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**Some Aspects of the Environmental Policy in
Brazil**

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SOME ASPECTS OF THE ENVIRONMENTAL POLICY IN BRAZIL¹

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Abstract

The paper discusses briefly the Brazilian environmental policy. Initially, the concept of sustainable economic development and some related ideas are evaluated. The Brazilian governmental institutions responsible for environmental management are described. Next, the problems of deforestation and pollution are discussed and some tentative explanations are provided.

Keywords: environment; economic development.

JEL Classification: O13.

1. Introduction

Brazil is a South American country that has some importance in every discussion about environment. Its prominence results from many factors:

- The Amazon rain forest is unique and its preservation is high on the world environmental agenda.
- Pollution is a serious problem and Brazil has a sizeable contribution to the emission of some pollutants.
- Brazil will need to find a new way to develop so that the welfare of its inhabitants will increase without damage to the environment.

This paper intends to summarize some aspects of the Brazilian environmental policy that I judge to be of the utmost importance. I try to insert the discussion in an appropriate framework and not to be excessively technical.

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2. Sustainable economic development

The notion of sustainability is closely linked to environmental and developmental issues. A classical definition of sustainable development is given by the World Commission on Environment and Development:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”²

Some discussion of the elements of the above definition is helpful to point its important elements out.

The first element that deserves emphasis is development. Development in the economic literature is often associated with higher consumption or higher satisfaction produced by this higher consumption. Sometimes development is associated with a higher value of a measure of output and is called economic growth. Output in this case would be an intermediate object that would guarantee a higher consumption. It is implicit in the argument that more output means more income and each person will consume a proportion of his income. This notion is flawed if we consider that:

- It is intrinsically utilitarianist. It presupposes that a person is moved by egoism in all of his acts and there is no possibility of altruism.
- It does not consider the role of inequality and assumes ex ante that all individuals are alike.
- It does not consider explicitly the environment.

The notion of sustainable economic development would be an attempt to modify the theory in order to eliminate the third flaw.

The second element to point out is intergenerational equity. The necessities of present and future generations need to be assured. In a certain sense we also deal with the question of inequality here, when we consider the intergenerational linkages and the weight given to future generations in the decision making process. Sometimes the monumental work *A Theory of Justice* of John Rawls is cited as an example of a fair decision criterion relating to future generations. It can be put simply as “we need to make our decisions about the future as if we could live in the future”. No bias favouring the present generation will appear if we make a social contract using our veil of ignorance to abstain from our temporal location in order to produce fair decisions. An early economist, Frank Ramsey, studying on the 1920s the question of social allocations of goods over time by the point of view of a social planner, stated that it is ethically indefensible to consider the present generation as more important than the future one.³ One can argue for some type of compensation scheme favouring the future generations to achieve (in principle) the intergenerational equity, so that the effects of the above mentioned bias come to an end.

Once the future generations concern us, the main themes of debate are: how we could manage the exhaustible and renewable natural resources; and how we could curtail the pollution emissions obtained as a by-product of the economic development.

There are no simple answers to these questions. One can argue that the use of natural resources and the generation of pollution are, to a certain extent, admissible because the benefit they produce in terms of a higher standard of living surpass the costs in terms of health diseases. It is alleged that we would never attain the stage of economic development we are today if we had preserved the natural resources and

² World Commission on Environment and Development (1987) *Our Common Future* (Oxford, Oxford University Press), p. 43.

³ Ramsey, F. P. (1928) A Mathematical Theory of Saving, *Economic Journal*, 38, pp. 543-559.

produced no pollution. Economists sometimes describe this situation using the figure of a hypothetical substitution of physical for environmental capital which constraints the behaviour of future generations. Obviously there are some types of environmental goods that are essential to life and for these there is no possibility of substitution. But aside from these considerations it is indisputable to anyone who examines the economic and environmental data that the type of development using dirty technologies cannot continue.

Sometimes the economists describe the relation between pollution and development as one of the following type: a country will produce more pollution until a certain stage is reached, so that from that point onwards the pollution will decrease. This is known as the “Environmental Kuznets Curve”, relating emissions of pollutants to levels of national output. It is possible to show that for some pollutants this relation is valid and for others it is not. Perhaps the failure of the Kuznets Curve can be attributed to a predominance of the scale effect, that is more output necessarily produces more pollution. If this is the case or if the turning point on a Kuznets curve occurs at an extremely high level of output, then it is possible to create artificially the incentives to produce a turning point at a feasible level. One of the means to force a favorable turning point is the signature of an agreement which involve a large number of countries with explicit targets on emission levels of some key pollutants. A successful agreement will put incentives on the adoption of cleaner technologies to act in the opposite direction of the scale effect, resulting in less emissions. One remarkable example of environmental agreement is the Kyoto Protocol firmed up on December 1997.

We will focus in the next sections on the environmental policy in Brazil. The term environmental policy is extremely wide in scope. We will be brief and stress some points that are important in the Brazilian context.

