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## TRACK A: STRATEGIC MANAGEMENT OF ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT PROGRAMS

### ENVIRONMENTAL COMPLIANCE, POLICY REFORM AND INDUSTRIAL POLLUTION IN SUB-SAHARAN AFRICA: LESSONS FROM NIGERIA

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#### SUMMARY

Water pollution has continued to generate unpleasant implications for health and economic development in Nigeria and other developing countries. However, despite the attention of the public and policies of international agencies' focusing on this problem, the situation in Nigeria seems degenerating; therefore, it demands increased attention.

Right from the inception of British Rule in the 1900s in Nigeria, the colonial economic development policies and plans contain little or no stringent rules to conserve the natural resources or to limit pollution. Thus, the formative years of institutional environmental regulation in Nigeria could be said to have been characterized by the absence of clear scientific criteria and standards on toxic wastes and on pollution levels.

Hence, in December 1988, as part of the emerging coordinated approach to environmental issues, the Federal Environment Protection Agency was established due to discovery of an Italian ship in May 1988 of some imported toxic chemical wastes.

So far, there are no clear formulated policies in Nigeria aimed at coordinating and monitoring the relationship between environmental management and sustainable development. Presently, the environmental protection legislation in Nigeria is poorly enforced. Hence, policy makers need to understand the extent to which resource and environmental conditions impinge upon macroeconomic performance.

#### 1 INTRODUCTION

Regulations are the most common approach to environmental problems. *Standards, bans, permits, and quotas* are often favored by policymakers because they promise certainty of outcome – without costly monitoring and enforcement,

however, this promise may not be realized (Bell and Russell, 2002). Experience from Nigerian environmental policies and implementation has shown that the traditional command-and-control system to pollution abatement had not produced the desired result both economic and environmental wise because the instrument is grossly ineffective due to lack of enforcement and compliance. In addition, monitoring results are almost non-existent. As a result, there is the need for a paradigm shift from the command-and-control approach to mixed environmental policies involving the use of market-based instruments to complement the traditional command-and-control system in achieving economic efficiency in the use of the resource.

## **2 THE HISTORY OF ENVIRONMENTAL POLICY AND POLLUTION CONTROL MEASURES IN NIGERIA: (1900-2004)**

From the onset of British Rule in the 1900s, Nigeria's environmental protection effort had been through the colonial bye-laws. The colonial economic development policies and plans contain little or no stringent rules to conserve the natural resources or to limit pollution. The major laws on water pollution include Criminal Code of 1958 with section 246 aimed at controlling burial in houses and the Public Health Act of 1958, which aims to control the spread of diseases, slaughtering of animals, and disposal of night soil and refuse. The fines and penalties are liberal and the laws are quite often poorly enforced.

As early as 1964, a committee was formed from various arms of the Federal Ministries to study the problems of water pollution and to formulate a program leading to the enactment of a Water Pollution Act of the federation. Over the years there has been an increased awareness of the problems of water pollution with no positive steps taken in the right direction.

In 1970, the Expert Committee on environmental health of the National Council of Health reviewed many proposals received on this subject with the aim to recommend the establishment of a sanitary inspectorate in the Federal Ministry of Health. However, the efforts yielded very little results.

Thus, the formative years of institutional environmental regulation in Nigeria could be said to have been characterized by the absence of clear scientific criteria and standards on toxic wastes and on pollution levels, while the enforcement of basic environmental and household hygiene depended largely on qualitative legal rules. Oil pollution has attracted some considerable public interest since the 1970s. A number of communities in the Niger Delta Wetlands of Nigeria have protested the ecological problems of the oil industry and the paucity of government action (Chokor, 1993).

Water pollution remains a major problem in the Nigerian environment. Both urbanization and industrialization have contributed to the scale of pollution. Presently, there are no incentives for the adoption of pollution abatement measures

and very few disincentives, if any, for polluting the environment. Wastes are disposed of indiscriminately, especially for small and medium scale industries. Major establishments, like the refinery industry, are encouraged to adopt adequate waste disposal and good refining practices under the Petroleum Refining Regulation Act of 1974.

