

# DIFFERING PERCEPTIONS OF RISK OF HAZARDOUS WASTE FACILITY SITING IN RURAL NIGERIA

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## **Abstract**

*Perceptions of environment risk have militated against numerous hazardous waste facilities such as landfills in North America and other developed countries. The spate of rejections led to the presently famous 'not-in-my-backyard' (NIMBY) syndrome in environmental planning and management literature. The existence of this syndrome has not been empirically studied and confirmed in rural Nigeria and this paper fills that gap. In doing so, it compares the perceptions of two communities, one with a landfill and the other without it. The authors conclude that the NIMBY syndrome exists since respondents near the facility are non-supportive, and rated the anticipated negative effects highly while, on the other hand, respondents that are far from the same facility are largely indifferent to the facility and its negative externalities. Greater community involvement, appropriate compensation and better solid waste management practices are considered as having tremendous potentials for facilitating hazardous waste facility siting in the country.*

**Key words:** Hazardous waste, landfill, community, rural, site, perception.

## **Introduction**

The need for scientifically certified sanitary landfills for wastes (a hazardous waste facility) in Ibadan, Nigeria, derives largely from two main developments. One is the absence of a formal sanitary landfill in the metropolis which was identified as one of the key problems being faced by inhabitants during the 1995 City Consultation on the Sustainable Ibadan Project (SIP) that is being promoted jointly by the United Nations Centre for Human Settlement (Habitat) and the United Nations Development Programme (UNDP). Secondly, the Federal Environmental Protection Agency (FEPA) has established standards for sanitary landfills in the country, bearing in mind that wastes have to be generated but in an acceptable and safe manner.

In an attempt to tackle the seemingly intractable solid waste problem in the city, the Oyo State Environmental Protection Agency (OYSEPA) decided to site a landfill at Aba-Eku Community in Ona-Ara Local Government Area of Oyo State. Being a World Bank assisted project, OYSEPA was compelled to initiate an environmental impact assessment (EIA) process for the site in 1995, since it falls under Category A of the 1991 World Bank Operation Manual (OD3.01 Annex 4). The EIA report indicates that the local

people in Aba-Eku are not happy with the project, however, they have grudgingly accepted the facility (Agbola *pers. com.*).

The siting of hazardous waste facilities in many countries, especially the United States of America (USA), Canada and Germany, has met with community opposition due largely to the perception of risk. Hence, the failure of many hazardous waste siting processes because nobody wants to be located near one, has been attributed to the NIMBY syndrome for Not-in-my-backyard (Peele and Ellis 1987; Armour 1987; Bailey *et al* 1989; Olokesusi 1995). Negative externalities such as groundwater resource pollution, vermin and rodents, foul odour, decline in property value and social stigma, have all but reduced community acceptance of hazardous waste facilities (Zeiss and Atwater 1987). The poor disposal practices in designated landfills in most African countries and lack of compensation, have not helped to convince prospective host communities of any associated positive effects. This is because the effects of hazardous waste facilities are not entirely negative.

While there is extensive literature on the impact of hazardous waste facilities such as landfills in the developed countries, only a few exist on African countries. An assessment of the impact of the Ring Road waste disposal facility in Ibadan, carried out after its decommissioning in 1990, by Olokesusi, (1994), shows that 75 per cent of the 246 respondents to a survey questionnaire, supported the decision of government to decommission the facility. Health, pollution, noise and other risk factors were cited for supporting the decision. Moreover, property rents were negatively impacted by the landfill. Similarly, Arimah and Adinnu, (1995) found that the implicit housing price in Olodi, Lagos (where there is a landfill), shows that annual rent appreciates by  $\times 1.178^1$  for every metre away from the landfill. These two findings agree with those obtained by Zeiss, (1984) and Havelicek, (1985).

Much as these studies are useful for policy formulation and environmental management, very few empirical studies in Nigeria have attempted to ascertain the perception of host communities concerning landfills in general. In particular, there is no known study in Nigeria that has compared the perceptions of host and non-host communities on the issue. Perception of the environment is very important to its management, since environments are a multi-dimensional system of complex and dynamic interrelationships. Consequently, the nature and direction of alterations in them, the bio-physical and anthropogenic effects should be properly studied and understood. Equally germane is the extent to which the new environments resulting from changes - for example construction of a hazardous waste facility, are compatible with the objectives and preference patterns of individuals and of societies (UNESCO 1973; Sekaran 1989; Olokesusi 1992).

