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## Residents' Assessment of the Impact of Waste Disposal System on Environmental Sustainability in Atiba Local Government Area of Oyo State

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### ABSTRACT

*The extent at which residents of Atiba Local Government Area, Oyo State assess the effectiveness of their waste disposal system and its impact on environmental sustainability were examined in this study. The survey evaluated the level of involvement of Atiba Local Government and her efforts in sustaining liveable environment. The descriptive survey research design was used for the study. A total of two hundred (200) respondents were randomly selected from the 10 wards that make up the local government area. A self-developed structured questionnaire was used as instrument to elicit response from the residents in the study area. The data collected were analysed and interpreted using the frequency count, simple percentages and chi-square analysis. It was revealed in the findings that residents in the study area assessed that there is significant impact of waste disposal system on human health, flooding, water pollution, air pollution and environmental sustainability. It was recommended that government at various levels should ensures strict compliance of people to environmental sanitation laws and regulation. This could be adequately addressed by making the necessary machineries needed for effective waste disposal available and accessible to the communities' residents.*

### INTRODUCTION

Several countries in the world, including Nigeria, have declared plans, policies and regulations regarding their environmental quality, standards and protection, and environmental laws. These laws, plans, policies and regulations were generally promulgated to safeguard the well-being of the different environments, natural (biosphere and atmosphere) and human, and the elements of air, land, water, soil and vegetation, as well as human and animal population, and their habitats and resources.

Thus, Nigerian environmental policies, regulations, programmes, plans and laws are made usually to cover wide areas. They include land use plan, solid waste management, pollution control, water and waste water management, landscape management (flood, erosion and desertification), infrastructure/facility planning and environmental awareness services. It is therefore, certain that the preparation and implementation of comprehensive policies at different scales, is one of the effective way of improving the quality of the environment.

The Federal Environmental Protection Agency (FEPA) was set up in 1983 by the Bill passes by the Nigeria Government. The agency was empowered by the law to lay down standards for the control of the Nigerian environment. It was also to protect, among other things, the public health and the enhancement of the quality of water, air, land, the biodiversity and other aspects of the environment of Nigeria. But, man all over the world and at the national levels, has so altered and exploited the natural environment to the extent that the biosphere – man's zone of abode on the surface of the Earth- has been so damaged, thereby making sustainable living a nightmare

The major concern of this study is the processes of disposal. When there is an efficient disposal system, there tend to be a reduction in the effect of these wastes on health, the environment or aesthetic. Waste disposal is defined as non – air and sewage emissions created within and disposed of by a municipality, including household garbage, commercial refuse, construction and demolition debris, dead animals, and abandoned vehicles (FEPA,2002). From an environmental perspective, the sheer magnitude of the solid waste problem in Nigeria in general is hard to comprehend. Nigeria is a nation that exemplified chronic solid waste management problems in conjunction with population growth (Onibokun & Kumuyi, 2003) Waste management plays an integral role in human activity. Not only does it involve traditional decision making about whether to bury, burn, recycle or produce less wastes, it must also consider impacts to health, society and the environment. The importance of solid waste management and disposal practices in all over community

development cannot be overemphasized. Ikuru (2002), noted that 'waste management can facilitate change as other more basic needs are fulfilled for a significant proportion of community'

Solid waste management constitutes one of the most crucial health and environmental problems facing government in developing countries (Cointrean-Levine, 1994; Zurbrugg & Rothernberger, 2006). The operational options for primary waste collection in developing countries are observed to be door-to-door collection, communal stage or bring system and house to house collection with trucks. Another identified method of disposing off wastes is through incineration. When commenting on the efficacy of constructing incinerators Lardinios (1996) emphasized that incineration of municipal solid waste is rarely economically feasible for developing countries. He explained that the high humidity of waste often requires the addition of supplemental fuels and the great diversity of waste composition between neighborhoods makes consistent and optimal operation difficult to achieve.