3. The Brazilian Institutions

The Brazilian Constitution (rewritten in 1988) devoted a whole chapter to the environment (chapter 6 on Title VIII). Before this remarkable fact, we can stress the creation of the National Policy for the Environment (PNMA) in 1981, relating to preservation, improvement and recovery of environmental quality. This policy was enforced only in 1990 with the creation of the National Environmental System (SISNAMA).

These are the constituents of SISNAMA:

- Council of the Government: upper body.
- National Council of the Environment (CONAMA): consultant and deliberative body.
- Secretariat of Environment of the Presidency of the Republic (SEMAM/PR): central body.
- Brazilian Institute for Environment and Renewable Natural Resources (IBAMA): executive body.
- Sectional bodies (at the federal and state levels) related to protection of the environment.
- Local bodies at the municipal level and entities.

According to the legislation of CONAMA every project that has potential to damage the environment needs to present an Environmental Impact Study (EIA) and an Environmental Impact Report (RIMA), besides being subject to a three-stage

environmental licensing process. Economists argue that benefit-cost and cost-effectiveness analyses are superior to impact assessments when conducted properly.⁴ But the adoption of some type of environmental analysis is worthy of note.

4. The Amazon rain forest

The Amazon rain forest concerns all mankind because the Legal Amazon has almost 5 million sq km and a huge biodiversity that needs to be preserved. In this section we will review some findings about deforestation and its causes in order to understand this topic.

The deforestation in Amazon has many reasons, and a proper analysis need to consider two distinct periods: before the 1990s and during the 1990s. We will focus on two studies on the first period.⁵ This period is characterized by the attempt to force the occupation of the Amazon by means of a plethora of governmental incentives. The region was considered important mainly for security reasons. The incentives used by the Brazilian government to force colonization and attract investments include, inter alia, the construction of roads, the concession of fiscal incentives (credit subsidies, tax exemptions), and the creation of the Free Export Processing Zone of Manaus, allied to the availability of land for agriculture, cattle ranching and mining. The rates of growth in the Amazon on the 1970s were around 18 percent annually. Official data on deforestation reveals that the annual deforestation rate was on average 0.54% a year during 1978/1989. The potential main causes of deforestation, according to Reis and Margulis, are:

- Increases in population density.
- Squatting and shifting cultivation.
- Cattle ranching.
- Forest conversion to crop areas.
- Commercial logging.

Using a large amount of data from Amazonian counties, the authors conclude that cattle ranching and commercial logging are not statistically significant to explain deforestation in this period. The other variables are highly relevant to the problem.

Using a partly original data set for the same time period, Pfaff concludes that population is a cause of deforestation only in the initial moments of colonization. After a certain stage of development population is not relevant in this respect. He also finds that land characteristics, transport costs and development project policies are important factors to explain deforestation.

These findings desmistify the role of comercial logging and cattle ranching, frequently considered as villains in the process of deforestation. They also show that governmental incentives to population settlement may produce increases in the rate of deforestation.

Recent data from the 1990s show a mixed pattern. The deforestation rate decreased to 0.3% per year in 1991/1992, raised to 0.81% in 1994/1995 and then decreased to 0.51% in 1995/1996. The government identified, by means of satellite

⁴ See, for instance, Tietenberg, T. (1996) *Environmental and Natural Resource Economics* (New York, HarperCollins), chapter 4.

⁵ Reis, E. J. & Margulis, S. (1991) Options for Slowing Amazon Jungle Clearing, in: R. Dornbusch & J. M. Poterba (Eds) *Global Warming: Economic Policy Responses* (Cambridge, Mass., MIT Press); Pfaff, A. S. P. (1999) What Drives Deforestation in the Brazilian Amazon?, *Journal of Environmental Economics and Management*, 37, pp. 26-43.

images the critical areas of deforestation, the so called “deforestation arc” (comprising the northeast of Para state, the northwest of Maranhao and Tocantins states, the northeast of Minas Gerais state, the entire state of Rondonia and the east of Acre state). The main causes of deforestation for this period, according to the government, are cattle ranching, commercial logging and crop areas. It is argued that nowadays the governmental policies are not producing deforestation as in the past. We are not aware of academic studies evaluating these contentions that make use of current data. We only stress that two of the alleged main causes today were not significant in the past.

The government is currently pursuing several objectives. The main ones are: regulation of forest fires; new environmental criteria to classify real estate as eligible for expropriation; and coordinated inspection operations using the information provided by the Amazon Surveillance System (SIVAM). Worthy of note is the Pilot Program to Conserve the Brazilian Rain Forest (PPG7), an initiative of a group of countries under the coordination of the World Bank that started in 1992. The initial projects began in 1994. The objective is to pursue a new strategy to develop the rain forest regions (especially the Legal Amazon) in a sustainable manner.

5. Pollution

Data recently made available show that Brazil was on 1996 the seventeenth largest emitter of carbon dioxide in the world, contributing with 1.14% of the total emissions.⁶ It is a matter of concern that carbon dioxide is one of the gases associated with the greenhouse effect. The following is an evaluation of the possible causes of the emission of carbon dioxide.