With this background, this paper seeks to determine whether or not the NIMBY syndrome actually exists in Nigeria using a case study approach. It examines why one

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<sup>1</sup> $\times 135$  is equivalent to US \$1.0

rural community favours the siting of a hazardous waste facility in another community (host community) while the latter community does not want it sited therein, and is not supportive of the project. This paper will be of tremendous interest to environmentalists for two main reasons. First, it sheds the much desired light on perceptions of the probable effects of a hazardous waste facility in an African country. There are few such studies if any on Africa, and none has explicitly addressed the NIMBY syndrome in Nigeria, especially using a comparative example. Second, the paper contributes to the debate on cross-cultural perception of human induced environmental hazards in general and the extent to which rural Africans are supportive of hazardous waste facility siting.

Subsequent sections of the paper are as follows: the next section reviews previous studies on hazardous waste facility siting, what follows is the study methodology. Results and discussion follow, while the paper ends with conclusions and policy recommendations.

### *Review of Previous Studies*

There is need for wastes generated to be properly and safely disposed, because of the dreadful consequences of ill-disposed wastes. With the spate of industrial and technological developments coupled with rapid population increase in Nigeria, the need for effective waste management strategies becomes very crucial. Associated with the management of waste is the siting of waste disposal facilities. Government policy and decisions in this regard have been at variance with public interest in most cases perhaps, due to the insensitivity of the policy provision or decision parameters to people's interests and aspirations. Development of hazardous waste facilities has been hampered by the NIMBY syndrome - Not-in-My-Backyard syndrome, in the United States and other developed countries. This development is regarded by Flyn *et al.*, (1990), as a common explanation offered for public opposition to the proposal for siting of hazardous facilities. According to them, it refers to intense and often adamant resistance by the local population to proximal sitings.

It is generally believed that siting of hazardous waste facilities is a crucial problem and one that is associated with highly complex technical and managerial problems (Bourke 1994). Hazardous waste siting has social implications as well. In this regard, response from people in respect of siting waste disposal facility in their areas has been strong. In order to minimise opposition (Bourke 1994) observed that many hazardous waste disposal companies are attracted to rural communities primarily because these communities are isolated, lack political clout, and can be desperate for economic improvement.

Of interest are reasons for people's response and the variations of such among them. Bourke, (1994) posits that certain key variables in predicting responses are the anticipation of economic benefits and the perception of risk. Her experience with rural Utah in the USA however shows that another relevant variable is residents' perception of the local economy. She further observes that local residents can perceive siting of hazardous waste facility in rural communities, as any other industrial proposal, with anticipation of economic benefits, social and environmental consequences. She found in

her study of three rural communities that those communities with poor local economies were more likely to support a siting a hazardous waste facility locally.

But contrary to Bouike's findings, Olokesusi (1995) discovers that even though Hoppeston community in the State of Illinois, USA was in dire need of economic rejuvenation, and improved tax base, local opposition to a proposed hazardous facility siting was so strong that a lawsuit arose. This shows that the nature of responses to siting waste facility varies from place to place. Luloff *et al.* (1996), opine that, what is often considered by residents of more prosperous communities to be a "bad deal" may be viewed as the only alternative by those residing in poorer communities. Response also varies between residents of the nearest communities to the waste disposal facility and those residing farther away. For instance, Bourke (1994) observed that residents of communities nearest to the proposed site for hazardous waste facility perceived more economic benefits, fewer risks and favoured the disposal more than those residing in communities located farther away. This perception of residents in close proximity to proposed site often informs their opposition. Kraft *et al.* (1991) for example contended that, such opposition is often considered to be irrational because the public is pictured as poorly informed and interested primarily in avoiding local imposition of risks and emotive rather than cognitive in its appraisal of the risks and its response to siting proposal.

Similarly, it is perceived that in most conception of the "NIMBY" syndrome emotion is assumed to dominate over a thoughtful assessment of a facility's risk, costs and benefits. It is presumed that people fear the risk associated with a facility and/or are being forced to bear localised costs of a project for which they receive no special benefits. A recent case is the rejection by the residents of Mitak in Gifu Prefecture, Japan through a referendum in July, 1997 of the siting of an industrial waste disposal facility (Nigerian Tribune, 25 June, 1997, p. 5).