Solid waste disposal practices are influenced by the supply of waste disposal and other infrastructures (Cointrean, 1982). Common methods of waste disposal in most communities in Nigeria as observed by Lawal (2005) are open dumping and burning of waste in open spaces. Dumpsites are often located on swamp lands or low-lying areas with waste being used for land reclamation. The states of the dumps are seen with heaps of uncovered wastes, open burning and exposed to disease vectors and scavengers. The practice of open dumping creates adverse environmental impacts, by not only threatening the health of the people nearby but also their immediate surroundings, which in turn affects their economic and social life (Taiwo, 2006)

Another frequently used waste disposal method in Nigerian society according to Oladapo (2012) is waste burying on land. Waste is covered and buried in ground where is completely forgotten afterwards. This method has advantages of reducing odours and discouraging rats and other vermin when the waste is entirely

organic. When the waste stream has inorganic waste such as plastic, the method causes environmental implication associated with land pollution.

Waste burning is still practices in developing countries. Burning of waste is done in backyard of the houses, open spaces or in the dumpsites. The main justification of waste burning is to reduce the volume of uncovered waste (Laoye, 2006). Such practices are discouraged because besides increasing pressure on land, air and water quality, they pose threats to human (Bolaane & Ali, 2004).

The development of environmental-oriented behaviour depends on the value system people assign to themselves, to others and to fauna and flora resources. Based on the experience of our old parents who lived in remote villages, clan and compounds had the culture of keeping their environment clean, even with little or no knowledge of western education. The traditional way of life of African people especially in the rural areas is the type in which the population shares a feeling of togetherness. There is a common feeling of solidarity, reciprocity and maximum cooperation between all the social groups that is not commonly observed among the urban people (Egunyobi, 2000).

Based on the above submission, it is the interest of this researcher to delve into residents' assessment of the impact of waste disposal system on environmental sustainability in Oyo town, Oyo state. This is in recognition of the fact that the World Health Organization (WHO) has identified waste as one of the biggest challenges to the health of people in our society. One is greatly worried by the level of deplorable and degeneration of health sanitation in all nooks and crannies of Oyo township despite efforts being implemented by the government at local level to dispose waste in order to make the environment clean

### **Statement of the Problem**

Most communities in Nigeria have been battling with the challenges of environmental problems which have been attributed to the high

level of ignorance about the importance of environmental resources and peoples' lack of awareness of the implications of their actions resulting from poor environmental literacy. The problem under scrutiny in this study is residents' assessment of the impact of waste disposal system on environmental sustainability. It is no gain saying that one of the world's most pressing problems is waste disposal. When waste is not properly managed there will be environmental imbalance, implying disequilibrium between man and environment. For the development to be sustainable the by-products and effects of development should be contained and managed in such a manner that they do not compromise the possibility of further developments. Waste management in Nigeria does not seem considerate of future development.

In view of this assertion, government needs to be more active in the coordination of waste management activities. The populace as well has a responsibility to gather and collect, in a prescribed manner and place, all waste generated. There is also the need for all and sundry to voluntarily comply with laws. The wider community and regional governments should be at the forefront of good sustainable development practices. The findings in this study will help the government to improve on the waste disposal system and the necessary policies towards ensuring sustainable environment. It is equally hopeful that the study will reveal the level of awareness of people on the impact of waste disposal system on the sustainability of their environment. Thus, the need to have environmentally conscious citizens who can save the environment from disasters become inevitable.

### **Purpose of the Study**

Waste management and indeed environmental problem, has been a pressing issue in Nigeria for the Nigerian environment has been damaged in stating the obvious. Adubi, Agbanigo and Omojogberuni (2006) observed that the pace of work at changing the attitude of people towards waste among all the stakeholders does not show that

there is a problem at all. It is clear assertion that the government acting alone cannot successfully address the challenges of environmental management.

Environmental attitudes encompass beliefs, affective responses and behavioural intentions that people hold concerning environmental related activities and issues (School, 2002). To better understand environmental attitudes, the level of knowledge possessed by the population concerning the severity of environmental problems, their reaction to and their interactions with nature must be ascertained by assessing environmental awareness. Specifically, therefore, this study sought to:

1. Assess people's attitude towards waste disposal system; and
2. identify the impact of waste disposal on environmental sustainability in Atiba Local Government Area of Oyo state.

