International Business Management 2 (5): 168-172, 2008
ISSN: 1993-5250

Environmental Impacts of Small Scale Industries in Akoko Region of Ondo State

[1]A.F. Fatusin, [1]A. Fagbohunka and [2]O.D. Faloye
[1]Department of Geography and Planning Sciences, [2]Department of Business Administration,
Adekunle Ajasin University, Akungba-Akoko, Nigeria

Abstract: This study examined the environmental impacts of small scale industrial establishments in Akoko region of Ondo state of Nigeria. In order to do this, 204 small enterprises which constitute 50% of the entire plants in the region were sampled. The household heads of the closest residential buildings to the sampled small enterprises were also interviewed, in order to test residents' perception of injury they suffered from the operation of these enterprises. Data collected were analyzed using cross tabulation and simple percentages. The study found out that there is substantial lack of compliance with stringent environmental rules on production and discharge of effluents by these enterprises. The study further discovered that informal enterprises do pollute the environment more than formally registered ones, following the difficulty of controlling them since they operate outside the regulation of government and its supervising agencies. Moreover, the study found out that most of the wastes generated are not being recycled and are poorly disposed of to the extent that they tend to constitute health hazards to people. Finally, the study recommends that for maximum benefits to be derived from this industrial sub sector, efforts must be made to minimize the noxious impacts through recycling of the wastes so that the environment can be made livable.

Key words: Sustainable development, industrial pollution, solid wastes, environmental protection

INTRODUCTION

Perhaps, one of the major flaws in Nigeria's industrialization drive is the over emphasis on temporal growth of industries to the detriment of spatial and environmental consequences (Akinbinu, 2001). Even when a particular industry is known to pollute the environment more than the acceptable limit by the Federal Environmental Protection Agency (FEPA) governments and agencies at all levels of government are reluctant to enforce compliance, perhaps out of fear that stringent enforcement may striven the already weak structure and may lead to collapse of firms thereby endangering economic growth.

While, studies such as Olayiwola and Adeleye (2005) and Fatusin (2008) have revealed the positive regional impacts of small-scale industrial enterprises, especially its employment and poverty alleviating capacities and potentials, it is noteworthy to observe that attempts to minimize negative effects of small-scale industries mostly have tended to be ignored not only in Nigeria, but all over the world. There is indeed a careless assumption that large-scale industries, because of their massive inputs and outputs have more potential to degrade the environment than small-scale industries. However, recent studies have pointed otherwise.

MATERIALS AND METHODS

Small scale industries that were registered with the Ondo state ministry of commerce in Akoko region were 408 firms. Half of these industries were sampled making 204 enterprises. The study made use of two sets of questionnaires. The first set of 204 questionnaires were administered on proprietors of firms, while the other set of 204 questionnaires were administered on household heads of residential buildings that were closest to sampled enterprises. The objectives of these questionnaires were to investigate the types of wastes generated their disposal methods and residents perception of noxious impacts of these wastes. These questionnaires were administered using systematic random sampling technique.

Concept of sustainable development: The concept of sustainable development is a fairly new formulation in the development thought. The most widely used definitions of the concept of sustainable development, comes from the United Nations World Commission on Environment and Development, which defined it as the development that meets the needs of the present without compromising the ability of the future generation to meet their own needs (UNO, 1996). Sustainable development according

Corresponding Author: A.F. Fatusin, Department of Geography and Planning Sciences, Adekunle Ajasin University, Akungba-Akoko, Nigeria

to Robin *et al*. (1995) has no precise legal meaning. It is a policy goal. The most widely cited definition comes from the United Nations World Commission on Environment and Development who defined it as the development that meets the needs of the present without compromising the ability of the future generation to meet their own needs.

The essence of sustainability is that the future should not be sacrificed for short-term advantages. To quote the Brundtland report, all our needs should be met in a way which does not compromise the ability of future generations to meet their own needs this view emphasizes how decisions and actions today can affects the future especially in relation to natural resource availability environmental health and destruction of local and global ecosystems and most importantly the livability of our cities.

As this is a general statement, it will be necessary to elaborate the definition further. One may for instance, define sustainable development as the economic, social and environmental aspirations of groups, which may or may not have economic growth as a priority. In short, the basic underlying principle is that the stock of natural resources should not be depleted beyond its regenerative capacity.

