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SYNOPSIS OF THE STUDY OF THE INSERTION OF ENVIRONMENTAL MANAGEMENT IN SECTORIAL POLICIES: The energy and industry case in Colombia

W O R K I N G P A P E R

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(Original document in Spanish)

Introduction

This document summarizes the results of a study on insertion of environmental policies in sectoral activities in Colombia, prepared for the IDB by the Center for Development Studies of the University of Los Andes. The analysis focuses on the industrial and energy sectors in Colombia. It is almost a decade since Colombia established an institutional framework for environmental protection, which, among other things, promotes the internalization of environmental controls within sectoral activities. It is now worthwhile stopping to evaluate the results of this process, identify strengths and weaknesses, and suggest corrective measures that could improve environmental management in the short, medium and long terms.

The study starts with a description of the main environmental problems caused by the industry and energy sectors. It then continues with a review of Colombia's legal and institutional framework underlying environmental management activities within the sectors. Finally, it presents the results of implementing environmental policy and channeling environmental investment within the industry and energy sectors over the last few years. The main outcome of this exercise is a series of proposals for environmental actions which address simultaneously environmental management improvement needs, economic efficiency in the sectors and overall national socio-economic objectives.

The Industry Sector

The manufacturing industry has played an important role in Colombia's economic life since 1950. The greatest population and industrial concentrations are located in Bogotá. According to the regional environmental authorities' monitoring programs, during the last five years the country's general tendency has been of a decrease in industrial discharges of DBO_5 and Suspended Solids. The residential sector contributes the most in these pollutants; industrial contributions are marginal or comparatively low.

Fixed emission sources, of which the manufacturing industry is the most important, produce almost 80% of the pollution by suspended particles, 85% of sulfur oxides and 16% of nitrous oxides. In Bogotá, the major atmospheric pollutants are sulfur oxides (SO_x), carbon monoxide (CO) and nitrous oxides (NO_x). These loads are mostly due to petroleum derivates combustion in the productive processes.

In order to compare the different industrial processes as to their environmental impact, Colombia is developing an Information System for Environmental Evaluation (*Sistema de Información para la Evaluación Ambiental*) of the productive sectors, which uses a number of indicators that relate the consumption of resources and polluting emissions with the production of a certain good.

The Energy Sector

As for the hydrocarbons sector, its importance in the Colombian economy is significant and on the rise. Nearly half of the oil produced in Colombia is exported. In the last four years, the petroleum sector's contribution to the GDP has risen to an average rate of 7.86%, and during the last decade oil and its derivates have contributed almost 21% to the country's total exports.

The environmental impacts of oil and natural gas deposit exploration, perforation and production processes are similar. In the exploration phase, the most significant environmental impacts relate to opening paths, deforestation and uprooting multiple small spots of approximately half a hectare (approx. 1.2 acres) across wide areas to allow helicopters to land. Erosion and changes in water currents are frequent. Thirty-seven percent of the areas explored in Colombia are primary forests. The environmental impacts of production relate mainly to handling of perforation mud, solid residues and to well "stimulation" by acidification and hydraulic fracturing. In Colombia the generation of intergenerational environmental liabilities associated to exploitation processes has been frequent.

Additionally between 1996 and 1999 the country's pipelines suffered close to 900 terrorist attempts. Due to them, hundreds of people lost their lives and 2,500,000 million barrels of oil were spilled. The value of the spilled oil is estimated at US$ 3.5 billion, disregarding the value of the damages to ecosystems, farmlands, soils and water.

Coal has the first place in the Colombian energy reserves, with approximately 43 million teracalories. However, only a small percentage of the production is consumed internally. Oil represents 48% in energy consumption, coal 8.6%, firewood 20% and electricity 13%. Information on the coal sector's environmental impact is precarious. There is no quantitative information. Small and medium mining are dispersed and technologically deficient, which makes their environmental problems harder to control and mitigate.

Colombia has an atypical energy consumption structure. There is a high participation of electricity in residential areas for cooking purposes, while the use of more economical sources such as propane or natural gas is less. For the industrial sector, the main energy sources are coal, firewood and bagasse, natural gas and electricity, in that order. The use of firewood and bagasse mainly relates to the use of biomass in sugar refineries as an energy source.

Activities of the electric sector include generation, transmission and distribution of electricity. During the construction of hydroelectric projects water and air pollution problems emerge, as well as erosion problems due to the construction of access roads, structures, camps, conduction systems, etc. The main environmental impacts related to electric transmission relate to the deforestation of corridors for installing towers and the construction of access roads. As for the distribution of electricity, the main environmental problem deals with pollution by spills of the PCBs used in transformers and condensers.

Regulatory Instruments

The current environmental regulations contain norms issued before and after the approval of Law 99 of 1993, and also norms issued before the promulgation of the Political Constitution of Colombia of 1991. In consequence it is a heterogeneous body, not always harmonic and coherent. Additionally, as could have been expected, along the transition from the old to the new environmental management system adjustment problems have abound.