The issue of public opposition to hazardous waste siting is so strong that, measures are being recommended to win public support in order to facilitate implementation of waste management programmes. This is because according to Kraft *et al.* (1991), without some ways to build confidence in siting process, any decision to locate the waste disposal site would likely be subject to vigorous public protest that could seriously delay or halt waste management programme. This view is shared by Mazmanian and Sabatier (1983) when they claim that successful implementation of the U.S Nuclear Waste Programme depended upon building and maintaining a requisite level of public support.

The work of Slovic *et al.* (1993) focuses on an empirical study aimed at assessing public attitude, perceptions and opinions, regarding the management of high level radioactive works in Nevada, Yuca Mountains in the United States. Under focus were people's perception of the risks and benefits associated with a nuclear waste repository, local support or opposition for the Department of Energy (DOE) to manage the programme and their views on a variety of other issues pertaining to radioactive waste disposal. Findings from the study reveal that the preferred nearest distance to the repository site is

200 miles or 310 kilometres. This distance is five times greater than that of a chemical waste landfill, three to eight times the distance from oil refineries, nuclear power plants and pesticide manufacturing plants.

Strong public distrust of the DOE was also evident from responses to a question such as ^whether the U.S. Department of Energy can be trusted to provide prompt and full disclosure of any accidents or serious problems with their nuclear waste management programme^ . This aspect is as described by Armour, (1987), as a lack of trust by the public in government, and the uncertainties and inequities inherent in decision making, concerning waste management. Consequently, this stems from the failure of proponents to acknowledge the legitimacy of public concerns arising from their perception of risk. This situation according to Włodarczyk, (1990), has also resulted in a wide gap in the way experts and members of the public, estimate and evaluate risks and impact.

The negative reactions of the local people to siting of hazardous waste facilities can be regarded as normal because of the associated risks. Włodarczyk, (1990), opines that risks associated with waste facilities are usually restricted to the local community. Therefore, each resident must assume a larger proportion of the total risk than of the total benefits (Pushchak and Burton 1983; Peele and Ellis 1987). Such risks are borne over a long period of time. For instance, solid waste landfills can have an operational lifetime of between 20 and 40 years and occasionally up to 70 years. Thus, residents live with a facility for a greater portion of their lifetime (Włodarczyk 1990).

Couch and Kroll-Smith (1994), are of the opinion that two contrasting patterns of community response to environmental conflict do present themselves - those that enhance, and those that undermine community solidarity. A hazardous waste facility siting for instance might create united opposition from residents, whereas an existing environmental hazard is often divisive. This is attributed to the different local definitions of the situation and different patterns by which effects are distributed. Consequently, a ^we versus them^ response develops among residents. Albrecht *et. al.*, (1996), say that this situation developed in opposing the low-level reactor waste facility in the Ward Valley, California, USA. Also, Albrecht *et al.*, (1996), argue that externally-driven siting proposals can have divisive effects among residents due to the different ^values^ individuals place on this like economic development and environmental quality, and because project benefits and costs are never evenly distributed among community residents.

As earlier enunciated, Agbola (*pers. com.*), claimed that the inhabitants of the Aba Eku community near Ibadan, rejected the siting of the hazardous waste facility but had no political power to stop construction. However, the study did not compare the community with any other, moreover the study was more of an *ex-ante* impact assessment. The foregoing explicitly shows that human perception and participation are very critical, in both the acceptance of risk and siting of hazardous waste facility. How these issues are perceived in the Nigerian context is pursued in subsequent sections of the paper.

## Methodology

Both primary and secondary data were collected and analysed in the course of preparing the paper. Two rural communities<sup>2</sup>, namely Aba-Eku and Ajibode were selected for the study. The distance between Aba-Eku and Ajibode is more than 25 kilometres. Aba-Eku, a rural community along the Ibadan-Akanran road, is in the Ona Ara Local Government Area (LGA) in the eastern part of metropolitan Ibadan. The landfill which was under construction during the study, occupies about 10 hectares of land and is a mere 300 metres to the community. However, since 1994, OYSEPA and other janitorial companies have been disposing refuse in the designated site without applying the principles of sanitary landfill management.

