

Full Length Research Paper

Health impact assessment of community-based solid waste management facilities in Ilorin West Local Government Area, Kwara State, Nigeria

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Adverse inter-relationships between man and his environment has been the main cause of disequilibrium, which usually result in negative effects to man himself, his environment and his survival as epitomized by the current global climate change phenomenon. This study applied the concept of Health Impact Assessment (HIA), an evolution of Environmental Impact Assessment (EIA) to predict the health impact of the proposed community-based solid waste management facility in Ilorin metropolis; which is a part of the Millennium Development Goals' (MDG) Health and Environmental Sustainability Projects (Goals 4-7). Through systematic sampling methods data was collected from four administrative wards in the metropolis for this work. Using The Nigerian Institute of Town Planners' (NITP) guidelines on impact assessment, the study was able to discover that there are many benefits derivable from the proposed project, however, there can be negative impacts too even if the Environmental Management Plan and project operational guidelines are strictly adhered to. This gives the need for overall assessment of such projects as against the practice of benefit analysis usually embarked upon by proponents of such investments. The study further suggested different participatory approaches in establishing the sustainability of projects.

Key words: Environment, man, millennium development goals, municipal wastes.

INTRODUCTION

Solid waste management can be regarded as the collection, storage, transporting, processing and disposal of solid waste in a manner that is in accordance with best principles of public health, conservation, aesthetics, and environmental considerations. Waste management practice in Nigeria is appalling. It is reported that only about 14% of Nigerian households have access to satisfactory refuse disposal system (FOS, 2004; NPC, 2005), and in both rural and urban areas of the country,

refuse is buried, burnt or disposed-off haphazardly into rivers, streams, canals, , forest, and open spaces. As a result, solid wastes are found everywhere especially in the country's populated urban centres (Adedidu, 1988). Urban wastes are known to pose serious environmental and health problems, promote the growth of insect vectors, cause fire hazards, flooding of streams, and other environmental nuisance.

Certain toxic and heavy metals like lead, mercury, cad-

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mium, minerals and synthetic chemicals present in wastes can contribute to the pollution of surface and underground water, and environmental degradation. This can escalate with increasing rates of urbanization and the equally increasingly range of economic activities in cities and towns. This unplanned and fortunately unmanaged situation has the capacity to reduce the capability of local governments and urban authorities to effectively manage waste in their domains. However, governments and urban authorities have continued to invest enormous resources in fighting this menace in order to ensure healthy living conditions and livelihood of their citizens. Hence, the increasing calls for the need to employ strategies to evaluate these engagements. The impact assessment process - a tool in planning, providing a veritable opportunity to integrate the views, concerns and values of the affected population, is one of such approaches known for impact assessment.

Justification for the study

Indiscriminate disposal of solid wastes has the potentials to cause damage to the environment and the health of people. In Nigeria, waste management is at the lowest ebb in most towns and cities. At many inner and peri-urban centres, refuse heaps are left unattended to, and where the Local Government Authorities do the collection, it is often irregular and sporadic. The recycling of waste is almost unknown, while methods of collection and final disposal are very much unsatisfactory. The alarming rate at which heaps of solid waste continue to occupy cities, coupled with the fact that 87% of Nigerians use disposal method adjudged unsanitary, has not only contributed to visual blight and odour, but has also encouraged the breeding of rodents, mosquitoes, and other pests raising serious concerns over public health (Ónibokun, 2000). For instance, about 50% of Nigerians suffer at least one acute episode of malaria every year with grave socio-economic implications in terms of productivity and cost of medications, in addition to infant and Child Mortality Rates 100 and 201 per 1000 live births, respectively (NPC, 2005).

The situation in Kwara State and Ilorin in particular, is a replica of similar issues in Nigeria. The establishment of Millennium Development Goals' (MDGs) Community Based Solid Waste Management facilities for the cities is seen as a panacea to the Solid Waste Management Problems. The facility involves processing and transforming municipal solid wastes into useful end products such as domestic goods, fertilizers, and steel implements, under a congenial and healthy environment. It is imperative that projects such as this, designed to alleviate the problem must be validly assessed for its potential health impacts in the context of the target population, hence; the application of the Health Impact Assessment (HIA) technique which has much in common

with Environmental Impact Assessment (EIA).