The 1979 Federal Constitution was centered on environmental hygiene, with emphasis on refuse clearance, and the management of liquid and solid wastes in abattoirs, residential homes and streets. All of these issues came under the supervision of local government councils (Ola, 1984). It is instructive to note that the Federal Constitution addressed the issue of toxic and hazardous wastes disposal and dumping in Nigeria before the Federal Government woke up to confront the problem. This was important in dealing with the subject of environmental abuse because Nigeria lacked both the institutional and legal framework to tackle the issue.

Another stumbling block in the development of policies to regulate hazardous waste occurred with the hesitation to create the Federal Environmental Protection Act, now Federal Ministry of Environment with effect from September, 1999). In May 1998, the shipment of toxic chemical wastes from Italy to Nigeria made up principally of polychlorobiphenyls to be dumped at the Koko Port triggered a hostile media reaction that further hastened the creation of the then Federal Environment Protection Agency. This Agency was part of the emerging coordinated approach to environmental issues to protect, restore, and preserve the ecosystem of the Federal Republic of Nigeria (FGN, 1988). The decree 58 of 1988 requires the Federal Environment Protection Agency to establish environmental guidelines and standards for the abatement and control of all forms of pollution. The coming of Federal Environment Protection Agency represents a milestone in environmental management effort in Nigeria.

The major function of the Agency is the establishment of national environmental guidelines, standards, and criteria most especially in the area of water quality, effluent discharge, air and atmospheric quality and including the protection of the ozone layer which in the past was absent (Federal Government of Nigeria, 1988). Others are noise control, hazardous substance discharge control and the removal of wastes and ascertaining spillers' liability. The agency also has power to initiate policy in relation to environmental research and technology and in formulating and implementing policies related to environmental management. In addition, the Agency is given some enforcement powers including the right to inspect facilities and premises, search locations, seize items and arrest people contravening any laws on environmental standards, and prosecuting them.

The agency is also empowered to initiate specific programs of environmental protection and may establish monitoring stations or networks to locate sources of, and dangers associated with, pollution. Furthermore, it has powers to conduct public investigations or inquiries into aspects of pollution (Federal Government of

Nigeria, 1988). Thus, the Federal Environment Protection Agency is the supreme reference authority in environmental matters in Nigeria, although state and local government authorities and institutions are still expected to play their traditional role of monitoring and enforcing standards as well as fixing penalties charges, taxes, and incentives to achieve certain environmental goals.

Once the decision was taken to confront the problem of environmental abuse, Nigeria led the fight against hazardous wastes dumping until the signing of the Basal Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal in 1989. However, there was no transboundary water quality monitoring or further action after the signing of the Basel Convention except for the guidance for the management of solid and hazardous wastes, which is far from been enforced.

With the development of the Federal Environmental Protection Agency, the States Environmental Protection Agencies were devised. These were complemented by the Local Governments Environmental Protection Agencies.

However, industrial pollution was regarded by the Federal Environment Protection Agency as a priority environmental problem and hence the first ever and only "National Guidelines and Standards for Environmental Pollution Control" was more of an industrial pollution control guidelines and standards with few notes as guidelines for surface impoundments, land treatments, waste piles, land fills, incineration and hazardous/toxic wastes. Moreover, even the available industrial pollution control guidelines and standards are not sound enough and far from been enforced in the country as it were presently. The main legislation for the protection of water resources is scanty.

A number of Nigerian State Environmental Protection Agencies now charges pollution levies. Although the measure is expected to serve as some disincentive to pollution generation and also for the alleviation of pollution problems in the state, it is better seen as a revenue generation effort on the part of the government.

It is difficult to say whether the revenue so realized is actually reinvested into pollution abatement. Further, the policy provides no real incentives for industries to adopt pollution monitoring and reduction measures or clean technologies.