Ajibode community in Akinyele LGA, is a rural satellite community of Ibadan. It is closer to the city centre than Aba-Eku. Ajibode community was selected because it is rural. While the two study communities are not totally identical, both are characterised by large farming population and absence of social infrastructure. Ajibode is designated as the control community, and a similar social survey questionnaire was administered except that reference was made to Aba-Eku as and when necessary. This is important to enable respondents realise that, siting of the landfill in Aba-Eku is the primary concern of the study. Reconnaissance surveys conducted in each of the communities revealed that Ajibode had a total of 399 households while Aba-Eku had 401 households at the time of the exercise. Some 40 respondents were selected from 40 households in each of the communities. This represents, approximately 10 per cent of the total households in each of the two communities.

Four research assistants under supervision adopted systematic random sampling technique in selecting 40 respondents in each of the two communities for the purpose of questionnaire administration. In this regard, a respondent was selected from every tenth household in each of the two communities. While 38 questionnaires were analysable for Aba-Eku, only 31 were analysable for Ajibode bringing the total to 69 out of 80 questionnaires distributed equally between the two communities. The questionnaires elicited information on respondents= socio-demographic characteristics, perception of the impact of a hazardous waste facility, and willingness to accept its construction among others. Resource constraints militated against a larger sample size. Before the questionnaire administration process, reconnaissance visits were made by the researchers to the two communities during which community leaders were intimated with the study objectives, the need for their cooperation and to facilitate the study. Published literature constitutes the secondary sources of data.

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<sup>2</sup>There are a few smaller communities around Aba-Eku from where respondents were sampled.

## Results and Discussion

### *Socio-economic Characteristics of Respondents*

This section discusses the socio-economic background of the respondents in the two communities. Variables examined include sex, age, and level of education and length of stay in the community. The majority of the respondents in the sample were males. They constitute 60.5 per cent and 71.0 per cent in Aba-Eku and Ajibode communities, respectively. This was because more males than females volunteered to participate in the study (Table 1).

**Table 1: Spatial and Gender Distribution of Respondents**

Sex	Aba-Eku		Ajibode		Total	
	Freq.	%	Freq.	%	Freq.	%
Male	23	60.5	22	71.0	45	65.2
Female	15	39.5	9	29.0	24	34.5
Total	38	100.0	31	100.0	69	100.0

More than one third (37.5 per cent) of the respondents in Aba-Eku belonged to the 56 to 65 years cohort, while 45.2 per cent of the respondents in Ajibode were younger men and women in the 18 to 35 years age cohort. Again, while only 3.2 per cent of Ajibode sample was above 56 years of age, 18 per cent (or 7 persons) in Aba-Eku have lived for over 65 years. This difference is most likely to be as a result of emigration of the younger ones from Aba-Eku to Ibadan metropolis in search of better economic opportunities, coupled with the proximity of Ajibode to employment opportunities in the metropolis, hence it becomes attractive to young people.

Expectedly, most of the respondents have no formal education, possibly because the two communities are rural in a tropical developing country. However, comparing the two groups, we found that the respondents in Ajibode had a higher level of education than those in Aba-Eku. For instance, while majority in Aba-Eku (47.5 per cent) had no formal education, most of those in Ajibode (32.3 per cent) had secondary education. As earlier mentioned, this variation is accounted for by the difference in the proximity of the communities to Ibadan metropolis. Besides, Ajibode has a secondary school while the nearest secondary school to Aba-Eku is about 8 kilometres away.

A significant proportion of respondents in Aba-Eku (52.6 per cent) have been living there since they were born, as against the case with Ajibode where seven out of every ten respondents have spent only between 5 and 15 years in the town. This indicates that,

while Aba-Eku is more of a traditional/rural community where residents migrate to the city, Ajibode is a peri-urban community where some people from the city decide to live with the local (rural) indigenes. In this category are workers at the University of Ibadan, the Nigerian Institute of Social and Economic Research and the International Institute of Tropical Agriculture. These institutions are located close to the town.

*Respondents = Perception of Waste Generation and Construction of the Landfill Facility*