Aim and objective of the study

The aim of this study is to assess the potential health impacts of the execution of solid waste management facility on the population and the environment with a view of arriving at informed planning policy decisions to be made for improving public health in Ilorin West Local Government Area and beyond. The specific objectives of this study include:

- Identification of the target communities in the old dump sites and around the location of the proposed facility
- Socio-economic characteristics of the communities
- Assessment of existing waste management practice
- Assessment of environmental and health impacts of proposed facility.

Study area

Ilorin metropolis is the administrative capital of Kwara State. It lies on latitude 8°30'N and longitude 4°30'E. Its elevation ranges from 250 to 400m above sea level. It is also the headquarters of the Ilorin West Local Government Area (LGA) which is surrounded by other LGAs of the state. This gives her roles as the commercial and administrative capital of the State, the headquarters of Ilorin West LGA, and together with Ilorin East, Ilorin South, Asa and Moro LGAs they constitute the Ilorin Emirate. The location of Ilorin west is shown in Figure 1.

Ilorin has diverse ethnic groups of mainly Yoruba, Fulani, Hausa, Kambari, Gobir, and Nupe, that constituted it. The multi-linguistic and multi-cultural nature of the people could be traced to their historical background. Ilorin is said to be founded as hamlets in 17th century by an itinerant farmer called Ojo from Gambe near Oyo-Ile. The hitherto existing hamlets were in 1830s consolidated under the sovereignty of Fulani hegemony by Abdul-Salam, the son of Sheikh Alimi. The total population of Ilorin West LGA is 365,221 in 2006. This is comprised of 180,387 males and 184,834 females; being the most populous LGA in Kwara State that has 3.0% as its growth rate (NPC, 2006).

The major occupation of the people is mixed farming. The wide expanse of arable and fertile soil and favourable climatic conditions supported the cultivation of variety of food and cash crops, including cashew, yam, beans, groundnut, varieties of vegetables, maize and guinea corn.

The rearing of animals is made possible due to the existence of savannah type of vegetation. Other prominent economic activities include cloth weaving, pottery making, blacksmithing, Shea butter production, and gum processing.