An important contribution of Law 99 of 1993 is the definition of competencies between regional and national instances, which solved one of the main problems in Colombia's public environmental management.

Even though Law 99 of 1993 favors economic instruments and incentives from the options to fulfill environmental policy goals, environmental authorities, true to their institutional traditions, continue granting priority to "command and control" instruments. The Colombian environmental legislation has centered its efforts in defining the procedures, proceedings and requirements necessary to advance the processes of obtaining licenses, permits, grants and authorizations. A lateral effect to this is that regulating entities as well as the objects of regulation have concentrated affairs more on fulfilling these procedures than on achieving defined environmental quality goals. The Government now faces the great challenge of incorporating defined environmental quality goals in these agents' missions.

Since the approval of Law 99 of 1993 and its regulatory Decree 1753 of July 1994 on environmental licensing, environmental impact assessments have become a central part in the different sectors' investment project cycles. However, there is consensus regarding the need to improve the licensing system, moving toward a system of strategic environmental evaluations. That is, environmental evaluations on sectorial policies and national and regional development policies. It has also been proposed to decrease the number of projects that must be licensed, through the issuance of environmental standards specific to the different types of sectorial projects, to prevent problems associated with discretion by officials in charge of evaluating environmental impact assessments.

Economic Instruments

Pollution rates were introduced in the national legislation in 1982, but their application had been limited because the authorities mandated to charge them did not have either the institutional capacity or the incentives to do it. Law 99 of 1993 picked up the issue and currently 12 of the 38 regional and urban environmental authorities have advanced in the process of implementing and charging retribution rates. However, the collection level from these rates has been very much lower that initially expected. Additionally, water pollution rates have not encouraged implementation of pollution prevention

measures through the reconversion of the productive processes; rather they have encouraged “en of the pipe” solutions which do not add value to industrial processes and negatively affect businesses’ cost structures and profitability.

In Colombia there also are tax incentives to stimulate environmental investments and the adoption of clean technologies by the industrial and energy sectors. Between 1997 and 2000 tax exemptions under these figures rose close to US$ 80 million. These exemptions are related to environmental investments close to US$ 500 million. Between 1997 and 1999 approved exemptions increased steadily. In 2000 they fell to a third of what they were in 1999.

Environmental Expenditure

Between 1995 and 2000, the environmental expenditures of the manufacturing industry increased steadily while public environmental expenditures decreased. In 2000, the environmental investments of the manufacturing sector and of the government were similar and equal, in each case, to close to 0.25% of the GDP.

Companies that produce gad, coal and hydroelectricity respectively earmark 4%, 8% and 12% of their investments to environmental studies and management programs. Additionally, the energy plants transfer between 2 and 3% of their energy sales to the environmental authorities of their jurisdiction. These environmental investments are above those from any other sector in Colombia. They are also atypically high internationally.

One of the businesses in the oil sector reports having invested between 1992 and 1996 an average of 65 million dollars per year in goods and services directly related to reducing their processes’ environmental impact. The invested amount by this company alone in one year equals almost 30% of the total public environmental investments in the year 2000. Given that every business in the sector is bound by the same regulations and are controlled by the same environmental authority, it can be thought that they all incur high costs related to fulfilling their environmental obligations.

Conclusions

Colombia faces the challenge of making its environmental regulation more flexible, allowing regulated sectors leeway to select the most cost-effective technological and/or administrative alternatives to reach the Government’s environmental quality goals. The Government will have to gradually back away from command and control instruments that are not justifiable in terms of their environmental benefits and their enforcement costs, and favor economic and market incentives. This type of instruments will contribute, among other things, to reduce the cost of environmental regulation from the point of view of the regulated entities and the general society.

Another critical aspect of environmental management is that in Colombia only some regional and local environmental authorities have the sufficient institutional capacity to conduct supervisions, evaluations and inventories on the quality and condition of natural and environmental resources. In consequence, environmental quality follow-up and supervision is unequal between the different regions, as well as the level of implementation of the environmental regulations. One of the effects of institutional capacity inequality is that the level of demand and environmental control that bind the industry frequently depend on its geographic location. This applies also to small and medium coal mining. Colombia faces the need to equal the implementation levels of environmental regulations throughout the country, so this does not occur. To this end it needs to strengthen the institutional capacities of regional and local environmental authorities.

In the case of the energy sector, the growing participation of the private sector and foreign investors, along with the institutional capacity reinforcement to carry out projects' environmental control, has contributed to the significant improvement of environmental planning and of the projects' prevention, mitigation, control and monitoring measures.

The Colombian government faces, finally, the challenge to revise and adapt the environmental regulations to the regulated sectors' changing technological realities, to current scientific information on the effects of pollution and to the new legal environment.