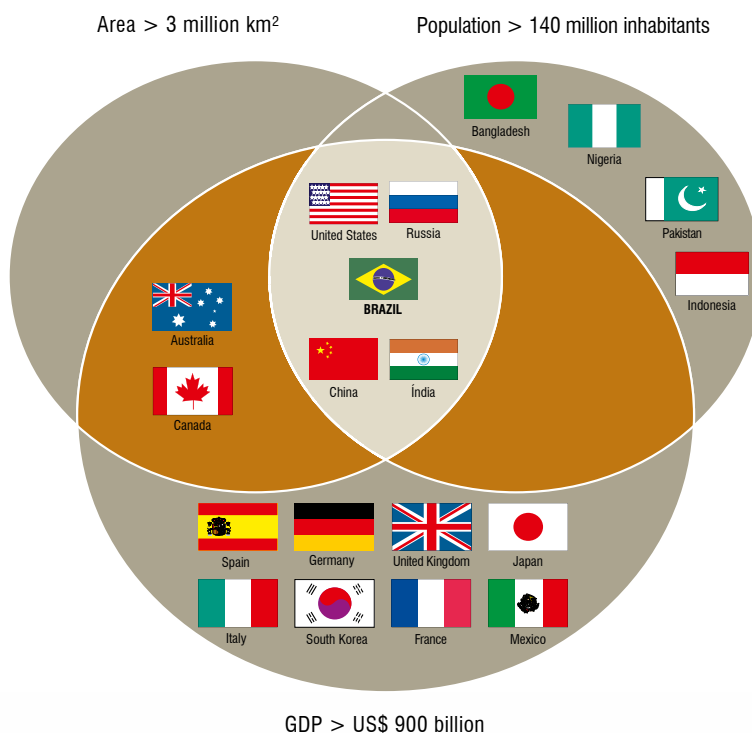
Source: DNPM – 2012



## BRAZIL IN THE WORLD

Over the past decade, Brazil's Mining Industry posted vigorous growth thanks to factors such as the profound socioeconomic and infrastructure changes that the country has been experiencing. This has been the case despite the fact that expectations on the mining business have been reduced as a result of the international crisis. This growth is driven by urbanization in emerging countries endowed with significant territorial areas, high population density and large GDP (Gross Domestic Product), such as the BRICs (Brazil, Russia, India, and China), which coincidentally are major players in the global mining arena.