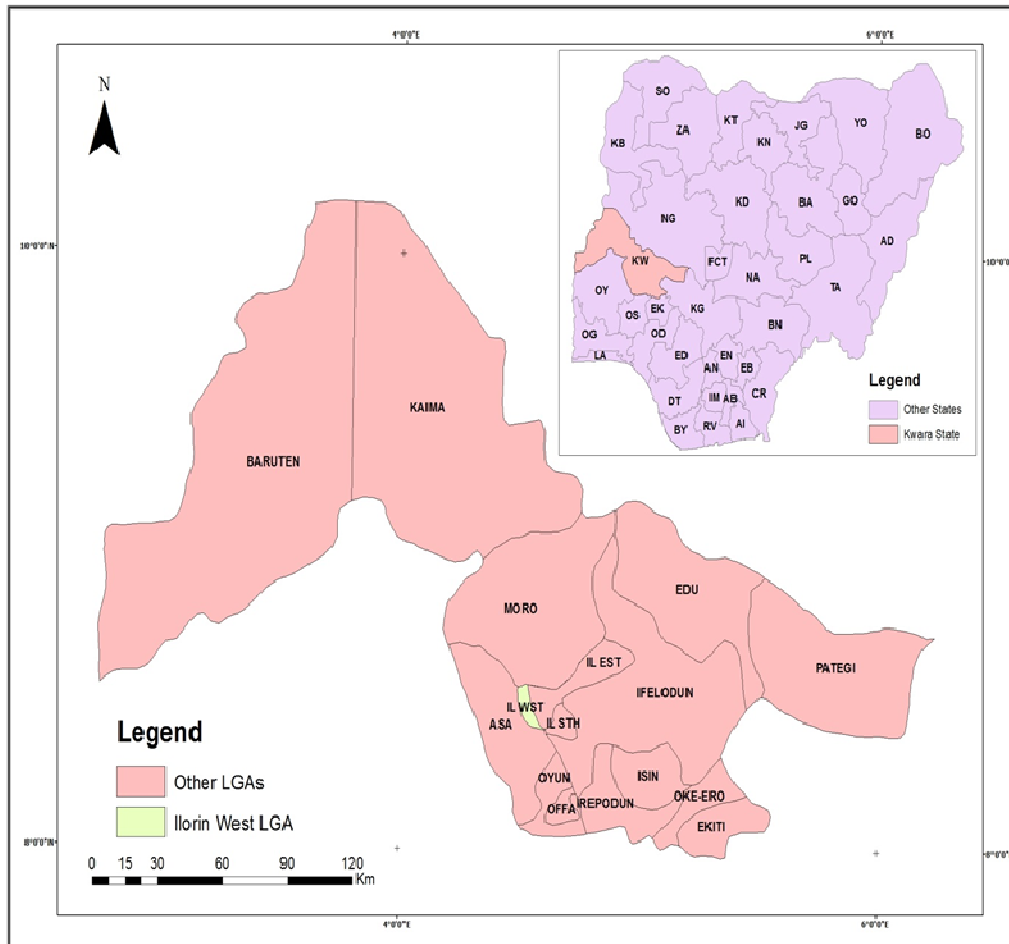


Figure 1. Location of the study area. Source: Ministry of lands and housing, Ilorin.

LITERATURE REVIEW

Participatory Development and Sustainability Analysis (PDSA)

Participatory Development and Sustainability Analyses (PDSA) as noted by Ohakweh and Ezirium (2006), involves getting all key people and institutions involved in the development decisions that affect them as an indispensable ingredient in achieving sustainable development. When a beneficiary community is involved in project development and implementation, it helps to build local capacity to solve problems and make sound decisions. This in turn leads to an improved chance that facilities and services will be used and maintained on a sustainable basis. Thus, one of the most important determinants of project success is the attention given to institutional arrangements particularly with respect to the receiving side or the inputs by the beneficiary groups (Yahie, 1993; Narayam, 1996, cited in World Bank, 1998). Participation implies that people require a greater

voice in local affairs and an expanded role in decision-making processes. The benefits of participation derive not only from mobilizing additional community resources but, more importantly, from increased effectiveness in the use of available resources - skills and knowledge (Honadle and Vansant, 1995, cited in World Bank, 1998). World Bank (1998) defines project sustainability generally as the capacity of a project to continue to deliver its intended benefits over an extended period of time. However, this depends on whether or not a balance can be achieved in the use of the principal forms of capital namely, human, natural, cultural, institutional, physical and financial.

Health Impact Assessment (HIA): An evolution from EIA

The environment has many connotations. For many persons, it is the natural world of plants and animals. In planning, environment includes not just the natural

surroundings but, it also includes such natural factors as water and wildlife and such economic and social features as employment and housing (Frank et al., 1977, cited in Nwafor, 2009). EIA thus involves just about everything, from environment, economic or political matters to concerns such as energy and air pollution. It is also a statutory requirement in many countries before a proposed project is approved.

The main purpose of EIA is to determine the outcome of a development proposal through the process of generating information on various changes that may occur in the environment in response to the implementation of a particular proposed activity and to be an aid to decision-makers about the possible or likely impacts of a proposed project (Ortolano, 1984; Wathern, 1990). The other purpose of the assessment is to ensure that decision makers consider the ensuing environmental impact whether to proceed with the project. Hence, predictions constitute much of the basis of EIA. Indeed the whole of EIA exercise is about prediction (Glasson et al., 1999).

Health Impact Assessment (HIA) is the stock taking evaluation of the overall or marginal gains and deficiencies in the total well-being and aspects of health status of a defined population as a result of natural occurrences or other man-made interventions. Such gains or deficiencies can be measured in terms of longevity, wellness and health promotion and productivity (Abanobi, 1997). HIA, therefore, is the estimation of the effects of a specified action on the health of a defined population with a view to assessing the potential health impacts (positive and negative) of policies, programmes and projects; and to improve the quality of public policy decision making through recommendations to enhance predicted positive health impacts and minimize negative ones.

Impact assessment in the planning process

All planning processes have the same principal elements: Identifying problems and goals; specifying objectives; compiling an inventory of conditions and resources; developing alternatives; evaluating alternatives; and plan implementation and monitoring. Impact Assessments applied to all these planning elements is aimed at avoiding, reducing or mitigating any adverse effects of implementing a program or a project. They are more than the coverage of economic, physical and social concerns in the planning process (Frank, 1977); therefore, it is not an activity that is handled separately from other planning functions.