Estimates cited in Reis and Margulis show that the contribution of the Amazonian deforestation before the 1990s was from 4.7% to 16.6% of the global carbon dioxide emissions. Its contribution to the stock of the pollutant was 4.2%, corresponding to around 2.1% of the total greenhouse effect. The dramatic increase in the rates of deforestation in 1994/1995 certainly worsed the situation. The wide range of the early estimates shows that there is no consensus on the empirical evidence.

Another factor that can potentially be a contributor to the emissions is the profile of the energy sector. World Bank data from 1993 shows that the world electric power sector accounts for 30% of all fossil fuel consumption and 50% of all coal consumption, two factors that contribute to the emissions of carbon dioxide. But the profile of the Brazilian electric power sector is not the typical one, with a predominance of hydro plants. Data from Erber⁷ show that the fraction of Brazilian emissions of carbon dioxide attributable to the electric power sector in 1997 is 3.8%, a quite small number. Brazil is currently implementing programs to increase energy efficiency that rely on demand side management with the financial support of the World Bank. Perhaps a program on the supply side could reduce the emission furthermore.

⁶ Marland, G., Boden, T. A., Andres, R. J., Brenkert, A. L. & Johnston, C. (1999) Global, Regional and National CO₂ Emissions, in: *Trends: A Compendium of Data on Global Change* (Oak Ridge, Tenn., Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U. S. Department of Energy).

⁷ Erber, P (1998) *Contribuição da Geração Hidrelétrica para a Redução das Emissões Atmosféricas* (Brasília, Ministério da Ciência e Tecnologia).

One can guess that a sizeable part of the emissions comes from automobiles. Ferraz and Serôa da Motta⁸ show empirical evidence on other pollutants pointing to a reduction of emissions as a result of the implementation of the Vehicle Air Pollution Control Programme (PROCONVE) from 1988 to 1997, especially in the final two years. It is possible that some reduction occurred in the emissions of carbon dioxide too. As the data on carbon dioxide emissions we referred to are from 1996, it possibly does not reflect the sizeable reduction of emissions on the final year. The same data set also shows that the main part of emissions comes from liquid fuel. This means that the hypothesis of the automobile pollution cannot be discarded hitherto.

6. The Kyoto Protocol

The necessity to force a turning point on the emissions of some pollutants responsible for the greenhouse effect (the most important of which are carbon dioxide, methane, hydrofluorocarbons, nitrous oxide, perfluorocarbon, all of them with high global warming potential) conducted to an agreement known as the Kyoto Protocol. It deserves its name from the Japanese city where the compromise was firmed up in the third Conference of the Parties (COP 3) on December 1997. The protocol consists of a set of explicit targets to be achieved by developed countries, allied to some programs to transfer cleaner technologies to developed countries (Joint Implementation- JI) and to developing countries (Clean Development Mechanism – CDM). A properly certified investment in developed (through JI) or developing (through CDM) countries gives to the investor a reduction in his own emissions. The main objective is to reduce the emissions globally because every emission contributes to the greenhouse effect.

In the same spirit of these decisions the Executive Board of the World Bank approved the Prototype Carbon Fund (PCF) in July 1999. The objective is to perform emissions trading by means of a fund of carbo-reducing investments in which the World Bank will be an intermediary to bring capital from industrialized countries to developing countries so that the developed countries can meet their targets of emission reductions explicated on the Kyoto Protocol. It is expected that Brazil will have some participation in these funds since it is one of the twenty largest emitters of carbon dioxide.

The position of Brazil since the first Conference of the Parties (COP 1) in Berlin on 1995 has consistently stressed two points:

- The necessity to evaluate properly the share of responsibility of each country in the process of curtailing emissions (principle of common but differentiated responsibilities). This is achieved using the state of art of knowledge and taking into account the right of the developing countries to have a sustainable economic development according to his own priorities.
- The fundamental contribution of the transfer of cleaner technologies to developing countries to the success of the Protocol. The Clean Development Mechanism is similar to a Brazilian proposal (Clean Development Fund) presented to the Ad Hoc Group on the Berlin Mandate on August 1997.

Summing up, according to the Brazilian point of view the developing countries should not have targets of emissions but need to have access to cleaner technologies to succeed in a process of sustainable economic development.

⁸ Ferraz, C. & Serôa da Motta, R. (1999) *Automobile Pollution Control in Brazil*, Seminários IPEA 19/1999 (Rio de Janeiro, IPEA).

7. Concluding Remarks

We intended to stress some fundamental points to understand how the Brazilian environmental policy is currently being conducted. This essay is not comprehensive but selective. We first discussed the concept of sustainable economic development. Next, we showed briefly how the institutions responsible for conducting the environment policy in Brazil are organized. Then we discussed the problems of deforestation and pollution and evaluated some possible explanations. We chose to emphasize matters relating to global environmental problems.

Brazil is not oblivious to environmental problems. It has taken a lot of effort to reduce emissions of gases and solve environmental problems, searching for a path of sustainable economic development. This is a new way to proceed, and we expect that the country will not fail in its task.