## BRAZIL IN THE WORLD



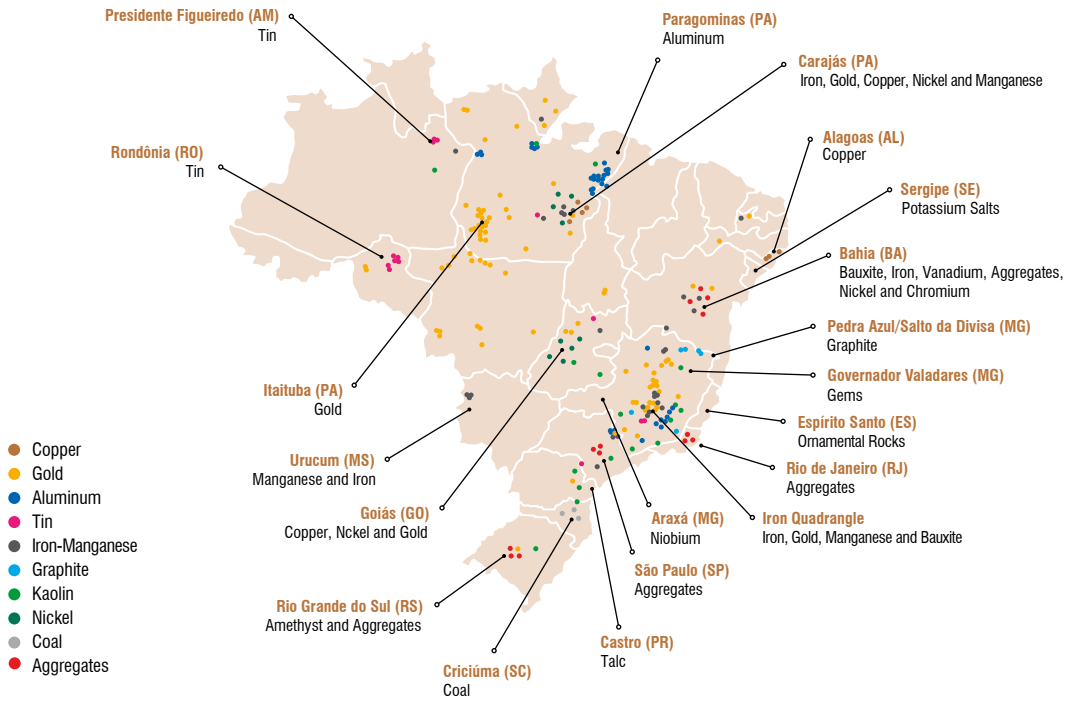
Source: Banco Mundial – 2010



Brazil



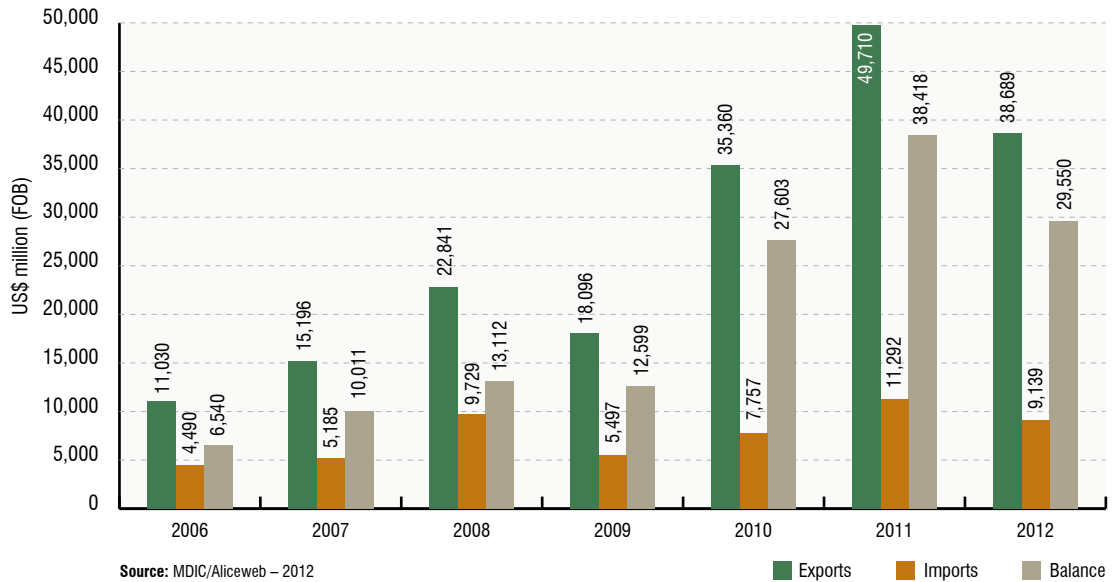
## MAJOR REGIONS WITH MINERAL DEPOSITS



Source: IBRAM – 2012

## TRADE BALANCE FOR THE MINING INDUSTRY

BRAZIL'S TRADE BALANCE IN 2012 = US\$ 29,550



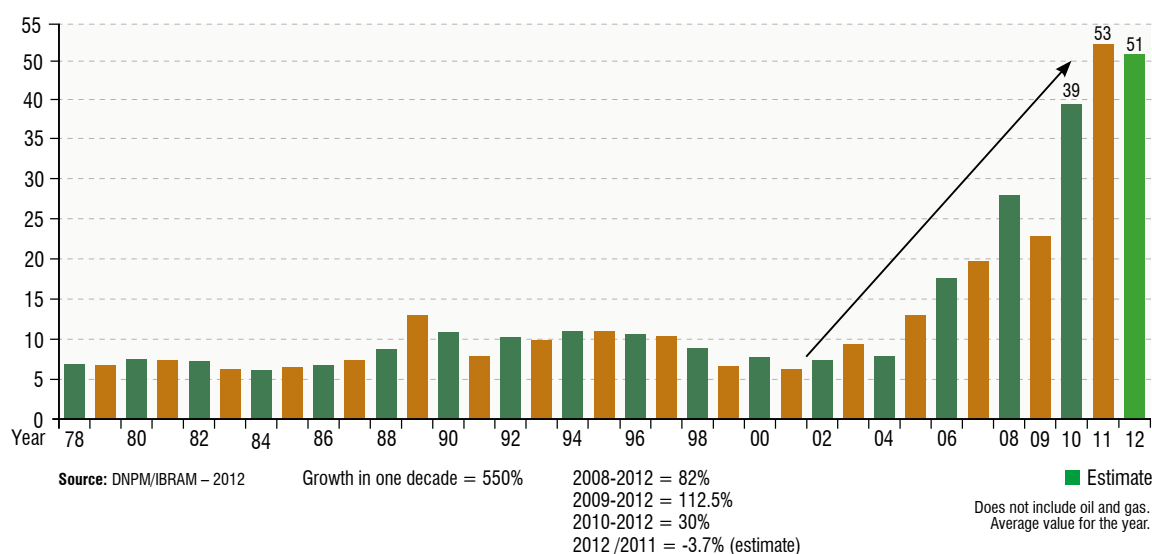


## BRAZIL'S MINERAL PRODUCTION (BMP)

**2012: Brazil's Mineral Production totaled US\$51 billion**

Since 2000, increased demand for minerals, especially due to the high rate of growth globally, has boosted Brazil's Mineral Production (BMP), in one decade, showed a significant growth. As urbanization rushes ahead and emerging economies go from strength to strength, it is estimated that BMP will continue to grow between 2% and 5% per year, over the next two years.

### TRENDS IN BRAZIL'S MINING PRODUCTION US\$ BILLION



### MINERAL PRODUCTION: BRAZIL'S GLOBAL POSITION (2012)

Exporter (Global Player)	Exporter	Self-sufficiency	Importer/ Produce	External Depende
Niobium (1st) Iron Ore (2nd) Manganese (2nd) Tantalite (2nd) Graphite (3rd) Bauxite (2nd) Ornamental Rocks (4th)	Nickel Magnesite Kaolin Tin Vermiculite Chromium Gold	Limestone Industrial Diamond Talc Titanium Tungsten	Copper Diatomite Phosphate Zinc	Metallurgical Coal Sulphur Potassium Rare Earths