When undertaking HIA, the stages involved are progressively outlined; however, they may not be necessarily implemented in a strict serial fashion. In practice, one often has to return to an earlier stage when there is more information (Sridhar, 2007). Key features to

be considered according to Abanobi (2008) include: Screening, Scoping, Identifying impacts, Assessment impacts, Making recommendations, and Monitoring impacts. The first step in the HIA process, having decided to do it is to have a quick review of the possible health impacts as shown in Table 1, and also to consider the size and importance of the proposal and availability of resources to do the assessment. A good way is to use a checklist that covers questions like: Does the proposal impact on one or more determinants of health? What are the personal and family lifestyles and characteristics; socio-economic environment, physical environment, and access to and quality of health and other services? Will any of the results of the proposal be irreversible? What population subgroups will be affected by the proposal? Who might be disadvantaged by the proposal? What is the geographical and population scale of the proposal? Is there conflict or disagreement about the proposal? If so, would a HIA help to resolve it? Are there time, money and expertise to do a HIA? Is it possible to change the proposal if necessary?

RESEARCH METHODS

The study area is officially structured into twelve (12) political and administrative wards in the LGA. From these, four (4) Wards were randomly selected for intense study. These are: Alanamu, Ajikobi, Baboko and Magaji Ngeri. These wards, situated within Ilorin Metropolis, were selected to provide estimates on demographic and other socioeconomic characteristics for the entire Local Government Area. The four wards were further stratified into 36 clusters as shown in Table 2. The study area has only 4 wards with an estimated population of 470,400 residents. Since the study is household based, a total of 8,231 households were listed in the 4 wards out of about 33% (of the LGA total) or 19,856 households found there (Table 2). The number of sampled households came to 2000 or 10% of the 33% households at 1 in every 3 systematically sampled.

Devices used to collect first hand primary information include; structured questionnaires on Demographic and socioeconomic characteristics and the identification. In addition, land survey of the area was also carried out using theodolite and high precision GPS equipment to obtain coordinates and other characteristics of the sites. Secondary data such were sourced from published and unpublished sources like academic journals, books, internet materials and so on. Descriptive statistical methods were used to analyse data on demographic and socio-economic variables of target communities including population characteristics-size, and composition, size of households, projection, economic activities, social and cultural structure, and property characteristics. Both quantitative and qualitative statistical techniques of data analysis were further used as designed for impact assessment studies.

RESULTS AND DISCUSSION

Economic activities and livelihoods

The people are engaged in numerous occupational activities. The major economic activities in the area

Table 1. Key features of HIA.

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- Undertaken on policies, programs, projects, plans or other detailed strategic proposals.
 - Undertaken when it will add value to decision-making processes.
 - Undertaken prior to the implementation of the policy, programs and project that is being assessed. It is prospective, pre-emptive, based on forecasts and predictions.
 - Should assess or identify the potential positive and negative impacts on health.
 - Should look at the impact on populations both directly and indirectly affected by the proposal.
 - Should include equity as a central concern.
 - Should engage key stakeholders in the formulation of recommendations.
 - Should be solution - focused.
 - Should aim at enhancing the benefits of health and minimize any risks to health.
 - Should include explicit consideration of the differential impacts on different groups in the population.
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Source: Abanobi (2008).

Table 2. Survey design.

Ward	No of Census EA	No. of Building	No of Cluster	No of Hhld listed	No of selected HHL D	% Hhld allocated for sampling	No of Institutional Hhlds	No of Existing Dump site, Canals/streams
ALANAMU	446	5087	10	2517	600	30	35	24
AJIKOBI	375	4231	10	2321	600	30	30	22
BABOKO	190	1905	8	1935	300	15	35	3
MAGAJIN GARI	165	1860	8	1458	500	25	28	5
Total	1176	13083	36	8231	2000	100	128	54

Source: Fieldwork, 2009.

include farming, cloth weaving, pottery - making, teaching, black smiting, petty - trading. In Ajikobi Ward, 68% of the respondents recognized farming as one of the major occupation of the people in that Ward, about 51% in Alanamu Ward, 10% in Baboko and 14% in Magajin Geri. In the same vein, about 92% believed that cloth weaving is foremost in Ajikobi Ward, 96% in Alanamu, 86% in Baboko and 39% in Magajin Geri. Meanwhile, Quaranic teaching is general found in all the Wards (Table 3).

Facilities and services

Meanwhile, the areas lacked modern facilities and infrastructures that can enhance their well-being as also indicated in Table 4. The only source of water at Gaa Saka is the water well, which is just one serving the whole community of seventy-two people. In Modi, there is also a single water well while the only borehole found there were inactive. However, it is the only place among the five with primary schools. While Gerewu has a borehole and water well, Peke has a natural stream and Idi-Ape has natural spring water as their sources of water supply, but no school. Finally, basic health facilities, such

as maternity, primary health centre, dispensary and, patent medicine store, are totally absent in these communities. None of their roads is tarred also or graded this makes them inaccessible in rainy season.