Environmental impacts of small scale industries: Small scale industries have generated a surge of interest among environmentalists and planners who are interested in the environmental impacts of SSI. In recent years, Scholars such as Scott (2006), Bannister (1998) and Warren (1998) have tried to analyze the correlation between environmental damage and the growth of small scale industries particularly in developing countries where the growth have been phenomenal. According to Scott (2006), the environmental impacts of the SSI in the developing world have tended to be ignored. Although, the promotion of such enterprises is seen as a way to provide employment and incomes, there is little evidence available on environmental impact and sustainability. There is indeed the general assumption that because they are small, these industries have little impacts.

There is no consensus, however, about whether small scale industries are more pollution-intensive than large-scale industries. Some argue that small scale industries may be more environmentally sustainable because of such factors as informal community pressure and regulation (Blackman and Banister, 1998; Puga and Venables , 1996). But there are also contrary views. As Braden (1993) noted, small scale industries often pollute more per unit of output than large firms operating in the same sector. This has variously been attributed to their failure to employ more efficient, updated technology, the difficulty of monitoring their compliance with regulations, their inability to safely dispose of the waste they produce and their limited awareness of the potentially harmful effects of their activities. The question often asked by the scholars is should policymakers be concerned about the environmental costs associated with measures to promote small-scale industries? Are they right in believing that the poor are overrepresented in this sector? Is their concern that regulation aimed at attenuating environmental costs would come at the price of exacerbating poverty?

In his contribution, Dasgupta and Wheeler (1998) calculated the particulate emissions in metric tons per employee by firm size in Brazil and discovered that small scale industries contribute a non negligible share of total pollution loads. However, on the aggregate they discovered that that SSI accounts for 62% of industrial pollution in Brazil. This according to him provides evidence for the national policy in regulating small scale industries. However, this presents a dilemma. Will stringent environmental regulation of the SSI, an industry still at early stage of development in Nigeria not worsen poverty in the developing countries? For example according to Lanjouw and Neri (2003), when stringent environmental regulations shuts down many small scale industries in Sao Paolo in 1997, poverty increases by 83% when they joined the pool of informal sector workers and the unemployed and by 72% when they joined the general working age population.

In his investigation of impacts of the SSI on urban environment in India, Pallen (2006) asserts that although the SSI is resourceful in many respects the, SSI can also be very environmentally problematic. When engaged in industrial activity they create more pollution than larger enterprises and because they operate in poorer, more populous neighborhoods, this pollution can have more disastrous consequences. The SSI practice of clustering offers clear economic advantages but may also create negative environmental consequences especially when heavy polluters dominate the cluster. Large sections of towns such as Kashur have been seriously damaged by the proliferation of small tanneries in the core of the city, which created significant health problems. This assertion was supported by Oyelakin-Oyelarin (1997) in his study of SSI industrial clusters of Akinbinu (2001), who studied the informal SSI cluster in auto mechanic village in Ibadan. Poor Occupational Health and Safety (OHS) standards are feature of small scale enterprise.

In a study conducted in the Philippines on the OHS of the estimated 3.6 million children working in the informal SSI sector, over half stated that they were exposed to physical hazards including extreme

temperature, humidity and noise. A quarter said that they were exposed to chemical hazards. Nineteen percent reported that they were exposed to biological hazards, principally bacteria and fungus. OHS standards are not a priority for their workers or entrepreneurs struggling to keep their SSI afloat. This is very regrettable given that cost effective OHS measures have been proven to increase productivity.

Environmental quality perception of small scale industries by residents: An evaluation of environmental impacts of adjoining small scale industries was investigated on residents of places where small scale industries are located. There is indeed the general perception among residents who live close to small scale industry that the operation of such enterprise do cause them some discomfort. Out of the 204 people living close to SSI sampled 110-54.1% believe they are being injuriously affected while only 94-45.9% of respondents believe it is not causing them any discomfort (Table 1).

However, there is a noticeable difference in the responses of residents living near the two broad classes of small scale industries. For example out of the 110 respondents who believe the operations of the adjoining SSI is causing them some discomfort, 98-89% live close to informal enterprises, while only 12-11% of the respondents live close to formal small scale industries. This is not surprising considering the fact that informal SSI does not subject themselves to controls and so many do not adopt stringent environmentally friendly practices which a formally registered firm may be forced to adopt. Moreover, many informal enterprises are located right inside the residential area where their impacts may be felt most by urban residents.

Pattern of discomfort caused by small industries: One hundred and ten respondents living close to identified small scale industries, who believed they are being injuriously affected by their operations were asked to identify the pattern of discomfort caused by the small scale industries in their neighborhood as shown in Table 2. The result shows that 31-28.2% of the 110 respondents, who are injuriously affected by the operation of the firms picked noise pollution from vibration of machines, while the gross majority of the respondents i.e., 36-32.7% of respondents picked poor disposal of solid wastes of small scale industries as the most nauseating problem.