STRATEGIC MINERALS

Source: DNPM/PNM 2030/IBRAM – 2012



## RANKING OF BRAZIL'S MINERAL PRODUCTION AND RESERVES AT GLOBAL LEVEL

Minerals	Global Production	Position in Ranking	Brazilian Reserves	Position in Ranking
Bauxite	14%	3 <sup>rd</sup>	6.8%	5 <sup>th</sup>
Copper	2%	5 <sup>th</sup>	2%	13 <sup>th</sup>
Ornamental Rocks	7.7%	3 <sup>rd</sup>	5.6%	6 <sup>th</sup>
Gold	2.3%	12 <sup>th</sup>	3.3%	9 <sup>th</sup>
Iron Ore	17%	2 <sup>nd</sup>	11%	5 <sup>th</sup>
Kaolin	6.8%	5 <sup>th</sup>	28%	2 <sup>nd</sup>
Manganese	20%	2 <sup>nd</sup>	1.1%	6 <sup>th</sup>
Niobium	98%	1 <sup>st</sup>	98%	1 <sup>st</sup>
Tantalite	28%	2 <sup>nd</sup>	50%	1 <sup>st</sup>
Tin	4.1%	5 <sup>th</sup>	13%	3 <sup>rd</sup>
Zinc	2.4%	12 <sup>th</sup>	0.85%	6 <sup>th</sup>

Source: PNM 2030/IBRAM – 2012

Brazil is a major player in the global Mining Industry. However, the Country is still dependent on some strategic minerals required by its economy. Brazil is the fourth largest consumer of fertilizers in the world and accounts for only 2% of the global production. The Country imports 91% of its potassium and 51% of its phosphate requirements, both essential for the fertilizer industry.

