09/09/2008

# Vale and Inpe issue report on climate change in Amazonia

Vale and the Brazilian Institute of Space Researches (Inpe) release today (September 9th) the first of a series of three reports about changes in weather and its impact on vegetation, agriculture, biodiversity, and power generation capacity in the states of Pará and Maranhão, where the company is present. In this first report, Inpe researchers have studied weather and temperature variations over three periods of time: 2010-2040, 2041-2070, and 2071-2100. The study will serve as the base of the information for subsequent reports, with release previewed for March and April, 2009.

The study is original due to its level of regional details, inclusion of forecasts for the next periods (especially for the period from 2010 to 2040) and for considering meteorological data by INMET (Brazilian Institute of Meteorology). For the analysis, evaluation criteria applied to AR4 - Fourth Assessment Report, IPCC (NU's Intergovernmental Panel on Climate Change) with three regional models (Eta CCS, by Inpe; RegCM3, by Universidade de São Paulo; and HadRM3P, by Haddley Centre, UK) were combined. Also, information from 36 pluviometric and climatologic stations over the region were used - 10 from National Water Agency (ANA) and 26 from INMET.

The researchers considered two scenario at IPCC to perform the analysis: A2 (more pessimist, highly concentration greenhouse effect gas emissions) and B2 (more optimist, with low concentration of greenhouse effect gas emissions, taking into account the accomplishment of Kyoto protocol goals).

In brief, the report shows that the weather in the region will be hotter and drier along this century. The estimative is that, in the period of 2010-2040, the temperature may be 2oC (35.6 ºF) hotter in the area covering eastern Pará until Maranhão. In the period of 2041-2070, it is forecast a raise of up to 4oC (39.2ºF). Regarding pluviometric indexes, the projection is reduction of rain up to 10%, in the period 2010-2040, and up to 20%, in the period 2041-2070. For such projections, the researchers have used HadRM3P model, from Haddley Centre, and concluded that changes in weather and temperature do not present large differences between scenarios A2 and B2.

For the period of 2071-2100, the report forecasts raises even higher of the temperature, alternating long periods of dry weather with precipitations concentrated in few times of the year. Rain reductions may be 2 and 4 mm per day regarding current weather in the region. The temperature will rise all over eastern Pará through NE, up to 7oC (44.6ºF) in regions of eastern Amazônia and northern Maranhão in scenario A2, the heating being lesser (up to 4oC or 39.2ºF) in scenario B2.

"The heating is observed in yearly average on the months of summer and winter and there are some variations between both models", as stressed in the study, which makes a detailed analysis for each season. The precipitation reductions in eastern areas of Pará (next to Amazonas river mouth) and in northern Maranhão may range between 40% and 60%, in scenario A2, and between 20 and 40% in scenario B2.

"These results lead us to conclude that the area of study presents a very high climatic vulnerability, comparable to Brazilian semiarid regions, consistent with a future weather drier than the current one, with some areas receiving intense rain concentrated in short periods, followed by long periods without rain and with high temperatures during the day and night. In such conditions, hydrologic balance may be altered, occurring periods of future water deficiency, currently non-existing in current weather, and, consequently, affecting native vegetation and regional agriculture", states the study.

However, Inpe researchers highlight that, despite of the various models applied, there is a certain level of uncertainty regarding future scenario of global weather and such uncertainty increases when regional scenarios are evaluated in detail.

**Preventive measures**

The study coordinated by Inpe is one more important construction element for Vale's sustainable development strategy for the region. The company's objective is to raise the level of knowledge about global warming impact on the regions it acts on, and therefore, create subsidies for establishing new public policies and preventive measures for its operations.

Having sustainable development in its mission, Vale has been strongly investing on projects promoting economic, social, and environmental benefits. In 2007, Vale invested US$ 4 billion in Pará. In environmental projects, the company invested US$ 110.2 million, an amount 834% superior to the US$ 11.8 million invested in 2006. In Maranhão, US$ 1 billion were invested in 2007 - amount 34% higher than the US$ 741.8 million invested in 2006. The environmental expenses had an increase of 234% regarding US$ 7.6 million done in 2006, reaching US$ 25.4 million in 2007.

And the investments will grow. For 2008 through 2012, the company already stated that it will invest US$ 2.8 billion in environment in all the countries where it is present. From this amount, US$ 692.5 million will be directed to the state of Pará.

**Vale Florestar**

One of the main Vale's environmental projects in Northern region is Vale Florestar, conceived to protect and recover native forest in Southeastern Pará, combining planting species in the region with trees for industrial use. This project constitutes an important initiative to mitigate changes in weather. Vale Florestar is currently the largest environmental recovery project already implemented in Amazônia. Initiated in 2007, the program will receive investments of US$ 300 million until 2015, being US$ 60 million by the end of 2008. The total area to be benefited by the program is 300,000 hectares, which will make possible to neutralize CO2 in record volumes. Until now, Vale Florestar already planted more than 11 million seedlings and recovered 40,000 hectares, 15,000 being planted with eucalyptus and 25,000 forwarded to revegetation of native forests. 1,250 direct and outsourced employees are working in the program.

Besides, Vale already helps protecting almost 3 billion trees around the world, most of them in Amazônia. There are 14 trees for every Brazilian person, considering current population of 190 million in habitants. The amount almost equals half the planet population, with population of 6.6 billion people. The stock of estimated carbonic gas is 1 billion tons.

## More information

**Mônica Ferreira**
monica.ferreira@vale.com
Rio de Janeiro
+55 (21) 3845-3636

**Fatima Cristina**
fatima.cristina@vale.com
Rio de Janeiro
+55 (21) 3485-3621