Waste generation among small scale industries: Waste generated by small scale industries can be classified into solid, liquid and gaseous. Solid wastes include garbage's from food processing mills, rubbish from other manufactures and thrash from offices. Liquid wastes on the other hand are mostly produce by liquid product based SSI such as water processing plants, vegetable oil mills and other food processing plants. These may come in form of sludge from machines, waste fuel e.g. diesel fuel and waste water derived from cleaning of machines. Gases heat dust and smokes from machines such as electric generators, burning of raw materials and wastes.

Out of 204 firms sampled, majority of them i.e. 98-48% operate rubbish during production. This is followed by 54 firms or 26.5% which generate packaging wastes. 40 firms or 19.6% of respondents produces only food wastes or garbage, while only 12 firms or 5.9% produce liquid wastes as the major waste products.

The structure of the wastes generated by small enterprises was investigated in Table 3.

The study found out that small scale industries generate diverse wastes. For example wood based enterprises generate sawn dusts, fumes and smokes from the machines and other wood wastes, food based enterprises generate food wastes, packaging material wastes and ashes. On the other hand, industries producing constructional materials produce discarded cement, broken blocks and packaging materials as wastes, while metal industries generate scrap metals, ashes, waste fuels and iron pillets as wastes.

Nevertheless, it is obvious that the uses to which wastes are put by the enterprises is low. While, it is obvious that not many of the wastes can be put to use by the enterprise concerned, however, some can be recycled. For example, out of the 31 number of food enterprises, only 9-29% make use of it one way or the other. Moreover, out of the 13 metal works, only 2-15.4% recycle the scrap metal for use.

The result of the low usage of wastes is poor environment from ineffective disposal of these wastes.

Table 1: Perception of residents on whether they are negatively affected by the operation of small scale industries

Are you negatively affected?	Frequency	(%)	Valid (%)	Cumulative (%)
Yes	110	54.1	54.1	54.1
No	94	45.9	45.9	100.0
Total	204	100.0	100.0	

Fieldwork, 2008

Table 2: Negative impacts of small enterprises

Effect of small enterprises	Frequency	(%)	Cumulative (%)
Vibration from the machines	31	28.2	28.2
Poor disposal of solid waste	36	32.7	60.9
Poor disposal of liquid waste	9	8.2	69.1
Smokes/fumes from the machines	25	22.7	91.8
Others specify	9	8.2	100.0
Total	110	100.0	100.0

Fieldwork, 2008

Table 3: Structure of wastes generated by small scale enterprises and their potential uses

Industrial classification	Type of small scale industry	Wastes generated	Major uses	No. of respondents making use of it
Wood based enterprises	Saw mills, furniture industries	Saw dust, fumes and smokes wood wastes	Fuel, navel doors	2
Food based enterprises	Bakeries, other food industries	Waste foods, packaging wastes, ashes	Feeding of animal, manure	9
Constructional materials	Blocks and bricks making industries	Discarded cement, broken blocks, packaging materials	Can be recycled	4
Textile/clothing	Weaving firms, tailoring firms	Waste dresses, wools	-	-
Other consumer products				
Water packaging	Pure water industries	Packaging materials		7
Metal works	Blacksmithing, welding firms	Scrap metals, ashes, pillets, waste fuel	Can be recycled	2

Fieldwork, 2008

Table 4: Methods of waste disposal

Disposal technique	No. of respondents	Respondents (%)
Burning	126	61.8
Evacuation	34	16.7
Burying	36	17.6
Recycling	8	3.9
Total	204	100.0

Fieldwork, 2008

Table 5: Perception of residents on the effectiveness of State Environmental Protection Agency

Perception	No. of respondents	Respondents (%)
Effective	14	6.9
Ineffective	159	77.9
Indifferent	31	15.2
Total	204	100.0

Fieldwork, 2008

Disposal: Wastes, once generated must be effectively disposed or recycled for sustainable environment. In Nigeria, though the proportion of wastes generated from domestic activities is predominant, industrial wastes are getting more important especially where disposal methods are ineffective and the technology to recycle wastes generated is lacking. An evaluation of predominant disposal method reveals that a gross majority of firms 126-61.8% burn their wastes, 36 firms or 17.6 bury the wastes, while 34-16.7% dispose them into the bush. Only 8 respondents or 3.9% indicate that they do recycle some of the wastes generated (Table 4).