## MAJOR EXPORTS AND IMPORTS (US\$ 1,000,000)

	2010	2011	2012
<b>Brazil's exports</b>	<b>201,915</b>	<b>256,039</b>	<b>242,580</b>
<b>Mineral exports - Commodities</b>	<b>35,362</b>	<b>49,710</b>	<b>38,689</b>
Iron Ore	28,912	41,817	30,989
Gold (in bars)	1,786	2,239	2,341
Niobium (Ferroniobium)	1,557	1,840	1,811
Copper	1,238	1,573	1,511
Silicon	460	637	523
Kaolin	275	261	236
Manganese Ore	357	306	201
Bauxite	270	319	325
Tin	8	23	16
Lead	12	9	7
Granite	219	247	233
Other	268	439	495
<b>Brazil's Imports</b>	<b>181,768</b>	<b>226,243</b>	<b>223,154</b>
<b>Mineral imports - Commodities</b>	<b>7,757</b>	<b>11,292</b>	<b>9,139</b>
Mineral coal	3,575	5,231	3,600
Potassium Chloride	2,204	3,471	3,510
Phosphate	135	207	205
Copper	952	1,141	562
Zinc	157	184	169
Sulphur	246	441	414
Other	488	617	678
<b>Balance – Brazil</b>	<b>20,147</b>	<b>29,796</b>	<b>19,425</b>
<b>Balance – Mining Industry</b>	<b>27,605</b>	<b>38,418</b>	<b>29,550</b>

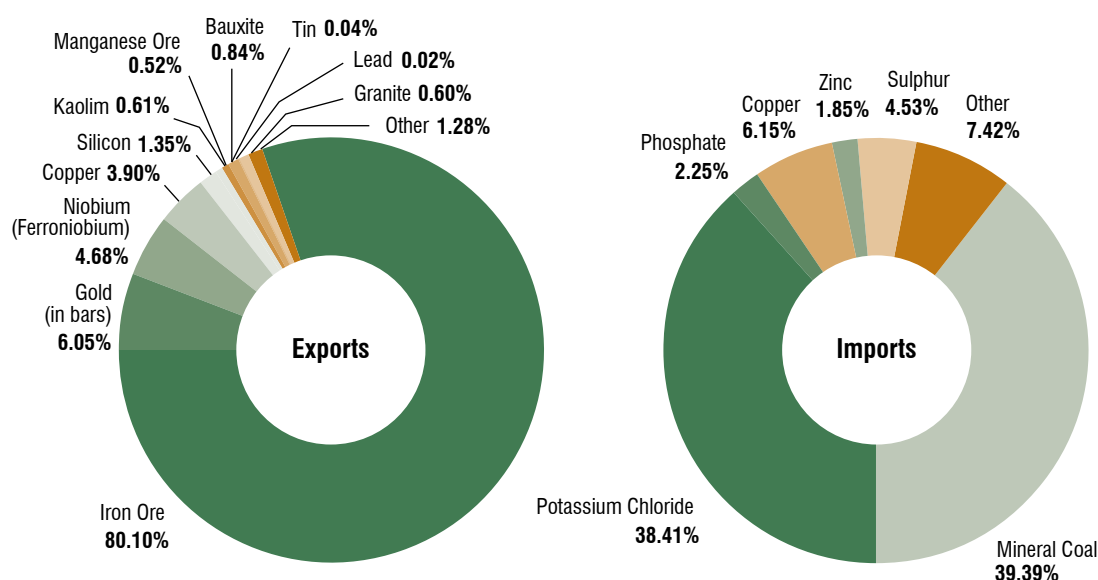
Source: Aliceweb – 2012 (updated in November 2012).



# Brazil's Mining Trade Balance – Exports and Imports

## BRAZIL'S MINING TRADE BALANCE – EXPORTS AND IMPORTS

% of amount in US\$



Source: MDIC/Aliceweb – 2012

The largest ore producing states in 2012, according to CFEM (Financial Compensation for Mineral Resources Exploitation) revenues are:

MG (53.2%), PA (28.6%), GO (4.1%), SP (2.8%), BA (2.0%), and Others (9.3%).

In 2012, the royalties (CFEM) reached a new record of R\$ 1.832 billion. In 2011 the amount had been significant with R\$ 1.540 billion, or 42.8% higher than in 2010, which was R\$ 1.078 billion.