### Research Questions

1. In which areas of environmental sustainability is Atiba Local Government putting most efforts?
2. Is there any significant impact of waste disposal system on human health?
3. Is there any significant impact of waste disposal system on flooding?
4. Is there any significant impact of waste disposal system on water pollution?
5. Is there any significant impact of waste disposal system on air pollution?
6. Is there any significant impact of waste disposal system on environmental sustainability?

### METHODOLOGY

The design of the study is descriptive sample survey. The population of the study was the entire residents of Atiba Local Government Area of Oyo State. All the ten wards comprising the local government area were used with simple random sampling technique. Twenty residents from each ward both male and female, with the

minimum acquisition of secondary education in Nigerian schools were selected with purposive and systematic sampling techniques.

The instrument used for data collection was a self-developed questionnaire. The questionnaire was divided into two sections. Section A was designed to collect information on the background of the respondents that is sex, age and highest qualification. Section B is centered on the relationship between waste disposal system and human health, flooding, water pollution, air pollution and environmental sustainability. It also asked the extent to which local government of Atiba has been effectively discharging her responsibilities on environmental management /improvement. The rating covers the following areas; land, erosion, roads, sanitation, marketing sanitation, cleaning facilities. The rating technique for the relationship of waste disposal system and the environmental issues mentioned above was the Likert 4 point scale types which indicate the following;

- Strongly Agree (SA) – 4
- Agreed (A) – 3
- Disagree (D) – 2
- Strongly Disagree (SD) – 1

The rating for the extent of local government’s responsibilities on environmental management was as follows; excellent – 5, good – 4, fair – 3, poor – 2, very poor – 1. The questionnaire was constructed by the researcher, necessary and adequate corrections were made to ensure its content and face validity. The instrument was trial tested in Afijio Local Government Area of Oyo State. Split half method yielded 0.82 reliability coefficient.

### Findings and Discussions

**Research question 1: In which areas of environmental sustainability is Atiba Local Government putting most efforts?**

**Table 1: Involvement of Atiba Local Government on environment sustainability**

	N	Mean	Std. Deviation
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Land	200	15.93	3.712
Roads	200	15.69	3.451
Erosion	200	15.59	3.254
Sanitation	200	17.13	4.316
Marketing & sanitation	200	15.93	3.712
Cleaning facilities	200	15.16	3.651
<b>Total</b>	<b>1200</b>	<b>15.81</b>	<b>3.780</b>

From table 1 above, respondents' assessment shows that the mean score on sanitation is 17.13, which is the highest (17.95%). This indicates that Atiba Local Government is putting effort on sanitation for environmental sustainability while cleaning facilities takes the least with the mean score of 15.16 (15.89%). The other are erosion with the mean score of 15.59 (16.34%), road 15.69 (16.44%), land 15.93 (16.69%), while marketing and sanitation takes 15.93 (16.69%). The average mean is 15.81. this translates to 75% and suggests a high level performance by Atiba Local Government on environmental sustainability. The picture is presented in figure 1.

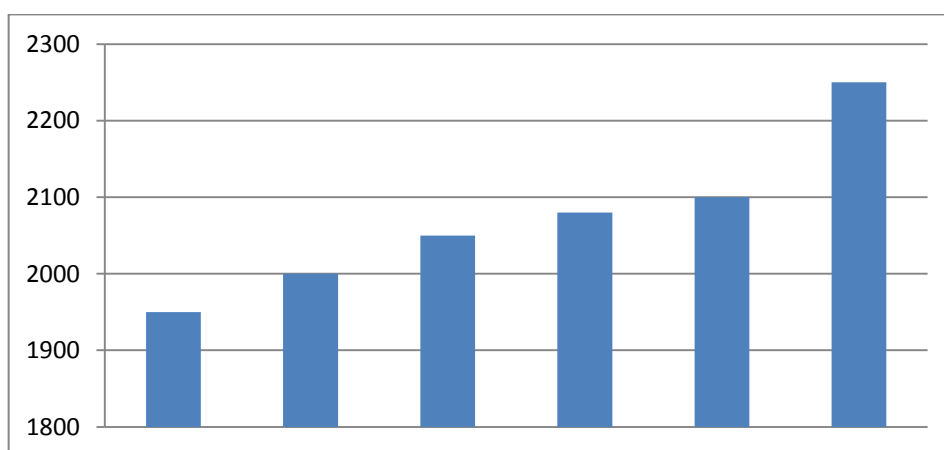


Figure 1: Bar graph showing Atiba L.G.A involvement in environmental sustainability

