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MINING IN A WORLD OF INNOVATION

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# MINING AND AMAZON FOREST: A LINK FOR THE FUTURE

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# AMAZON FOREST... THE LAST ADVENTURE IN THE TROPICS

Over 6,9 million km<sup>2</sup> of continuous rainforest... almost Australia's size



# AMAZON FOREST... THE LAST ADVENTURE IN THE TROPICS

- Encompasses 9 countries: **Bolivia, Peru, Colombia, Venezuela, Ecuador, Suriname, Guiana, French Guiana, and Brazil**



# AMAZON FOREST... THE LAST ADVENTURE IN THE TROPICS

- **4.196.943 km<sup>2</sup> in Brazil... 49,29% of the Brazilian territory ...**



# AMAZON FOREST... THE LAST ADVENTURE IN THE TROPICS.

- More than 30 thousand kinds of plants have been described, but it is estimated that other 20 thousand remain unknown.
- **There are more species of plants in one hectare of Amazon forest than in the entire European continent.**



# AMAZON FOREST... THE LAST ADVENTURE IN THE TROPICS

- Its wide surface shows mineral potential comparable to the main producing regions in the world
- However, the territory is underexplored and geological knowledge is still poor



# THE CHALLENGE TO DEVELOP AMAZON

- **Policies for the Amazon's economic growth has been changing along the history:**
  - In 1755, shortly after the gold discoveries in Rio Negro, Tapajós and Madeira by the Portuguese explorers, the Crown banned the mineral production in the region. A Royal Charter restricted activity in the region to "*the establishment of villages and civilization of the Indians*", claiming that only agriculture and trade could bring progress.
  - The rubber boom lasted about 40 years between 1870 and 1912. It finished when rubber plantations in other countries started producing latex more efficiently and at lower cost.
  - Manaus Free Zone – in the 60's – government incentives and tax reduction for imports and industrialization. Generated income concentration and did not reach the region's natural resources.
  - **Decades of 70 and 80 - The military government implemented the policy of colonizing the region through major infrastructure and large agricultural projects. It was a period in which deforestation were allowed and even encouraged.**
  - **After the Constitution of 1988 sustainability, preservation and harmony with local and indigenous communities became a basic concepts of development.**
  - **In the last 10 years the PAC (Growth Acceleration Plan) returns, in some way, the model of the military era, with roads, ports and large hydroelectric plants (Jirau, Santo Antonio, Belo Monte). The expansion of agribusiness frontier pushes the forest.**

# THE CHALLENGE TO DEVELOP AMAZON

- Brazil demand, for centuries, a model for the occupation and development of the Amazon region.
- Radical environmentalists want to halt the development of the region, keeping the forest untouched.
- Others look for the intensification of land use outside protected areas.
- In order to find the right model, we have to answer a simple question:
- **What do we want for Amazon region?**

# THE CHALLENGE TO DEVELOP AMAZON

**The answer is simple and almost unanimous:**

***"We want to develop Amazon, keeping the forest as it is, standing, preserving its fantastic biodiversity."***

- Productive activities that meet this assumption should have two specific features:
  - High economic density (more wealth generation per occupied area);
  - Improving Human Development Index (HDI) of Amazonian communities, the lowest in the country.

# Mining: a sustainable option to develop Amazon

- Mining has never been considered as an option for development of the Amazon region. On the contrary, it has always been stigmatized as a predatory and environmentally incorrect activity.
- The fact: mining industry fully complies with what is expected for the Amazon's development:
  - It has high economic density;
  - improve the quality of life of local communities;
  - There are technologies for environmental remediation and mitigation of damages;
  - It is a long-term activity.

LET'S DEMONSTRATE ....

# Amazon's mineral production (2013)

- **Value of mineral production** - US \$ 14,758,290,000.00 (31.7% of Brazilian Mineral Production).
- **Estimated movement of earth (solid / year) by mining –**
  - 175 million tons of various minerals (DNPM, 2013) + 391 million tons of overburden removed = 566 million tons removed. Estimating reasonable density, the estimated volume excavated in all Amazon mines in a year: 277 million cubic meters.