CFEM – also known as the Mining Royalty – is one of many charges in the mining supply chain. This charge was established in Article 20, paragraph 1 of the 1988 Constitution, and it is payable to states, the Federal District, municipalities, and Federal Government agencies as consideration for the economic exploitation of mineral resources in their respective territories. CFEM's revenues are distributed as follows:

- 12% to the Federal Government (DNPM 9.8%, IBAMA 0.2%, MCT/FNDCT 2%);
- 23% to the state where the mineral has been sourced;
- 65% to the producing municipality.

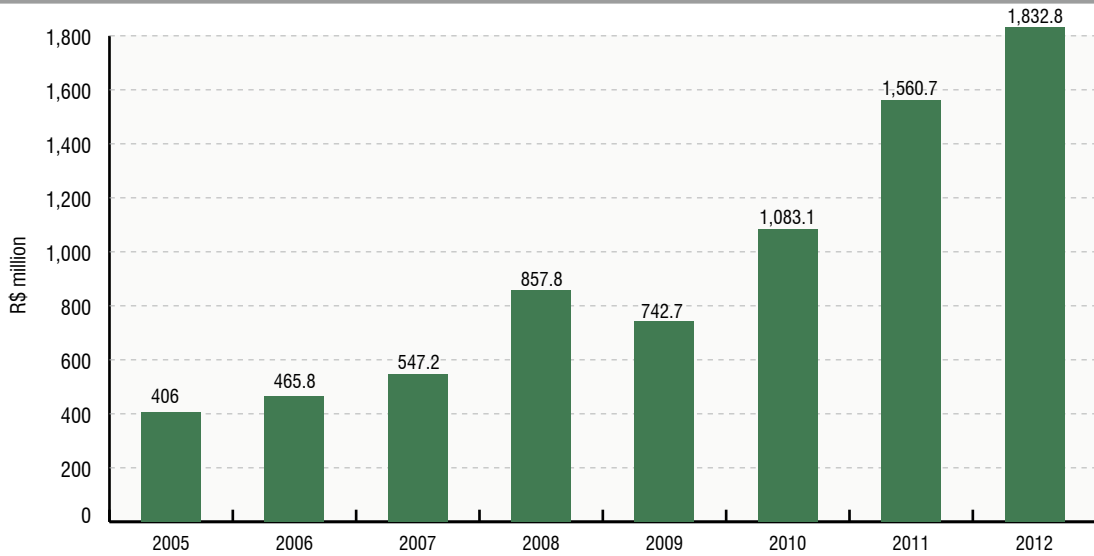
Tax rates are applied onto the net revenue, and they vary according to the mineral involved:

- 3% for: aluminum ore, manganese, salt-gem, and potassium;
- 2% for: iron, fertilizer, coal and other substances;
- 1% for: gold;
- 0.2% for: precious stones, cuttable colored stones, carbonates, and noble metals.



### ROYALTIES IN BRAZIL – 2005-2012

(CFEM – FINANCIAL COMPENSATION FOR MINERAL RESOURCES EXPLOITATION)



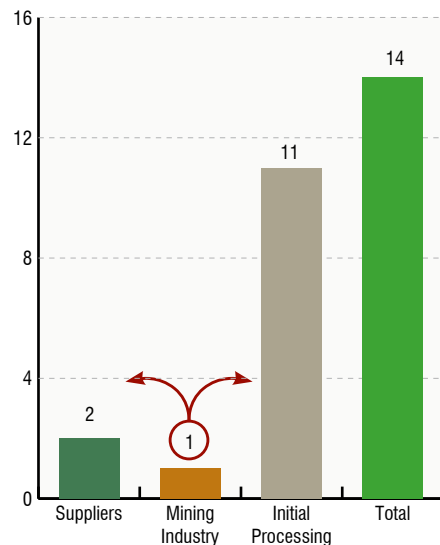
Source: DNPM/IBRAM – 2012

## Employment in Brazil’s Mining Industry

A total of 175 thousand workers were employed in the mining sector in 2011. Studies conducted by the Ministry of Mines and Energy’s Secretariat for Geology, Mining and Mineral Processing show that the multiplier effect of job creation is 1:13 in the mining sector, i.e., for every job created in the mining sector another 13 jobs (direct jobs) are generated along the supply chain. Therefore, in 2011 the mining sector employed about 2.2 million workers directly, not including the job posts generated in research, exploration and planning, and the manpower employed in the mines.