So far, there are no clear formulated policies in Nigeria aimed at coordinating and monitoring the relationship between environmental management and sustainable development. This is in spite of all the efforts of the Federal Environmental Protection Agency. Presently, the environmental protection legislation in Nigeria is poorly enforced. There are no incentives for the adoption of pollution abatement measures and very few disincentives for polluting the environment. Wastes are disposed indiscriminately especially for small and medium scale industries but excluding major establishments like the refinery industry which is encouraged to

adopt adequate waste disposal and good refining practices under the Petroleum Refining Regulation of 1974.

Moreover, in the inventory of Nigeria environmental problems compiled by the Federal Environment Protection Agency (1999) in the context of socio-economic, cultural and ecological imperations, environmental pollution of water (industrial effluent, chemical fertilizers, human waste, eutrophication, deposits by run offs, oil spillage, etc) and issues of health (water borne diseases such as cholera, typhoid, dysentery brought about by the use of contaminated water) have been deemed critical and therefore deserves a place in any master plan for environment and natural resource conservation.

It must be stated that the Federal Environmental Protection Agency is handicapped by the limited environmental information available, the range, nature and diversity of information required as well as the scope of the work itself.

Moreover, the need for environmental control arises from the fact it brings improved health and better living conditions. Experiences from advanced industrialized countries have shown that in the short term, the net effect of pollution control activities is almost certain to have some macroeconomic impacts including improved health, reduced productive time loss and economic growth.

### **3 TREND IN POLLUTION AND POLLUTION LOADS BY DOMESTIC AND INDUSTRIAL EFFLUENTS IN NIGERIA**

The discharge of wastewater into surface waters and the resultant deleterious changes in water ecology have been reported by several researchers (Law, 1980; Okoronkwo and Odeyemi, 1985; Odokuma and Okpokwasili, 1993) who also expressed concern over human health and the possible accumulation of human enteric pathogenic microorganisms by aquatic organisms.

Incidences of water-borne diseases in rural areas of developing countries leading to millions of deaths have been reported (UNU, 1983). Some of these deaths have been traced to the use of waters grossly polluted by untreated waste (De Silva et al, 1988; UNEP, 1991).

The discharge of wastewater from bathroom, laundry, slaughterhouses, etc have been used to explain the deterioration of most tropical rivers as they pass through inhabited places (Oluwande et al, 1983). The condition, pollution load and effluent effects on water sources in Nigeria are as follows:

**Table 1: Physico-chemical characteristics of industrial effluents from Nigeria**

Parameter	Sugar Factory	Paper mill	Brewery	Textile factory	Soft Drink Factory	Petroleum Refinery	Steel making Plant	Tannery	Federal Environment Protection Agency's Effluent Limit for Discharge into Surface Water
Temperature	-	-	32.0	39.0	31.44	7.0-8.2	-	39°C	Less than 40°C
PH	4.8	4.4	9.0	7.1	3.2-11.4	-	6.90	10.2	6-9
Total Solids	1415	905	3170	2200	130-680	560-740	-	6960	2000
Suspended Solids	468	790	406	10	10-30	5-620	-	2470	30
Dissolved Oxygen	1633	100	2110	-	5.0	Nil-7.3	0.7-4.8	4.50	50
BCD	1954	730	3000	710	1000-	72-800	-	2000	-
COD	2.0	-	1.0	285	2600	268-720	28	46.50	2000
Chloride	1.7	-	1.9	-	6-30	17-64	-	2300	5.0
Phosphate	0.35	0.65	-	0.5	0.04-1.60	0.20-6.30	-	-	20
Iron	-	-	-	-	2.4	-	-	39	-
Chromium	-	-	-	10	-	3.7-260	-	-	20
Oil and Grease	-	-	-	3.0	25	0.85-1.0	-	127	0.20
Sulphide	-	-	-	-	0.98	1.0-1.5	1.0	-	20
Nitrate	-	-	-	-	11	0.03-2.30	6.50	1500	500
Sulphate Colour	Yes	Yes	Yes	Purple	32.5	Yellow	-	-	-
Odour	Yes	Yes	Yes	Yes	Yellow	Yes	-	-	-