Virtually all respondents agreed that solid waste generation is a normal human activity. While all the respondents in Ajibode agreed to this question, 97.5 per cent of those in Aba-Eku had the same view, since waste generation is an inevitable process in the production and consumption cycles of goods and services all over the world. Respondents were asked whether construction of the landfill is desirable at all. Although almost all of them perceived waste generation to be inevitable as earlier discussed, Table 1 indicates that all respondents in Aba-Eku felt that there was no need for construction of the landfill. To them, it was considered to be a bad development. On the other hand, 71 per cent of Ajibode respondents where there is no landfill site felt indifferent to the question. Even though about 23 per cent of them felt it was not a good development, the fact that majority of them were indifferent probably means that those who live far away from a landfill site may perceive its construction as a positive development, and *vice versa*. This assertion is based on the divergence of opinions between the respondents in the two locations. Those close to the facility are much more concerned while those living far away are indifferent or express less concern. Responses shown in Table 2 strongly reflect the NIMBY syndrome on the part of Aba-Eku residents. This finding is akin to that of Mitak in Japan (Nigerian Tribune, 1997; Portney 1991). Indifference on the part of most Ajibode respondents (71 per cent) suggests that, they did not perceive the facility as having any significant negative externality, and were therefore neither concerned nor interested. It is quite likely that they would have responded differently to the question if the facility were to have been sited in Ajibode, since their  $\Delta$  values  $\Rightarrow$  that is preference would have been altered by the action (UNESCO, 1973). The 22.6 per cent from Ajibode, who disagreed, can be characterised as being possibly aware of the inherent dangers posed by the facility to the host community, and were therefore sympathetic to that community.

**Table 2: Perception of respondents on the construction of Landfill.**

Response by Community	Indifference		Agree		Disagree		Total	
	No.	%	No.	%	No.	%	No.	%
Aba-Eku	0	0.0	0	0.0	38	100.0	38	100.0
Ajibode	22	71.0	2	6.5	7	22.6	31	100.0
Total	22	32.0	2	2.9	45	65.2	69	100.0



Responding to the question “would you support the construction of this landfill in the future if you have your way?” Table 3 indicates that virtually all respondents in Aba-Eku (97.4 per cent) would not support construction of the project in future, unlike respondents in Ajibode. About 84 per cent of Ajibode respondents were again indifferent to whether they would allow construction of a landfill facility at Aba-Eku or not. This suggests that people could be indifferent to the siting of a landfill in an area other than where they reside, because they would not directly experience the adverse impact arising from it. There may also be an underestimation of the potential risks - health, pollution and property value depreciation and such like that are associated with the facility by the Ajibode respondents. Moreover, since there is a landfill site in Aba-Eku and due to the present experience of its adverse consequences, residents do not support its construction either now or in future. On the contrary, Ajibode has neither a landfill site nor is there a proposal to site one there. Again, residents of Ajibode have no experience as regards the adverse effects on Aba-Eku residents and can therefore be indifferent to whether a landfill facility is sited in Aba-Eku. These findings are in conformity with those of Fischhoff *et al.* (1983); and Portney (1991), that risk elements such as exposure pattern, origin and volition can influence acceptance or rejection. For Aba-Eku residents, the siting decision is involuntary, the facility is perceived as a human-made risk and as unfamiliar.

**Table 3: Position of respondents on support for construction of Landfill Facility in Aba-Eku.**

Community	Indifferent		Supportive		Not supportive		Total	
	No.	%	No.	%	No.	%	No.	%
Aba-Eku	0	0.0	1	2.6	37	97.4	38	100.0
Ajibode	26	8.9	3	9.7	2	6.5	31	100.0
Total	26	37.7	4	5.8	41	59.4	69	100.0

Due to their experience with government projects and pronouncements, about 58 per cent of 69 respondents did not have trust in government to disclose information about the hazardous consequences of locating a landfill facility. Spatially, 60.7 and 54 per cent of those sampled in Aba-Eku and Ajibode respectively had no trust (Table 4). A few of the respondents, 18.4 per cent in Aba-Eku and 25.8 per cent in Ajibode, however, felt they could trust government in this respect. This common lack of trust in government may also be rationalised on the ground that residents of Aba-Eku opposed the siting, yet the government still proceeded with the action. Thus, the “positivist” decision-making approach was applied by the Oyo State Government, most residents were poorly

informed although very few but influential community leaders were co-opted by the government (Portney, 1991).

Antecedents in Nigeria show that once a facility of this type has been put in place, the government does not bother again about taking mitigation measures unless serious negative effects appear, such as an epidemic or death. Essentially, long-term environmental management and contingency plans are never made. This pattern of response could therefore be linked to the people's distrust for the governments in the country. Even though the situation is much better in Canada, this finding is similar to that by Armour (1987).