**Note:** Informal work arrangements in the mining industry cannot be ignored, especially when it comes to minerals of high unit value (gems, gold, diamond, etc.), and also in the extraction of mineral aggregates for the civil construction sector. Many workers across Brazil’s 5,565 municipalities fail to be covered by official statistics. Estimates, though very inaccurate, indicate somewhere between 300 thousand and 500 thousand workers (PNM 2030).

### THE IMPORTANCE OF MINING IN JOB CREATION



Source: SNGMTM/MME

#### JOB CREATION

MULTIPLIER EFFECT 1:13

**2.2 million**

direct jobs are created in Brazil

(175,000 jobs created in the mining industry). Date: 2011

Source: Ministry of Mines and Energy (MME)’s Secretariat for Geology, Mining and Mineral Processing – PNM 2030



# HDI of Mining Municipalities

The Human Development Index (HDI) of mining towns is higher than that of their respective states. Even when mining projects are set up away from major urban areas or even in areas with low social indicators, they bring a tangible potential for regional sustainable development. The HDI is published by the United Nations Development Program – UNDP.

Municipalities – States	Ore	HDI for the State	HDI for the Municipality
Itabira – MG	Iron Ore	0.766	0.798
Araxá – MG	Niobium	0.766	0.799
Nova Lima – MG	Gold	0.766	0.821
Catalão – GO	Phosphate	0.773	0.818
Cachoeiro de Itapemirim – ES	Ornamental Rocks	0.767	0.770
Parauapebas – PA	Iron Ore	0.720	0.740
Oriximiná – PA	Bauxite	0.720	0.769
Presidente Figueiredo – AM	Cassiterite	0.713	0.742

Source: UNDP – 2012

# Investments in the Mining Sector

The graphs on pages 12 and 13 show the growth in the volume of investments in Brazil’s mining sector.

The values provided by IBRAM are projections for five-year periods. Based on data obtained from the mining companies, IBRAM reported massive investments of US\$75 billion for 2012-2016, which sets a new record for the Mining Industry.

It is one of the private segments with the most significant investments in the Country. After all, investments amount to US\$15 billion per year. This figure is recalculated and updated periodically by IBRAM in its website.

These investments cover a large number of minerals, of which iron ore is the most important, accounting for 63% of total investments.



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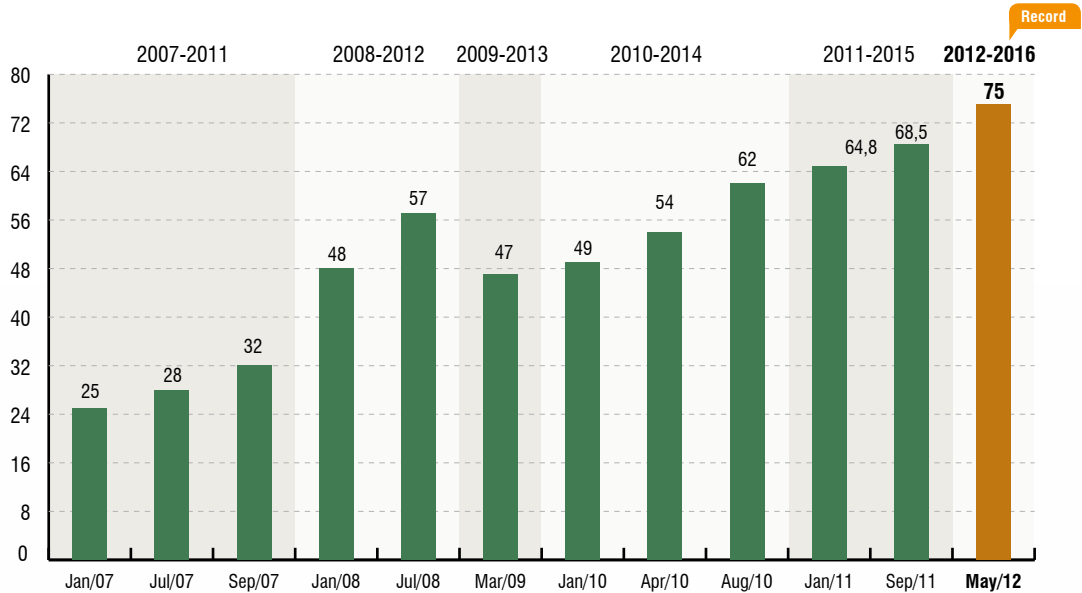