**Research question 2: Is there any significant impact of waste disposal system on human health?**

Table 2: Impact of waste disposal system on human health

S/N	STATEMENT	SA	A	D	SD	M	S.D
1.	Most people fall sick as	110	82	5	3	3.5	0.59



	a result of improper handling of waste generated.	(55%)	(41%)	(2.5%)	(1.5%)		
2.	Burning refuse at home, in incinerator and at dumpsites do not have much impact on human health	34 (17%)	55 (27.5%)	63 (31.5%)	48 (24%)	2.35	1.02
3.	It is necessary to be conscious of health risk whenever waste is being disposed	74 (37%)	91 (45.5%)	24 (12%)	11 (5.5%)	2.12	1.31
4.	Diseases emanated from waste may not really affect many people	34 (17%)	49 (24.5%)	54 (27%)	63 (31.5%)	2.25	1.08
5.	People living close to dump sites are at higher health risk than their counterparts living far from the area	107 (53.5%)	64 (32%)	19 (9.5%)	10 (5%)	3.31	0.85

Statement	$\chi^2$ cal	$\chi^2$ tab	Level of sig	Df	Remark
Agreed	23.87				
Disagreed	7.90				
Total	31.77	21.03	0.05	12	Significant

From the above table, the results indicate that  $\chi^2$  cal is 31.77 while  $\chi^2$  tab is 21.03 at 0.005 level of significance. It was therefore realized that there is significance impact of waste disposal system on human health.

### Research question 3: Is there any significant impact of waste disposal system on flooding?

Table 3: Impact of waste disposal system on flooding

S/N	STATEMENT	SA	A	D	SD	M	S.D
1.	It is a fact the improper waste disposal system can	63 (31.5%)	52 (26%)	41 (20.5%)	44 (22%)	2.64	1.12

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	lead to flooding						
2.	Dumping refuse into drains and gutter greatly contributed to past flooding in Oyo state	120 (60%)	56 (28%)	20 (10%)	4 (2%)	3.46	0.75
3.	Household wastes dump into drains are too small to block water ways	37 (18.5%)	36 (18%)	68 (34%)	59 (29.5%)	2.23	1.06
4.	People that dump refuse into drains are aware of its consequence but disregard it	92 (46%)	76 (38%)	22 (11%)	10 (5%)	3.25	0.84
5.	If air waste disposal system is not properly monitored, it may cause more damages to live and properties	109 (54.5%)	68 (34%)	15 (7.5%)	8 (4%)	3.36	0.79

Statement	$\chi^2$ cal	$\chi^2$ tab	Level of sig	Df	Remark
Agreed	10.77				
Disagreed	2.52				
Total	23.29	21.03	0.05	12	Significant

From the above table, it could established that the calculated value of 23.29 is greater than tabulated value of 21.03 at 5% level of significance. It was therefore realized that there is significance impact of waste disposal system on flooding.

**Research question 4: Is there any significant impact of waste disposal system on water pollution?**

S/N	STATEMENT	SA	A	D	SD	M	S.D
1.	Improper way of disposing wastes can affect quality of our water resources	110 (55%)	70 (35%)	13 (6.5%)	7 (3.5%)	3.40	0.74

2.	Most of our water bodies are now breeding places for micro-organism as a result of waste disposition	86 (43%)	92 (46%)	21 (10.5%)	1 (0.5%)	3.30	0.67
3.	There is increase in the cost of treating water for domestic and industrial use due to our waste disposal system	58 (29%)	98 (49%)	36 (18%)	8 (4%)	3.03	0.79
4.	Increase in water borne disease has nothing to do with waste disposal system	43 (21.5%)	40 (20%)	50 (25%)	67 (33.5%)	1.67	1.16
5.	Dump sites can cause a great damage through pollution to ground water resource	77 (38.5%)	90 (55%)	27 (13.5%)	6 (3%)	3.18	0.78

**Table 4: Assessing respondents' opinions on impact of waste disposal system on water pollution**

Statement	$\chi^2$ cal	$\chi^2$ tab	Level of sig	Df	Remark
Agreed	20.6				
Disagreed	41.9				
Total	62.5	21.03	0.05	12	Significant

Consequent upon the result from the table above in which  $\chi^2$  cal value of 62.5 is greater than  $\chi^2$  tab value of 21.03 at 5% level of significance, it is concluded that there is significant impact of waste disposal system on water pollution as it relates to public submission.