**Table 4: Perceptions of respondents on whether Government can be Trusted to Disclose Information about the Hazardous Impact of Locating a Sanitary Landfill.**

Location	Neutral		Strongly Agree		Somewhat Agree		Strongly Disagree		Somewhat Disagree		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Aba-Eku	7	18.4	1	2.6	7	18.4	21	55.3	2	5.3	38	100.0
Ajibode	3	9.7	3	9.7	8	25.8	15	48.4	2	6.4	31	100.0
Total	10	14.5	4	5.8	15	21.7	36	52.2	4	5.8	69	100.0

*Respondents' Perception of the Impact of the Landfill Facility*

Information on the anticipated impact of the facility on nine key human concerns were elicited from the respondents. Once again, those respondents living in close proximity to the landfill anticipated more negative effects on each of the nine areas of human concerns. Particularly striking were the expected consequences on frequency of road accidents, flies and rodents, ground water pollution and property value (Table 5). These were equally the most prominent reasons given by opponents of hazardous waste facility siting in the literature. While it is true that some of the respondents' farmlands have been acquired for the landfill, the probability of their obtaining lands close to the former farmlands is high. The psychological and other socio-economic costs of the land expropriation should however not be glossed over (Luloff *et al.* 1996). Increased road traffic accidents could occur as a direct result of higher refuse truck traffic, especially on a rural road, which in the country is the type normally plied by more rickety and unsafe mini-buses, trucks and taxis.

On the other hand, respondents in Ajibode anticipated that there would be no impact in respect of the nine categories of human concerns. Even when they anticipated adverse impact, the proportion of those that indicated such was small, about 20 per cent. Typical examples are the values of homes and farmlands; income and ground water pollution. Traffic accident rates might rise as a result of increase in vehicular traffic, particularly in the light of the rickety condition of most vehicles on Nigerian roads. Again, these

findings are in conformity with *a priori* expectations according to the findings of Olokesusi (1994); Arimah and Adinnu (1995); Portney (1991); and Luloff *et al.* (1996).

With a view to determining the existence of any statistically significant differences in responses to those questions shown in Table 5, the Student's t-test was performed on each of the responses emanating from the two groups. Consequently, validation for the 'No Impact' category could not be done, because only one stream of data for Ajibode was available.

**Impact Type: 'WILL GO UP'**

H<sub>0</sub>: There is no difference in the impact type between Aba-Eku and Ajibode respondents.

H<sub>1</sub>: The impact type has influenced a change between Aba-Eku and Ajibode respondents.

Significance Level  $\alpha$ : 5%

Tabulated t-statistics  $t_{0.025,12}$  = 2.179

Calculated t-statistics  $t_c$  = 4.720

Since  $t_c > t_{0.025,12}$  we reject H<sub>0</sub>: thus the impact type 'will go up' has influenced a change, that is, in the perception of the landfill effects between Aba-Eku and Ajibode respondents.

**Impact Type: 'WILL COME DOWN'**

H<sub>0</sub>: There is no difference in the impact type between Aba-Eku and Ajibode respondents.

H<sub>1</sub>: The impact type has influenced a change between Aba-Eku and Ajibode respondents.

Significance Level  $\alpha$ : 0.25%

Tabulated t-statistics  $t_{0.025,12}$  = 2.131

Calculated t-statistics  $t_c$  = 2.687

Since  $t_c > t_{0.025,12}$  we reject H<sub>0</sub>: based on the same reason for the first hypothesis.

Consequently, it is assumed that the two samples come from different populations and have reacted differently to the questions posed.

**Concluding Remarks and Recommendations**

We set out to investigate both how rural Nigerians perceive the effects of a landfill facility, and the existence of the 'not-in-my-backyard' (NIMBY) syndrome. The empirical analysis has shown that rural Nigerians recognise the importance of solid waste management. Also, rural Nigerians are conscious of possible negative externalities from hazardous waste facilities, especially if such facilities are sited close to them. Such perceived externalities include depreciation of property values, increase in rodents and