Housing facilities

Although there are several facilities a housing unit is expected to possess, the study shall restrict its analysis to two variables of toilet facility and source of domestic water which are directly related to man's health and sanitation. While in the entire study area Pit latrine (51%) is the commonest toilet facility, in Magaji Ngeri ward 64.2% of the facility is Bucket Latrine. Other 3 wards are characterized by Pit Latrine, specifically Ajikobi (58%), Alanamu (54%) and Baboko (66%). The modern water closet types are distributed minimally within Ajikobi (6%), Alanamu (14%), Baboko (10%) and Magaji Ngeri (6%). Ajikobi is also second in line with 24% of Bucket Latrine (Table 4).

In the study area, interestingly about 72% of the sources of domestic water are from improved sources comprising of 31% tap water and 41% borehole water.

Table 3. Responses on major economic activities of the beneficiary communities.

Wards	Farming%	Cloth weaving%	Pottery%	Quaranic teaching%	Black smithing%	Others%
Ajikobi	68	92	54	94.5	6.5	7.5
Alanamu	50.5	95.5	3	87.5	-	9.5
Baboko	9.5	86	55.5	97	18.5	-
Magaji-Gari	13.5	38.5	33	87.5	42.5	26.5

Source: Fieldwork, 2009.

Table 4. Types of toilet facilities used by the households.

Ward	Water closet	Pit latrine	Bucket latrine	Nearby bush/river	Other	Total
Ajikobi	6.3	58.1	23.6	12.0	-	100
Alanamu	14	54.2	18.7	13.0	.2	100
Baboko	10.3	66.1	5.0	10.0	8.6	100
MagajiNgeri	6.2	28.8	64.2	.8	-	100
Total	9.2	51	29.2	9.2	1.4	100

Source: Fieldwork, 2009.

The borehole source (67%) is commonest in Magaji Ngeri while the tap source (63%) is commonest in Baboko. Alanamu ward has the greatest percentage (30%) of well water followed by Ajikobi and Baboko with about 29% each and Magaji Ngeri 20%. The dependent on stream or rains in this area is virtually non-existent with only Alanamu having 0.5% of each.

Methods of disposal of wastes by the households

The waste disposal methods include burning, dumping in Kwara State Wastes Management Company refuse bin, along the street, at the central dump, communal dumps, open dumps, drainage/canals/stream and others. As shown in Table 5 and Figure 2, the communities disposed -off their solid waste in many ways, Majority of the households in Ajikobi (about 56%) dump their wastes along the street while about 41% in Alanamu burn theirs. In Magaji Ngeri about 33% dumps in the refuse bin of Kwara State Waste Management Company (KWMC). However, it is common in all wards to dump refuse at unauthorized places, like central dump, commercial bins dump, drainage/canal/streams and other sensitive places.

Impact analysis of the project

Description of the project

This project is about the establishment of Millennium Development Goals (MDGs) Community-based Solid

Waste Management facilities for the cities in Nigeria. It is conceptualized, supervised and managed by the Federal Ministry of Environment and financed by the World Bank. It is designed with expectation of being handed-over to the State and Local Governments for day-to-day running.

The establishment of Millennium Development Goals (MDGs) Community-based Solid Waste Management facilities for the cities in Nigeria is seen as a panacea for the Solid Waste Management Problems. The facility involves processing and transforming municipal solid waste into useful end products such as fertilizers, steel implements and so on; under a congenial and healthy environment.

Potential positive and negative impacts of the project

The impacts assessed in this work are broken into two: positive and negative impacts. There is a thin line between the health impacts and their socio-economic and environmental counterparts; as they are interwoven and intertwined in many respects. The level of environmental friendliness of an area and its socio-economic well-being are a function of the health status of its people and their communities. The following are the potential positive and negative impact of the project (Table 6).

Potential positive impacts on the communities

Creation of employment opportunities: With the take-off of this project, jobs will be created to the benefits of the people in the localities. Such jobs may however,

Table 5. Methods of disposal of wastes by the households.