**Research question 5: Is there any significant impact of waste disposal system on air pollution?**

**Table 5: Respondents' opinion about impact of wastes on air pollution**

S/N	STATEMENT	SA	A	D	SD	M	S.D
1.	Carting away wastes from market place and houses by	79 (39.5%)	92 (46%)	25 (12.5%)	4 (2%)	3.20	0.73

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	trucks to dump site do pollute air						
2.	The atmosphere is not really polluted when refuse are burnt in open, it is therefore permissible	28 (14%)	73 (36.5%)	62 (31%)	37 (18.5%)	2.44	0.94
3.	Communities around dumpsites are at greater risks of air pollution through inhalation of unhygienic stinking odours	118 (59%)	73 (36.5%)	5 (2.5%)	4 (2%)	3.50	0.63
4.	A lot of toxic materials are released to the atmosphere when waste materials are piled up in open spaces	86 (43%)	90 (45%)	20 (10%)	2 (2%)	3.29	0.72
5.	Pollution of the atmosphere will be greatly reduced if our waste disposal system is properly carried out with theconsciousness of the environment.	107 (53.5%)	77 (38.5%)	10 (5%)	6 (3%)	3.39	0.72

Statement	$\chi^2$ cal	$\chi^2$ tab	Level of sig	Df	Remark
Agreed	36.43				
Disagreed	9.23				
Total	45.69	21.03	0.05	12	Significant

The above table revealed that the calculated chi-square value of 45.69 is greater than the tabulated chi-square value of 21.03 at 5% level of significance with degree of freedom of 12. It is therefore affirm that there is significance impact of waste disposal system on air pollution.

**Research question 6: Is there any significant impact of waste disposal system on environmental sustainability?**

**Table 6: People's response to impact of waste disposal system on environmental sustainability**

S/N	STATEMENT	SA	A	D	SD	M	S.D
1.	Refuse burning at dump site can contribute to high temperature in the environment	75 (37.5%)	74 (37%)	43 (21.5%)	8 (4%)	3.05	0.86
2.	Some valuable natural resources are destroyed in areas where dump sites are located	51 (25.5%)	106 (53%)	40 (20%)	3 (1.5%)	3.00	0.71
3.	Improper waste management has contributed to making the aquatics habitat unsafe for aquatic lives	79 (39.5%)	85 (42.5%)	31 (15.5%)	5 (2.5%)	3.14	0.76
4.	Hygienic water has become a scarce commodity in the environment as a result of improper waste management	86 (43%)	72 (36%)	33 (16.5%)	9 (4.5%)	3.16	0.84
5.	Human beings have become susceptible to diseases due to our wrong attitude to waste disposal	95 (47.5%)	79 (39.5)	22 (11%)	4 (2%)	3.29	0.75

Statement	$\chi^2$ cal	$\chi^2$ tab	Level of sig	Df	Remark
Agreed	21.10				
Disagreed	3.62				
Total	24.72	21.03	0.05	12	Significant

It is evidence from the above table that  $\chi^2$  calculated value of 24.72 is greater than the  $\chi^2$  table value of 21.03 at 5% level of significance with a degree of freedom of 12. One can therefore affirm that there is significance impact of waste disposal system environmental sustainability in line with people's response on the issue.

## DISCUSSION

The result arrived at in this study are summarized and remarked as follows; Atiba local government area of oyo state is putting more effort on sanitation in environmental sustainability. The reason may be due to the fact that Atiba Local Government occupies a very large area and highly populated. A larger percentage of the area covered are not well planned with vast majority of the populace either illiterates or semi-illiterate hence their low attitude towards environmental sanitation. It is pertinent to note that the attitude of the local government was in line with Laurent (2004) that reveals that the attitude of people in the indigenous area towards waste generation and management is generally low. This is due to illiteracy, poverty, lack of basic health education, inadequate environmental education and inability of traditional communities to catch up with fast urbanization.