MINERAL PRODUCTION GROWTH BY 2016

Mineral	Production in 2011 (1,000 tons) (A)	Increments by 2016 (1,000 tons) (B)	Expected Production by 2016 (C) = (A + B)	Change (C/A)
Aggregates	673,000	176,000	849,000	26%
Iron	369,000	451,000	820,000	122%
Bauxite	31,000	7,000	38,000	23%
Manganese	2,600	400	3,000	15%
Phosphate	1,800	700	2,500	39%
Copper	400	200	600	50%
Potassium	290	2,110	2,400	728%
Zinc	285	65	350	23%
Niobium	90	30	120	33%
Nickel	70	30	100	43%
Gold	0.066	0.029	0.095	44%

Source: Estimates by IBRAM – 2012

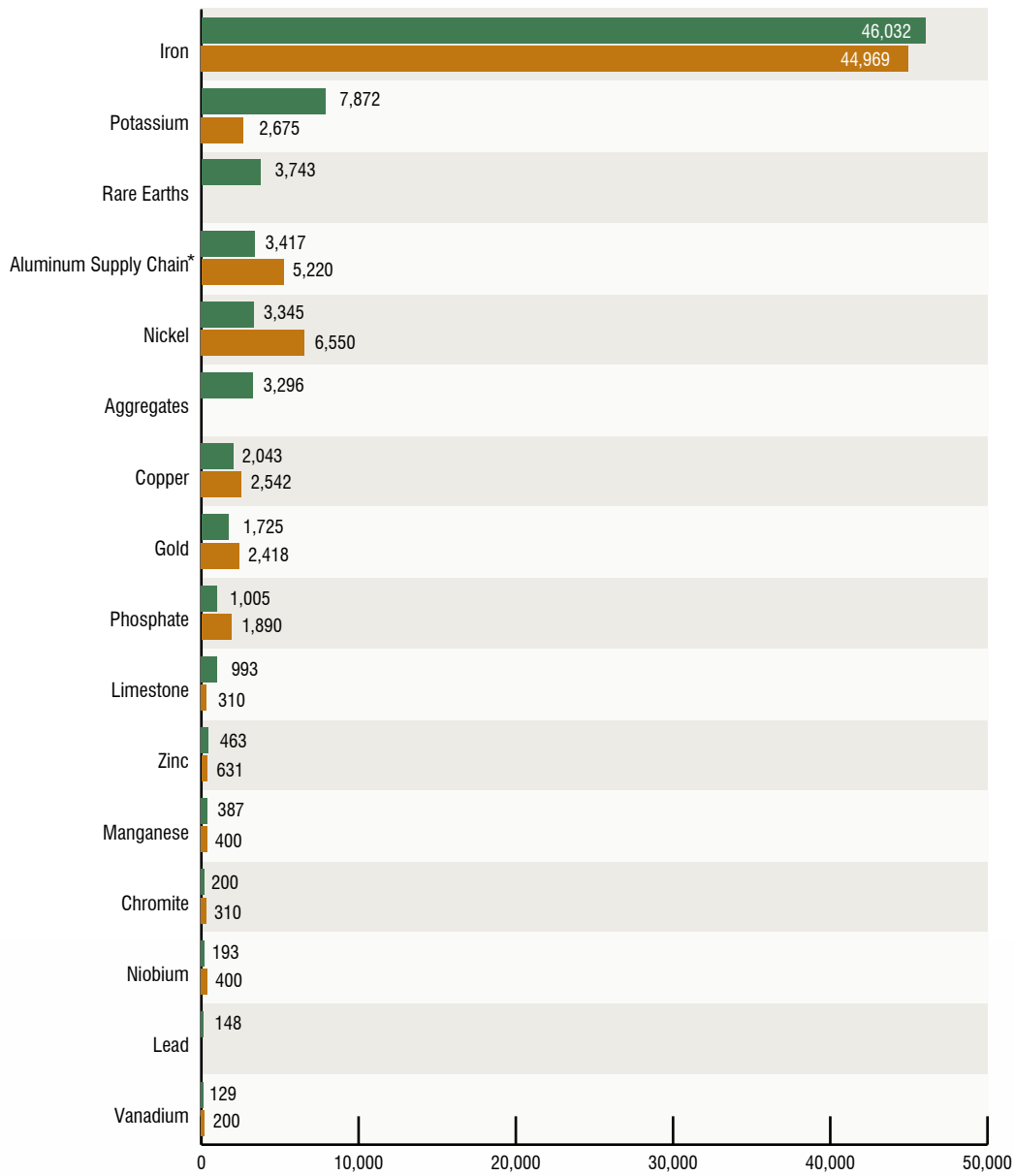
INVESTMENTS IN THE MINING SECTOR – 2012-2016  
US\$ BILLION