**Table 5: Respondents perception of the effects of the Landfill.**

Impact Attributes	Impact Types	Aba-Eku		Ajibode		Total	
		No.	%	No.	%	No.	%
Values of Homes	Will go up	-	-	2	6.5	2	2.9
	Will come down	38	100	6	19.4	44	63.8
	No impact	-	-	28	74.2	23	33.3
	Total	38	100	31	100	69	100.0
Value of Farmlands	Will go up	-	-	1	3.2	1	1.4
	Will come down	38	100	6	19.2	44	63.8
	No impact	-	-	24	77.4	24	34.8
	Total	38	100	31	100	69	100.0
Number of Farmers	Will go up	2	53	-	-	2	3.6
	Will come down	36	97.7	6	19.4	42	51.8
	No impact	-	-	25	80.6	25	44.6
	Total	38	100	31	100	69	100.0
Household Income	Will go up	-	-	1	3.2	1	1.4
	Will come down	38	100	6	19.4	44	63.8
	No impact	-	-	24	77.4	24	34.8
	Total	38	100	31	100	69	100.0
Cost of Living	Will go up	22	57.9	8	25.8	30	43.5
	Will come down	16	42.1	-	-	16	23.2
	No impact	-	-	23	74.2	23	33.3
	Total	38	100	31	100	69	100.0
Rate of Crime	Will go up	30	79.0	6	19.4	36	52.2
	Will come down	8	21.0	1	14.3	9	13.0
	No impact	-	-	24	77.4	24	34.8
	Total	38	100	31	100	69	100.0
Frequency of Road Accidents	Will go up	36	97.7	4	12.9	40	58.0
	Will come down	2	5.3	1	3.2	3	4.3
	No impact	-	-	26	83.9	26	37.7
	Total	38	100	31	100	69	100.0
Number of Flies and Rodents	Will go up	36	97.7	6	19.4	42	61.0
	Will come down	2	5.3	1	3.2	3	4.2
	No impact	-	-	24	77.4	24	34.8
	Total	38	100	31	100	69	100.0
Ground Water Pollution	Will go up	37	97.4	6	19.4	43	62.3
	Will come down	1	2.6	1	3.2	2	2.9
	No impact	-	-	24	17.4	24	34.8
	Total	38	100	31	100	69	100.0

flies, pollution and traffic accidents. These results to a large extent, conform to theoretical expectations, and are consistent with previous studies in countries such as the United States, Canada and Nigeria.

The results further reveal that the NIMBY syndrome manifests itself. For example, apart from the explicit rejection of the hazardous waste facility by Aba-Eku residents, they consistently placed high premium on its adverse effects. The indifference by Ajibode respondents is an indication that since the facility is *not-in-their-backyard*, most find it difficult to appreciate the possible and probable negative externalities. The foregoing has more than anything else, clearly confirmed that perception of risks associated with sanitary landfill differs among residents, especially when they are at different locations from the landfill site. The situation is such that those who live in close proximity to the landfill site (i.e., the Aba-Eku residents), perceive greater risks and less benefits compared to those who live far away from the landfill site. Our findings equally conform to expectations.

Another important result of the study is that, while respondents of both communities differ in perception of environmental risks inherent in a hazardous waste facility, virtually all of them are unanimous in their lack of trust in government with respect to disclosure of information about the hazardous impact associated with siting a landfill facility. This probably suggests that lack of trust in government is one of the factors responsible for protest against the facility siting by Aba-Eku residents. This finding is equally not peculiar to rural Nigeria, even though hazardous waste facilities are better sited and managed in developed and a few developing countries. A major implication of the results from this study is that, future siting of hazardous facilities could become very problematic since those whose communities are expected to host the facilities are becoming familiar with the negative externalities. Given this scenario, solid waste managers may be forced to site landfills in distant rural locations from the urban centres. Consequently, additional disposal costs would have to be borne by haulage firms, which would in turn pass such costs to consumers. This development could negatively affect the willingness-to-pay for waste management services.

Perhaps what is most important is perceptible improvement in solid waste facility planning, design and management practices in metropolitan Ibadan in particular, and the country in general. Also, participatory and effective environmental impact assessment process is recommended, so that appropriate compensation packages such as water supply, health and educational facilities and agro-based industries can be used by proponents as incentives and compensations to facilitate hazardous waste facility acceptance by host communities. This is the norm in most developed countries (Olokesusi, 1995; Peele and Ellis, 1987).

Probably, the siting process in Aba-Eku could have failed if outside environmental groups and civil rights organisations had provided an alliance with the host community and exerted greater pressure on the OYSEPA. This is reminiscent of the environmental injustice being experienced by ethnic minorities in the United States as reported by the

US General Accounting Office (1983); and Mohai (1985). Much as the siting process generated mild community conflict, it is likely that the legacy left behind may be both short and long-term, especially with regard to community effectiveness, cohesion, viability and human quality of life. According to Luloff *et al.* (1996), the residues of sentiment that remain, can provide a critical backdrop for future problems within Aba-Eku community that can spill into different future issues and situations.

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