Sources: Adekanbi (1983); Federal Environment Protection Agency (1991); Osibanjo et al (1988)

The effect of uncontrolled disposal system renders surface waters and underground water systems unsafe for human, agricultural and recreational use. It also destroys biotic life, poisons the natural ecosystems, poses a threat to human life, and is against the principles of sustainable development. However, if the adverse effects of river pollution and spread of water borne diseases are to be mitigated in Nigeria, current planning laws and waste disposal practices must be reassessed (Sangodoyin, 1989).

#### **4 THE USE OF MARKET-BASED INSTRUMENTS FOR POLLUTION ABATEMENT IN NIGERIA – MERITS AND CHALLENGES**

The market based approach to environmental management is concerned with creating conditions in which the production of goods and services can flourish with the support of an enabling environment for private sector activity and an economic framework of incentives and reward for good organizational performance.

Environmental management in Nigeria has historically been characterized by a “command and control” approach. The limitations of this approach included an acute shortage of government funds, managerial skills, and administrative enforcement capacities. Hence, the use of economic and financial instruments to complement the traditional command-and-control system could overcome some of these difficulties because the market based approach is certain to generate large inflow of financial resources from the polluting industries at the early stage of environmental compliance. These finances could be used for administrative enforcement and monitoring costs and capacity building, resulting in the achievement of economic efficiency in the use of the resource.

The proposed market-based instruments approach draw lessons from best practices around the world. This involves setting up an appropriate taxes and pollution charges on generators of pollutants that is above the marginal cost of pollution control to or above the environmental cost that their pollutants impose on the affected population or communities (World Bank, 1994; 1998). The environmental taxes and charges would have the simultaneous benefit of generating financial resources while also acting as disincentives to polluters. This includes emission charges or taxes based on the quantity and quality of pollutants discharged (water effluent charges).

The pollution levy system would involve imposing charges only for pollutants that exceeded emissions standards by the Nigerian Federal Environmental protection Agency and then only for the one pollutant most in violation. A fee would also be charged on the total quantity of wastewater discharged into river bodies.

The major challenges to the adoption of the market-based instruments approach in Nigeria include the need for an accurate monitoring network, transparency, a working legal system, and a realistic incentive to trade (NEST, 1995). Other

challenges include corruption, favoritism, and poor environmental enforcement. In addition, other unique obstacles include the fact that there are fewer trained people and the best people tend to be concentrated in capitals rather than in field post. Finally, equipment for monitoring and data collection are scarce and most basic data are unreliable.

However, despite the challenges of the market-based instruments approach enumerated above, the system still offers high potential for efficient and cost-effective environmental management approach in Nigeria when mixed with the traditional “command and control” system. Hence, the argument for economic instruments above suggests that the efficiency gains from their use are an outcome of incentives for pollution abatement innovations and the ability of firms to reduce emissions in the most cost-effective manner. However, the introduction of the market based approach would need to be preceded with a significant capacity building.

## 5 RECOMMENDATION AND CONCLUSION

One of the major goals of environmental regulation from the inception has been to reduce water pollution. There have been no clearly established, coordinated policy framework and standards for diminishing water pollution, especially through resource pricing, incentives, and taxes. In contrast, heavy reliance has been placed on qualitative legal rules. However, the benefits of clean environment would be available only if the generators of pollutants are encouraged to invest in pollution prevention and abatement technologies with the help of a judicious mix of regulatory policies, economic incentives, and fiscal instruments.

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*Excerpt from the Proceedings of the International Network for Environmental Compliance and Enforcement's (INECE) Eighth International Conference, Linking Concepts to Actions: Successful Strategies for Environmental Compliance and Enforcement, held 5-11 April 2008, in Cape Town, South Africa.*

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