

## CO<sub>2</sub> Emissions Trade in Brazil: A Choice Between CO<sub>2</sub>-Ionization and Wind Energy Generation!

Casagrande JR., E. F., Federal Center of Technological Education of Paraná, Brazil  
Schultz, D. J., COPEL Geração, Brazil

Big companies and accountancy firms have already set up different lobby groups because they are foreseeing ways to make money in a multi-billion-dollar emission-trading-game after de regulation of the Clean Development Mechanisms (CDM) which is about to be established by the Kyoto Protocol in order to control "global warming". Environmentalists and scientists are concerned about the effectiveness of the carbon sinks (reforestation and afforestation projects to absorb carbon dioxide) supported by the CDM to combat the climate change. By using this strategy, companies, especially from the energy, oil and automotive sector, can avoid to make investments in clean technology and renewable energy production. Recently, the partnership established between transnational corporations and Brazilian and international environmental NGOs had acquired more than 100 thousands hectares in tropical forest areas such as the Amazon Forest and the Atlantic Forest in order to implement "environmental projects" for carbon sinks. It is estimated that around US\$50 million will be spent in reforestation programmes (part of this money already was used to buy the land). Some Brazilian environmentalists are calling it a kind of neo colonialism or CO<sub>2</sub>lonialism! The money that has been spent in these transactions could be invested in successful measures to reduce global warming based on solar and wind energy generation. A study from the Brazilian Electrical Energy Research Center (CEPEL), shows that the country has a capacity to have installed 143 thousand MW of wind energy converters. Only in the Southwest Region, the wind power installed capacity could reach 29,700 MW - twice the capacity of Itaipu hydropower plant (the biggest hydropower plant in the world, located in the south of Brazil!).

### 1. The Warning of the Global Warming

In 1990, the English based Oxford University published the book entitled 'Global Warming: The Greenpeace Report' [1]. The 600 pages' book had 19 articles from global specialists alerting about the urgency of implementing measures to stop the greenhouse effect. The previous year more than 300 scientists signed the report of the Intergovernmental Panel of Climate Change (IPCC) from the United Nations Assembly (UN). Here, they described the increase in atmospheric gases' concentration derived from human activity mainly through the burn of fossil fuels. From the time when the international treaty to combat global warming and reduce emissions of 'greenhouse gases' was designed - the Kyoto Protocol - in the third session of the Conference of the Parties (COP-3) in Kyoto, in 1997, till today, the world still waiting for the legalization of mechanisms that obliges all countries to cut emissions of greenhouse gases by about five per cent from 1990 levels by 2012. Maybe shocked by the material losses and deaths caused by recent floods and the pressure of the public opinion, the European countries have accepted to implement some necessary measures to reduce gas emissions through the ratification of the Kyoto Protocol. However, led by the United States, governments such as Australia still opposed to implement such measures, mainly in respect to Carbon Monoxide (CO) and Carbon Dioxide (CO<sub>2</sub>). In spite of the indignation of environmentalists, scientists and society as a whole, the American government keeps using the strategy of delayed action surrendered to the production sector lobby that argues that any such agreement represents a threat to profits. Reminding that the US output of gas jumped almost 3 per cent last year, the previous rate of growth, and the biggest increase for years, according to the US Energy Information Administration. The US, with just 5 per cent of the world's Population produces a quarter of the world's greenhouse gases. Without changing a production model based on high gas emissions, some companies and governments of industrialized countries want to use the Clean Development Mechanisms (CDM), a so-called flexible mechanisms to help countries reach emissions targets without trimming output, promote investments by firms or governments in developing countries and could include reforestation and afforestation projects to help absorb carbon dioxide, the main greenhouse gas.