Source: IBRAM – 2012

## INVESTMENTS IN THE MINING SECTOR – 2012-2016

US\$ BILLION



Source: IBRAM – 2012

■ New investments in the Mining Sector (2011-2015): US\$68.5 billion

■ New investments in the Mining Sector (2012-2016): US\$75 billion

\* **Aluminum Supply Chain** includes investments in Bauxite, Alumina and Aluminum.



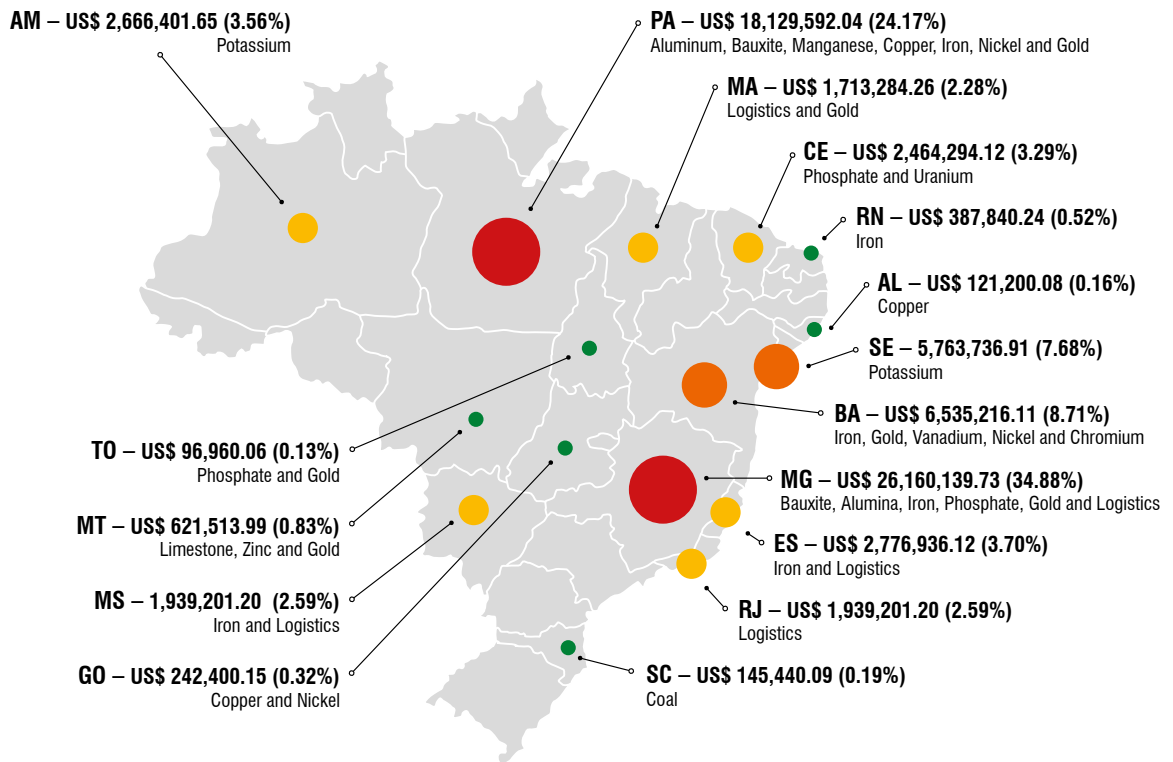
**Brazil**



Eugênio Paçelli

### MAIN INVESTMENTS IN THE MINING SECTOR BY STATE

2012-2016 – US\$ 75 BILLION



Source: IBRAM – 2012