Ward	Burning		In KWMC refuse bin		Along the zstreet		At the central dump		In communal bins		At the nearest open dump		In drainage/ canal/ stream		Other		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Ajikobi	102	17	60	10	132	22	84	14	120	20	126	13	6	1	18	3	600	100
Alanamu	84	14	54	9	42	7	84	14	72	12	48	8	42	7	174	29	600	100
Baboko	21	7	27	9	18	6	39	13	15	5	27	9	141	47	12	4	500	100
Magaji Ngeri	30	6	180	36	75	15	15	3	40	8	160	32	0	0	0	0	300	100

Source: Fieldwork, 2009.

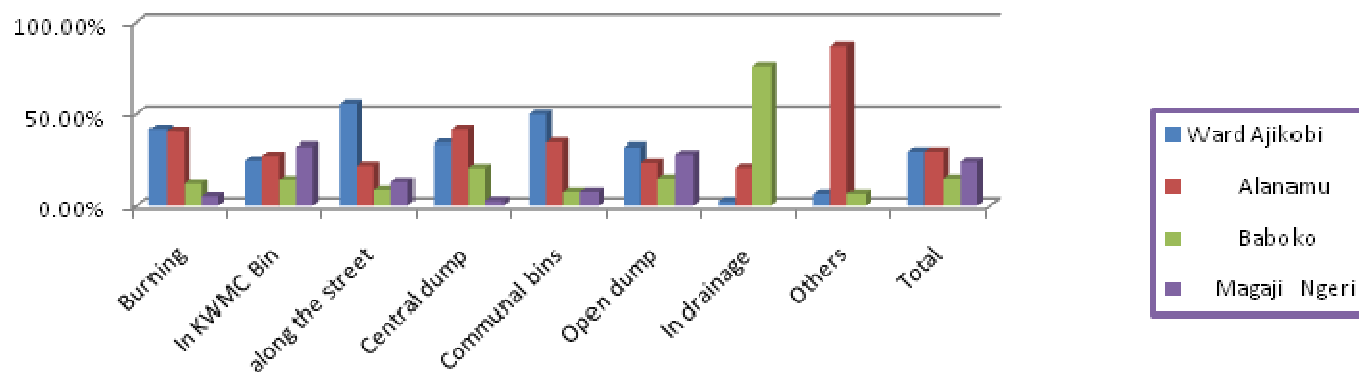


Figure 2. Methods of disposal of wastes by the households. Source: Fieldwork, 2009.

involve low-skilled labour such as watchmen, labourers, artisans, gardeners, and petty-trading; thereby enhancing the standard of living of these ordinary people.

Increase demand for basic goods and services: The functioning of the waste management facility

in the area will lead to increase in demand for basic goods and services by and to all stakeholders like petty traders, artisans, property-owners, water sellers, restaurant operators. This will improve the economic well-being of the communities. There is also the improvement of basic infrastructures such as roads, water supply,

and power supply; especially in these rural communities.

Increase urbanization: Due to in-migration of recycling plants workers and traders, there is bound to be increase in population of these localities as workers tend to settle down in them.

Table 6. Potential impacts on the communities around the dumpsites.

Positive	Negative
<ul style="list-style-type: none"> - Creation of employment opportunities. - Increase demand for basic goods and services, hence improved economy. - Upgrading of infrastructures and facilities. - Increase urbanization, due to immigration of Recycling plant workers and traders. 	<ul style="list-style-type: none"> - Increase environmental and health problems. - Likely chemical explosions and fire hazards. - Pollution of source and channels of water. - Increase noise pollution / Erosion. - Reduction in size of cultivable arable land. - Abandonment of agriculture for formal jobs.

Source: Fieldwork, 2009.

This will lead to increase social and economic activities as the localities are changing face gradually from rural to urban.

Potential negative impacts on the communities

Increase environmental and health problems:

The location of the existing dumpsites around the rural communities could lead to potential environmental and health problems. With the location of the proposed one not far away from the former, the problems are bound to be aggravated, unless pro-active measures are taken. In the five communities wherein the study were carried out, problems of nauseating odour and smell, swarm of flies, mosquitoes, rodents and air pollution were so endemic, with their attendant cause of diseases such as fever (malaria, typhoid), TB, and related diseases. The large-scale poverty of the people coupled with inadequacy of basic facilities such as pipe-borne water, electricity, modern and adequate shelter, food, tarred roads, schools, markets exacerbated the problem.

Possibility of chemical explosions and fire hazards:

Gas, liquids and fumes produced by the decomposition of wastes can be explosive if it accumulates in confined space e.g. cellars of buildings. This may also lead to great fire occurrence with its attendant effects such as air pollution, decrease visibility, and fire hazards.