### 2. Carbon Credits, Transnational Corporations and NGOs Ltd.

According to the CORPWATCH [2], only 122 companies are responsible for 80% of all CO<sub>2</sub> global emission, meanwhile only 4 oil transnational corporations - Shell, Exxon-Mobil, BP-Almoco-Arco and Chevron-Texaco - are responsible for 10% of the CO<sub>2</sub> emission. The Report from the Pew Center on Global Climate Change said that more than 65 trades of greenhouse gas emissions totalling 50 million

to 70 million tons have occurred over the past five years, but that those figures probably underestimate the market activity. The emissions reduction are traded for between 60 cents and \$3.50 per ton of carbon dioxide equivalent [3]. It is estimated that the carbon global market could be worth between US\$5 to US\$10 billion in business [4]. Once the implementation of market-based mechanisms is a trend which fits perfectly in the neo liberal economy, the strategy adopted by transnational companies is to establish partnerships with environmental non-governmental-organizations (NGOs) to acquire huge land areas in developing countries, in order to implement the so-called carbon sinks or carbon sequestration which eventually will account in carbon credits for the investors.

In spite of the 'good intentions' of most NGOs, this kind of organization has enormous difficulties to survive, especially when they grow and are forced to keep permanent staff and require larger infrastructure. Since they depend upon economic resources that come from short-term projects, the search for new projects is constant, which leads to certain concessions towards the practices of project founders.

These commercial transactions have been criticised by environmentalists and scientists who are concerned about the effectiveness of the carbon sinks to combat climate change. It also allows companies, especially from the energy, oil and automotive sector, not to make investments in clean technology and renewable energy production - a real step up to reduce the greenhouse effect and it is also contemplated by the CDM.

In fact a recently four-year research conducted by scientists at Duke University in North Caroline, suggest that forests will be less effective at slowing climate change, because they will mop up less carbon dioxide than expected [5,6]. These studies, which have monitored growth of mature pine trees in Duke Forest, had more realistic results regarding how much CO<sub>2</sub> plants can absorb than earlier inconclusive experiments that took place in sealed environments such as greenhouses. These cannot maintain genuine outdoor conditions of temperature, humidity and rain. Also, a new research conducted at the University of Washington, in Seattle, pointed out that the breakdown of leaf litter is already releasing large amounts of carbon in the rivers and wetlands of the Amazon rainforest [7]. This means the forest may be releasing as much CO<sub>2</sub> as it absorbs, if not more.

Another problem regarding reforestation projects for carbon sequestration is that tropical forest areas are under risk of fire, which will in fact add up more CO<sub>2</sub> to the atmosphere. This incident that occurs very often in Brazil can contribute for the

country to be considered one of the ten biggest global CO<sub>2</sub> producers along the industrialised countries. The problem is that in Brazil, the partnership between transnational companies and national and international environmental NGOs had already acquired more than 100 thousands hectares in tropical forest areas such as the Amazon Forest and the Atlantic Forest for carbon sink projects. It is estimated that around US\$50 million will be spent to implement the reforestation projects (part of this money already was used to buy the land). These projects can take more 40 years to be fully implemented - Some Brazilian environmentalists are calling it a kind of neo colonialism or CO<sub>2</sub>lonialism! Bellow we can see some examples of those projects:

### 2.1 Carbon Case 1

Its involves a French car company, the Citroen Peugeot, which is investing about US\$ 12 million in an area of 12 thousand hectares in state of Mato Grosso to create the so-called 'Carbon Sink of the Amazon Forest'. The project involves a very well know Brazilian NGO, Pró-Natura, and the Office National des Forêts (ONFI), a so-called international branch of the French Environmental Ministry, which aims to develop a carbon storage capacity of 50.000 metric tons per year. Apart from mediating commercial transactions, these organizations will also manage a reforestation programme and research on native plant species that capture carbon. This could be considered relevant from a scientific point of view, however here we question the hidden strategy that such companies have found to avoid reducing their impact on the environment. Despite the fact that the NGOs involved in the Project are saying that the Peugeot will not require carbon credits under contract rule, the question we could ask to Peugeot is about her position in the future if environmental regulation get more tough in Europe and the company would need these credits? Could we believe in automotive companies when they are responsible for 12% of the carbon global emission [8]?

More efficient strategies that contribute to minimise emissions of Citroen cars should direct investment towards research of less pollutant fuels, such as Hydrogen fuel cells and to produce totally recyclable car parts.