**This large volume fits into a pit of 544 hectares @ 50 m deep**

**Or a squared area with 2.350 m side.**

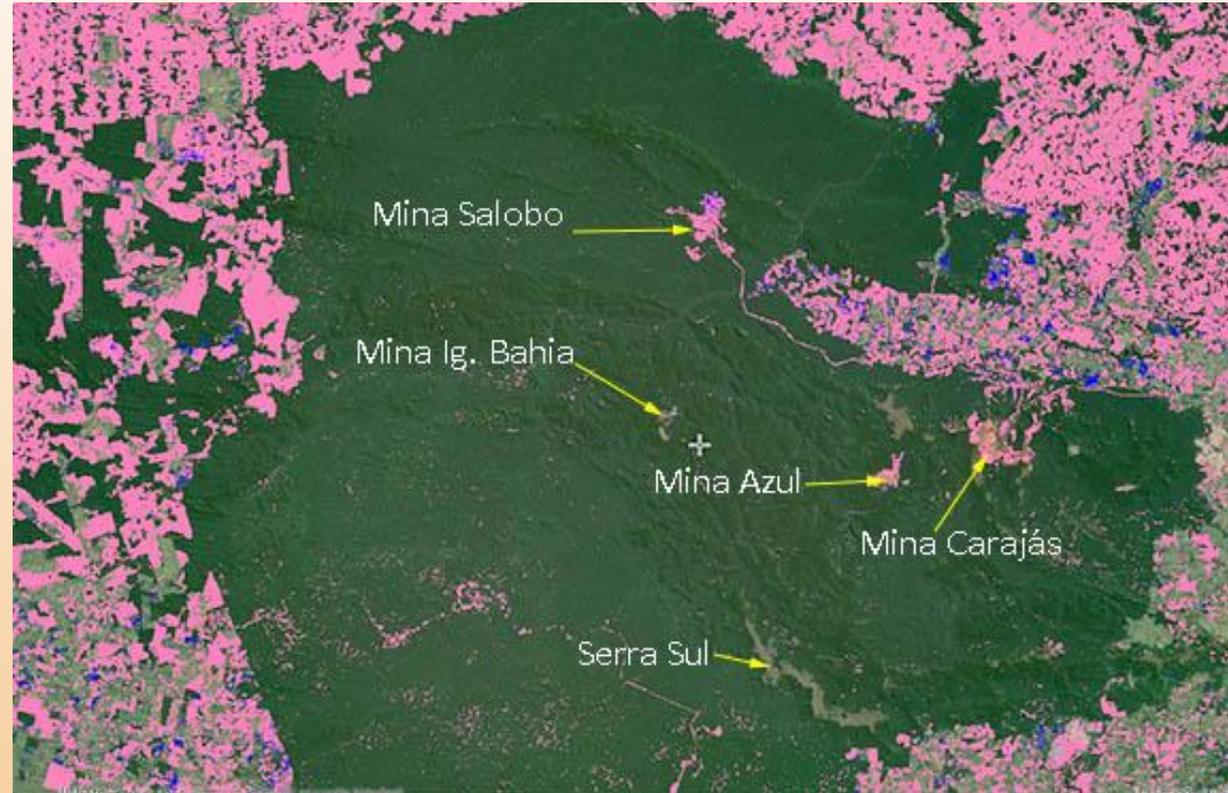
# A fantastic concentration of value

- **14.7 billion dollars can be produced in a theoretical space of 554 hectares...**
- **Something like 26.6 million dollars per hectare.**
- **Comparing: 01 hectare produces about 3 tons of soybeans, which price was US\$ 420.00 / t (2013), or US\$ 1,260.00 / hectare. This is 0.004% of mining revenue, considering the same area. This exercise confirms the high economic density of the mineral resource.**
- **The 554 hectares potentially suppressed by mining in 2013 mean 0.09% of 5,891 square kilometers deforested in the Amazon in the same year.**

# The message is...

- It's time to set up a real productive dialogue between environmentalists and the mining industry, focusing in the development and preservation of the Amazon Region.
- Actually, environmentalists and miners do not maintain a productive dialogue for decades. They behave as enemies.
- The Academy could be the link between the two groups, contributing to the search of the consensus.

# An image is better than 1000 words...



- VALE has mined out from Carajás thousands of tons of ore along decades. The mines occupy 3% of the National Forest with 3,927 square kilometers held by the company.
- **The image is striking: out of the protected area by mining, no more forests, devastated by agriculture, cattle ranches and logging, activities responsible for the "colonization" of the Amazon up to now...**



- THANK YOU