Water pollution and general environmental pollution:

The tendency for the source and channels of water supply to be greatly polluted is very high in the communities. Polluted water flowing from waste dumps and recycling plants can cause serious pollution of water supplies. The careless and disorderly way of the Waste Management Trucks' drivers usually results in noise pollution which may impede the peace and tranquillity of these rural communities.

Heavy trucks also cause significant damage to roads that were not designed for their weight and frequencies, creating pot holes resulting in intense erosion.

Deforestation: The clearing of trees for this project results in a negative impact with its attendant distortion of the ecosystem and destruction of flora and fauna lives. It also leads to reduction in the size of arable lands, loss of food sources, hunting, fuel energy, raw materials for building, and herbs. To mitigate this, afforestation programme policy must be adopted for the remaining lands to curb indiscriminate clearing of land. Erosion control strategies must also be employed to protect the already distorted ecosystem of the project site and surrounding area while environmental and forestry protection laws must be strictly enforced.

The establishment of a recycling plant which necessarily will generate other forms of occupation different from conventional agriculture will not only encourage the abandonment of the latter but will result in the reduction of available cultivable land. Hence, reduction in the volume of food produced in the area.

General evaluation of the impacts of the project

An assessment of the key impacts earlier identified becomes pertinent, in order to arrive at an objective and independent decision. Consequently, the authors used mathematical weighting technique, which involves assignment of weights ranging from 1 to 5 for the environmental and health factors impacts for the analysis. This is in accordance with the Nigerian Institute of Town Planners (NITP) scores guide as follow: 5 (Very Positive Impact), 4(Fairly Positive Impact), 3 (Neutral Impact), 2 (Fairly Negative Impact) and, lastly, 1 (Very Negative Impact) (Table 7). The percentage score is thus 87.2%. The rating as interpreted by the NITP scoring guide as Acceptable.

RECOMMENDATIONS

HIA's strength lies in its being a tool which enables informed policy decisions to be made based on a valid assessment of their potential health impacts, at the same time adding health awareness to policy making at every

Table 7. Summary of the project impact statement.

S/N	Parameters	Score	
		Maximum points obtainable	Points obtained
	Physical		
	Location	5	4
	Landform/landscape	5	4
	Weather and climate	5	4
1.	Flora and Fauna	5	4
	Soil	5	4
	Zoning	5	5
	Setbacks	5	5
	Plot coverage	5	5
	Parking	5	4
	Environmental and health		
	(a) Pollution		
	Reduced air pollution	5	4
	Reduced noise pollution	5	4
	Reduced water pollution	5	4
	Reduced odour	5	5
	(b) Environmental degradation		
2.	Deforestation	5	3
	Reduced erosion	5	4
	Reduced Blockage of drainage	5	4
	(c) Potential health hazards	5	4
	Reduced chemical explosion	5	4
	Reduced fire hazards	5	4
	Reduced epidemic diseases	5	5
	(d) Improve aesthetics		
	Infrastructure / services		
	Upgrading of:		
	Water	5	5
	Electricity	5	4
3.	Refuse collection	5	5
	Drainage and sewage	5	5
	Road network	5	4
	Telephone /Communication	5	4
	Socio-economic		
	Increase employment	5	5
	Improved property value	5	5
	Enhanced income	5	5
4.	Private companies revenue	5	3
	Improved economic well-being	5	5
	Improved taxation	5	5
	Improved behavioural attitude	5	5
	Total	165	144
	Percentage score	100	87.2%

Source: Authors' computation (2010).

level. This study has shown that it is more than just a monitoring or evaluation tool, though it has much in common with the more established EIA. HIA provides a practical framework for identifying health impacts and ways of addressing them within its principles of social model of health, equity and social justice, multidisciplinary and participatory approach, use of qualitative and quantitative evidence, explicit values and openness to public scrutiny.

Through evaluation of impacts and other assessments the proposed establishment of the Solid Waste Management facility at Ita-Amo Area of Ilorin West LGA with performance of over 87%, is considered acceptable. The study vividly shows that the establishment of a modern solid waste management facility for the communities is a right step in the right direction as it will bring about several benefits. In addition, it was revealed that most HIAs need input from people with different perspective and from different organizations. It is a veritable opportunity to integrate these views, concerns and values of the affected population in the planning of projects that may have potential impact on their lives. The following recommendations are made to further strengthen these points.