### 2.2 Carbon Case 2

Another example is that of the State of Paraná-based NGO (south of Brazil), the SPVS (Wild Life Research Society). The SPVS, known for protecting wild species such as the Lion Tamarin and Blue-faced Parrot, in association with the American NGO, The Nature Conservancy, are running three projects involving carbon sequestration programmes. The first started with the acquisition of almost 7 thousand hectares in the Environmental Protection Area (EPA) of Guaraqueçaba (located in the Atlantic Forest of the State of Paraná) by the American Company Central and Southwest Corporation-CSW (the second biggest company in energy supply in the US based on coal, petroleum and nuclear power which has been recently acquired by the American Electric Power) where is going to be spend about US\$5.4 million in a reforestation project. The second project involves the automotive company, General Motors (GM), which have announced an investment of US\$10 million in 12 thousand hectares. And the third project is with the oil company, TEXACO, which made a contribution of US\$3 million to recover forest in 1 thousand hectare in the same EPA. This EPA is part of the Atlantic Forest ecosystem, which is considered to hold one of the greatest biodiversity of the planet. However, the Brazilian society has not been adequately informed of the details of such projects or how those millions of dollars are going to be invested in conservation and carbon sequestration! One of the greatest contradictions here is that the CSW, openly declared that there is no scientific evidence of the existence of global warming and therefore agrees with the US government in not signing any agreements on emission reduction!

### 2.3 Carbon Case 3

In this case we can see how energy companies are going to play in the emission trade game. The AES Barry is a transnational corporation based in Wales, UK, operating in more than 20 countries and is developing a project with the Ecologic Institute, another Brazilian NGO, that works in the State of Tocantins, located in Central West region of Brazil. The project was set up through the Responsible Care Fund of the AES Barry that aims to sequesterate about 7 million tons of carbon during 25 years through a reforestation project in a pluvial island. The Ecologic Institute declares that is a great opportunity business for the AES Barry given that the company will not need to spend about US\$150 to reduce 1 ton of CO<sub>2</sub> in their facilities instead will pay only between US\$2 to US\$10 for ton of carbon maintained through forest management [9]. Would be interesting to know the opinion of the communities that are living around AES Barry facilities about this "great business opportunity"! It is clear the lack

of ecological perception of the actors involved in this kind of transaction. For then the health problems suffered by people, especially by elderly and children that are exposed to gases emissions and life quality deterioration in industrial urban areas are less important! If energy companies want to address environmental problems seriously they cannot separate the local negative impacts of pollution from CO<sub>2</sub> global emission.

Since environmentalists claim for social and environmental responsibility, where lies the real commitment of these NGOs? Should there be more rigid criteria for the negotiation of such areas that include opinions of traditional people that live nearby? Aren't these NGOs encouraging companies to continue degrading the environment and affecting human health in their native countries? Is there enough scientific evidence that such strategy will actually work to reduce green house effect? What is going to happen if the projects would discover in these areas potential medicinal plants that could be commercially explored? The companies are going to loose the opportunity to claim patent of it?

This practice in our view represents a step backwards in the environmental and social debate that proposes changes in pollutant technologies and a revision in consumption habits, necessary steps for the concrete implementation of sustainable development. We should also see the energy policy carried out by the Brazilian government which is very contradictory. At the same time the country gives his support to the Kyoto Protocol, there is a plan to build 17 natural gas thermopower facilities till 2003. In this case any programme to plant forest to absorb carbon dioxide would be unrealistic. We cannot expect that all the Brazilian territory to be covered by forest!

### **3. A Sustainable Option**

According to the Clean Energy Blueprint 2001 Report from the American Union of Concerned Scientists, the United States could produce at least 20 percent of its electricity from wind, solar, geothermal and other renewable energy sources by 2020 [10]. The scientific group pointing out that a change in the US energy policies would reduce natural gas use by 31 and by almost 60 percent for coal. This would reduce the need for 975 power plants, retire 180 coal-polluting plants and 14 existing nuclear power plants. In Brazil, the investments could be in the same direction instead to buy areas for carbon sink and avoiding companies to be accused of neo colonialism or CO<sub>2</sub>lonialism! Specialists of the renewable energy sector in Brazil are saying that the money that has been spent in these transactions could be invested in

