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Estimating sectoral pollution load in Lagos by Industrial Pollution Projection System (IPPS)

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Abstract

Sensitivity to environmental issues brought about increasing pressure from local community, groups, environmental organizations and government regulators on industries to reduce their pollutant emissions. In this study, Industrial Pollution Projection System (IPPS), which was developed by the Infrastructure and Environment Team of the World Bank, was used to estimate pollution load in ton/yr (with respect to employment) of industrial sectors in Lagos. The IPPS was developed to exploit the fact that the scale of industrial activity, its sectorial composition, and the process technologies, employed in production, heavily affect industrial pollution. Available data, from Manufacturer's Association of Nigeria (M.A.N.) for the years 1997–2002 was used for the estimation.

From the cumulative ranking of the pollution load (ton/yr) estimate to all media (i.e. air, land, and water), Chemical and Pharmaceutical (CPH) sector is the highest polluting sector, followed by Basic Metal (BML), Domestic and Industrial Plastics (DIP), and Food, Beverage and Tobacco (FBT) sectors. Some of these sectors have the highest number of employees, and also appeared as the most polluting sectors in Lagos.

Keywords: Industrial Pollution Projection System (IPPS); Pollution intensity; Pollution load; International Standard Industrial Classification (ISIC); Industrial pollution; Employment

1. Introduction

A requirement for development in any country is a viable industrial base, a prime source of goods and services, employment, and national wealth that sustains economies (Ayre et al., 1994). However, industrial activities, including mining, are directly responsible for most of the polluting agents that degrades the environment, threaten the ecosystem and human health. The purpose of this study is to estimate sectoral pollution load using employment data of industries. Lagos is the most industrialized state in Nigeria with 68–80% of the country's industries located therein. Rapid and haphazard industrialization has taken place without environmental considerations. However, pollution abatement technologies are largely absent and the consequence is a gross pollution of natural resources and environmental media. Since effective environmental protection cannot take place in a data vacuum, IPPS, a rapid environmental management tool for pollution load assessment, has been employed in this study to provide a scientific rational basis for future policy direction to halt industrial pollution in Lagos.

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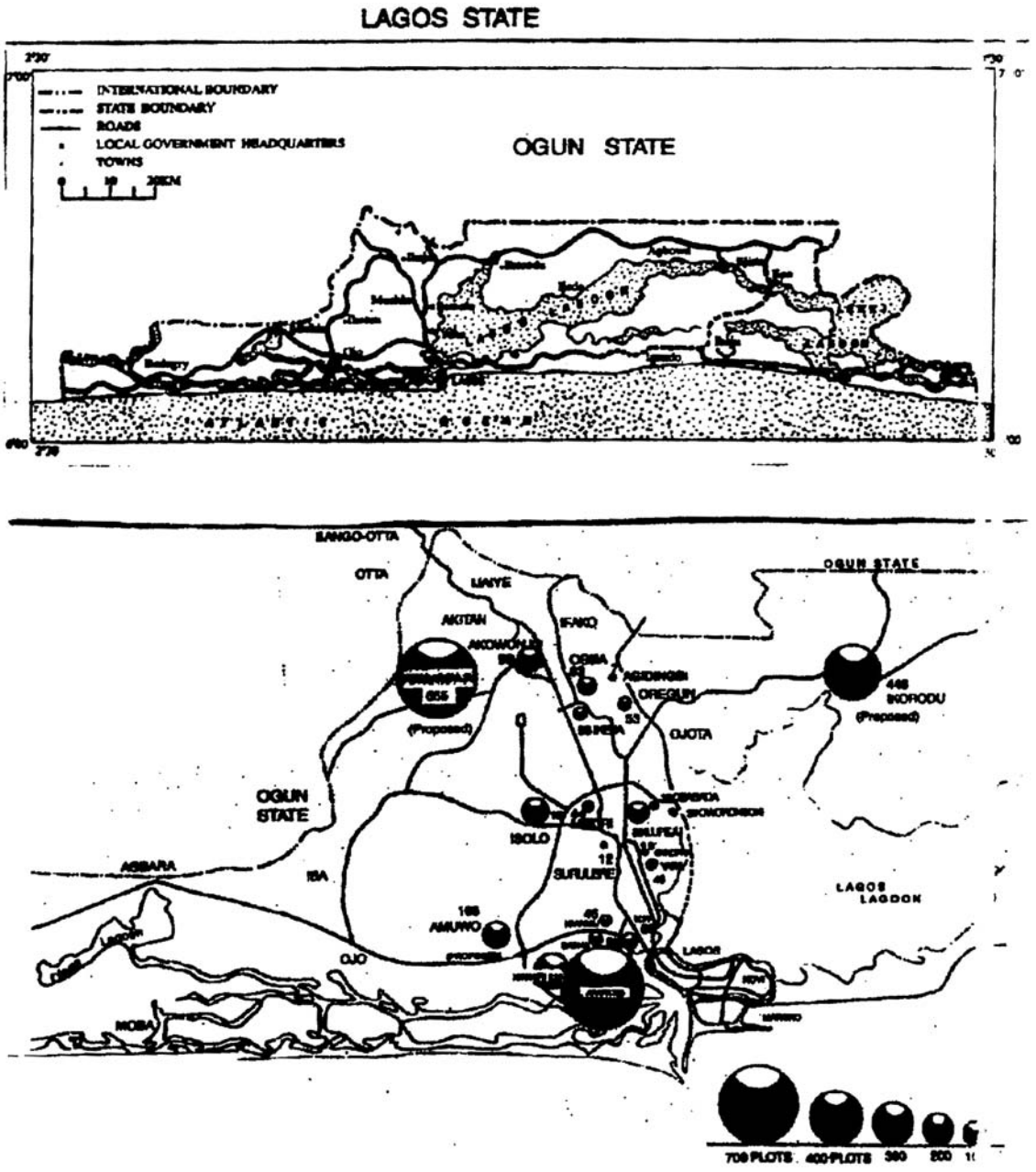

Fig. 1. Top: Map of Lagos State. Bottom: Map of industrial estates in Lagos.

It has been recognized that the developing countries lack the necessary information to set priorities, strategies, and action plans on environmental protection issues. Plant-level monitoring of air, water and toxic emissions is at best imperfect, monitoring equipment is not available and where available is obsolete; data collection and measurement methodology are questionable, and there is usually lack of trained personnel on industrial sites (Hettige et al., 1994). In the absence of this data, the World Bank has created a series of datasets that have given the research community the opportunity to better understand levels of pollution in developing countries, and therefore issue policy advice with more clarity (Aguayo et al., 2001). Hence, the World Bank developed the Industrial Pollution Projection System (IPPS), which is a rapid assessment tool for pollution load estimation towards the development of appropriate policy formulation for industrial pollution control.