- Efforts should be made by planners to seek harmony in partnership with public health workers in particular and the community in general in the process of conducting HIA studies.
- HIA studies should be integrated formally into the planning process in Nigeria with necessary statutes.
- Advocacy and sensitization of the members of the public, community participation in all waste management projects, plans, policies and programmes and institutionalization of good governance at all levels are necessary impetus for the success of the project.
- Embrace Integrated Waste Management (IWM) strategy which is "the selection and application of suitable techniques, technologies, and management programme to achieve specific waste management objective and goals." Every component of the waste should be taken into consideration in the management practice.
- Guidelines of the design for effective environmental laws should include management instruments that are well thought out, sound and result-oriented. For example; Environmental Management Plan, Health and Safety Plan, Monitoring and Evaluation Plan, Action Plan, and so on.
- The current and future Environmental Policy and in particular waste management policy on ground must have a well – specified guidelines. For example, it should specify and implement source segregation of non-hazardous recyclable waste, so that the economic incentive for waste picking at disposal sites is reduced.
- Waste pickers should be integrated into the main stream of Waste Management and provide basic health-care facilities for their operations and healthful living.

There should be the registration of these and other workers in the waste management chain including like waste pickers, and be provided with medication and adequate vaccination.

- Waste pickers in addition should be provided with quality education to enhance their work, about personal hygiene, and safe care.
- They can also be trained on areas to diversify their skills in areas like livestock rearing, solid waste re-use and recycling.
- The management of hazardous chemicals is not only a matter of technology and legislation, but also enforcement and funding. Some wastes are so hazardous and expensive to treat that priority attention should be focused on changing to processes that use substitutes that are less hazardous, and to minimizing the quantities that are discarded. Indeed minimization and substitution should be seen as the preferred options in dealing with difficult waste.

Conflict of Interests

The authors have not declared any conflict of interests.

REFERENCE

- Abanobi OC (1997). "Environmental Action Plans for Kwara State" Paper presented at a Workshop organized by Kwara State Environmental Protection Agency (KWEPA) on December 10, 1997, Kwara Hotel, Ilorin.
- Abanobi OC (2008). "Health Impact Assessment: Scope, Principles and Practice" Paper presented at a Workshop organized by Environmental Health Officers' Registration Council of Nigeria for Professional Environmental Health Workers at Ibadan in April, 2008.
- Adedidu AA (1988). "Measuring Waste Generation in Third World Cities: A Case Study of Ilorin, Nigeria" *Environ. Monitor. Assess.* 10(2):89-103.
- Federal Office of Statistics, (2004) *The Nigerian Statistical Fact Sheets on Economic and Social Development*. Abuja.
- Frank SS (1977). *The Practice of State and Regional Planning International City Management and the American Planning Association: Municipal Management Series*.
- Glasson J, Therivel R, Chadwick A (1999). *Introduction to Environmental Impact Assessment: Principles and Procedure, Process, Practice and Prospects*. London: UCL.
- Nwafor JC (2009). "Environmental Impact Assessment: The Nigerian Experience from inception to date and the way forward." Paper presented at Mandatory Continuing Professional Development Programme (MCPDP) organised by NITP/TOPREC.
- NPC (2005). *Report of the 2003 National Demographic and Health Survey (NDHS) National Population Commission, Abuja*.
- NPC (2006): *Enumerators' Manual for 2006 Population and Housing Census*. National Population Commission, Abuja.
- Ohakweh AO, Ezirium ON (2006). *Project Planning and Evaluation: The Planners Perspective*. Port Harcourt: Alpha Armour Investment Ltd.
- Onibokun AG (2000). *Affordable Technology and Strategies for Waste Management in Africa; Lessons from Experience*, Centre for Advance Social Science, CASSAD Monograph Series No.13.
- Orlando L (1984). *Environmental Planning and Decision Making*. New York: John Wiley.
- Sridhar MKC (2007). "Waste Management: Way Forward" – Paper presented at the National Orientation Agency, Ibadan, August 2007, Cultural Centre, Ibadan.

Wathen P (1990). "An Introductory Guide to Environmental Impact Assessment" in Wathen,P (ed) Environmental Impact Assessment: Theory and Practice London: Routledge.

World Bank (1998). Economic Analysis of Project: Towards a Result-Oriented Approach to Evaluation ECON Report Washington D.C.