successful measures to reduce global warming based on solar and wind energy generation. A study from the Brazilian Electrical Energy Research Center (CEPEL), shows that the country has a capacity to have installed 143 thousands MW of wind energy converters [11]. This capacity is the double of the today installed capacity, by means of mainly hydropower, but also thermopower plants in Brazil. The North East Region of Brazil has 48,95% of the wind capacity of the country. Only in three states - Pernambuco, Ceará and Rio Grande do Norte, there is a potential of 70 GW of wind generation [12]. Meanwhile, in the Southwest Region (São Paulo, Rio de Janeiro and Minas Gerais states), the wind power installed capacity could reach 29.700 MW - twice the capacity of Itaipu hydropower plant (the biggest hydropower plant in the world, located in the south of Brazil!). Today, the country has only 22 MW installed in wind farms. Considering the US\$50 million estimated to be used in carbon sink projects in Brazil announced by the international companies so far, it would be possible to install 50 MW of wind converters. Based on the data of the Paraná State Wind Map (developed by the State Company of Energy - COPEL Geração) for wind speed range higher to 7 m/s, the wind farms would need just 2,500 hectares (25 km<sup>2</sup>) area and would generate about 120 thousands MWh of electricity per year. The NGOs in Brazil should be following the example of the Greenpeace and another 23 Latin America environmental organizations which signed up a document against carbon sinks projects and set up a campaign to increase investments in renewable energy [13].

#### 4. References

1. Legget, J. (ed.) (1990) Global Warming - The Greenpeace Report. Oxford University Press. Oxford
2. CORPWATCH. (2001) Climate Justice Fact Sheet - CorpWatch Holding Corporations Accountable. <http://www.corpwatch.org/press/PPF.jsp?articleid=918>. Accessed on March 30.
3. Vorman, J. (2002) Greenhouse trades takes off, US on sidelines. Reuters News. Environmental News Network - ENS. March 20  
[http://www.enn.com/news/wire-stories/2002/03/03202002/reu\\_46712.asp](http://www.enn.com/news/wire-stories/2002/03/03202002/reu_46712.asp). Accessed on May 15.
4. Houder, V. (2001) Carbon trading may be hampered by the politics of pollution. Financial Times. August 14
5. Schelinger, W. & Lichter, J. (2001) Limited carbon storage in soil and litter of experimental forest plots under increased atmospheric CO<sub>2</sub>. Nature 411, pp. 466-469.
6. Oren, R., Ellsworth, D.S., Johnsen, K.H., Phillips, N., Ewers, B.E., Maier, C., Schafer K.V.R., McCarthy, H., Hendrey, G., McNulty, S.G. and Katul, G.G. (2001) Soil fertility limits carbon sequestration by forest ecosystems in a CO<sub>2</sub> enriched atmosphere. Nature. 411, 469-472.
7. Richey, J. E., Melack, J. M., Aufdenkampe, A. K., Ballester, V. M., Hess, L. (2002) Outgassing from Amazonian rivers and wetlands as a large tropical source of atmospheric CO<sub>2</sub>. Nature. 416, 617-620.
8. Menconi, D. Exaustor Natural (2001) Revista Isto É, 1676, São Paulo. November 14.
9. Pastor, L. (2000) Fábrica de ar. Dinheiro on line. 129. February 16.  
<http://www.terra.com.br/dinheironaweb/129/negocios/neg129carbono.htm>. Accessed on March 20.
10. PLANET ARK. (2001) Scientists urge more US use of renewable energy. Planet Ark Reuters World Environment News. USA October 16, 2001.  
<http://www.planetark.org/dailynewsstory.cfm/newsid/12811/story.htm>. Accessed on October 20.
11. Energia & Meio Ambiente (2001) Girando os "Cataventos" da Energia Eólica.  
<http://www.energiaeambiente.org.br/web/especial/especial16.htm>. Accessed on September 17.
12. Ílalo, F. (2001) Geração eólica recebe investimentos da ordem de US\$ 500 milhões. Gazeta Mercantil Nordeste. Recife. December 07.
13. GREENPEACE (2002) Mecanismo de Desenvolvimento Limpo, plantações florestais e florestas nativas. Greenpeace home-page. [http://www.greenpeace.org.br/clima/desenv\\_limpo.asp](http://www.greenpeace.org.br/clima/desenv_limpo.asp). Accessed on April 04.