Perception of residents and neighbors of small enterprises of the effectiveness of monitoring agencies.

The monitoring of compliance by industries to sound environmental principles and standards as provided by the Federal Environmental Protection Act lies with the Federal Ministry of Environmental. However, the Ondo State Environmental Protection Agency SEPA performs similar roles.

The agency according to the act establishing it has the responsibility among other things of visiting plants to assess the level of compliance or contravention by industries to quality environment. Any member of the public who is aggrieved could lay complaints at SEPA if he feels injuriously affected by the operations of any manufacturing industry.

However, by the perception of residents of places where small enterprises are located this organization is ineffective. Out of the 204 residents sampled, 159-77% believe the agency is ineffective, as there has not been any incidence of prosecution in spite of some complaints by residents as shown in Table 5.

Only 25-7.0% says they are effective while 53-15% of the respondents are indifferent.

CONCLUSION

This study has tried to evaluate the environmental implications of small scale industrial sub sector on the residents of places where these enterprises are located. The work has been necessitated by the fact that over 80% of industries in Nigeria are in this category. The study found out that most of the small scale enterprises sampled do not have efficient waste management system. Some 126-61.8% of the firms dispose of the wastes by burning, 16.7% by evacuation and disposing wastes into the bush, 17.6% bury the wastes while only recycle wastes for future use. The pattern of discomfort caused by small enterprises to the residents of places where small enterprises were located was investigated. Some 32.7% picked poor disposal of wastes as the most important negative impacts, 28% picked noise pollution from vibration of machines, while 22.7 picked smokes and dusts from plants.

It is now apparent that sustainable economic development in this millennium must go hand in hand with environmental care. Wastes are so called because they are thought to be useless. In many countries of the world, new uses are being found to previously useless materials by recycling wastes. For effective and sustainable management of wastes in Akoko region nay Nigeria therefore, efforts must be made to improve the method of disposal and convert wastes into new uses. This will not only improve urban livability but also improve economic development.

REFERENCES

Akinbinu, A., 2001. Small and Medium Scale Industries in Nigeria. 2nd Edn. NISER monograph Ibadan, 3: 5-10.

Banister, J., 1998. Community pressure and clean technology in the informal sector. An economic analysis of the adoption of propane by traditional Mexican brick makers. J. Environ. Ecol. Manu., 35: 1-21.

Blackman, A. and G.J. Bannister, 1998. Community Pressure and Clean Technology in the Informal Sector An economic analysis of the adoption of propane by traditional Mexican brick makers. J. Environ. Ecol. Manage., 35: 1-21.

Braden, B., 1993. African Capitalist in African Development. 2nd Edn. London: Lynne Boulder Publishers.

Dasgupta and Wheeler, 1998. Small Manufacturing Plants Pollution and Poverty. The Brazillian Example (ILO Working Paper) University of Sao-Paolo Brazil.

Fatusin, 2008. Regional Impact of Small Scale Industrial Enterprises in Akoko Region of Ondo State. Being an M. Phil. Dissertation Submitted to the Dept of Urban And Regional Planning, Obafemi Awolowo University, Ile-Ife.

Lanjouw, F. and Neri, 2003. A New Poverty Profile of Brazil Using PPV, PNAD and Census Data, pp: 59-92.

Olayiwola, L. and O. Adeleye, 2005. Rural Development and Agro-Industrial Promotion in Nigeria: Concepts, Strategies and Challenges. J. Soc. Sci., Kamia Raj Publisher, 22 (2): 128.

Oyelakin-Oyelaran, 1997. Nnewi, An Emergent Industrial Cluster in Nigeria. Technopol Publishers. 4th Edn. Ibadan.

Pallen, D., 2006. Building Environmental Impact Assessment Guidelines for Small and Large Enterprises. Environmental Impact Assessment Source Book for Micro Finance Institutions, India.

Puga, D. and A. Venables, 1996. The Spread of Industry Spatial Agglomeration in Economic Development. Centre for Economic Performance Discussion Paper.

Robin, R. *et al*., 1995. Spatial Convergence of Industries in Buston. 1st Edn. ABM Press, Buston.

Scott, A., 2006. Environmental Impacts of Small Scale Industries in Third World Countries. Global Environmental Changes Programme, University of Sussex.

UNO, 1996. Key Element of Sustainable Development in Third World. World Development Report Geneva.

Warren, E., 1998. The Experiences and Outlook of the ASIAN Development Bank in the Promotion of Clean Production in ASIA. 2nd ASIA-Pacific Round Table for Cleaner Promotion. Brisbane, Australia.