There is, therefore, the need to put in place appropriate refuse disposal mechanism across the land. It is also in line with Benedict (2005) who opines that increased ecological awareness and promotion of healthy environment are concomitant to sustainable environment. At this juncture a panoramic view of man's unwholesome attitude towards environment vis-a vis man's impact on the environment coupled with resultant effects of such becomes pertinent here. There is the need to improve on the current conservative policy option with regard to public education.

The result of the finding shows that there is significant impact of waste disposal system on human health. It clearly indicate that majority of the residents of Atibal Local Government Area rightly adjudged that there is a strong relationship between the ways and manner our waste are being disposed and it relative impact on the

health of human being who constitute part of the environment. The central place of the environment to man's survival needs no emphasis. The finding is in line with the submission of Oyewale (2015) revealing that the quality of human environment has a direct impact on people's health and their quality of life. Human's life relies on the environment for survival because every act of living utilizes one resource or the other from the environment either for basic living exercises or as an input of production.

This research work equally revealed based on the field survey that there is significant impact of waste disposal system on flooding. Patridge (2000) corroborated this finding in his work on Latin America and the Caribbean when he concluded that accumulation of waste along streets is enough to clog drains and cause localized flooding. By implication, this result is revealing that majority of the respondents in the study area are of the opinion that waste disposal system can threaten the sustainability of the environment through flooding.

It was realized in this finding that there is significant impact of waste disposal system on water pollution. The respondents believed that the way waste is handled greatly affects the quality of water available for both domestic and industrial use. A community that cannot provide good water for its inhabitant will not be able to sustain such inhabitants thus making it inhabitable.

Based on finding, answer to research question 5 state that there is significant impact of waste disposal system on air pollution. The respondent believed that the high rate of the pollution of air is strongly associated with our waste disposal system. It is an undisputable fact that burning creates thick smoke that contains carbon monoxide and nitrogen oxide that are hazardous to human health and generally degrade environmental air quality. The main justification for waste burning is to reduce the volume of uncovered waste. Burning of waste is done in backyard of the houses, open space or in the dump site. Such practices are discouraged because besides increasing pressure on

land, air and water quality, they pose threats to human life (World Bank, 1999).

On final analysis, this finding revealed that there is significant impact of waste disposal system on environmental sustainability. Environmental problems are a reality in today's culture that cannot be ignored. Researchers such as Brunner (2006), Onibokun and Kumuyi (2003) advocated that education is the key to reaching environmental sustainability. In this instance, sustainability is defined as developing way of human living that will ensure an enduring and sufficient level of support from the earth's resources. Environment management for sustainable development refers to sustainable use of environmental resources if possible through maintenance of regenerative capacity of renewable resources and avoidance of excessive pollution, which could threaten water assimilation capacities and life supporting system of the biosphere, and waste reduction (Subbotina, 2004)

## CONCLUSION AND RECOMMENDATIONS

Sustainability of an environment calls for the efficient management of the environment and its resources, and efficient management of the environment includes; among other things, informed and effective practice of generation and disposal of waste, in both public and private premises. This is because human survival does not only depend on the preservation of the scarce life-sustaining resources for future generation, but also on adequate disposal of waste created by living in a mass-consumption society. A healthy and beautiful environment is not a luxury but a basic human need both materially and non-materially.

Concern for the environment is not an innate attribute, rather sensitivity towards the environment is developed through nurturing role models, education and life experience. Due to the dynamic of the society, planet is in need of an environmentally aware and concerned populace to make important, informed decisions about the future of natural resources.



Many reasons have been adduced as to how human kind in general, has found itself burdened by myriad of environmental problems. Among them are poor planning, haphazard execution, the general treatment of resources as gift of nature with no value in exchange rather than as productive assets, and the notion that the world outside is a free garbage dump. The trend cannot simply continue and mankind has come to realize that fact. But the need to put each notion on a path that is equitable, environmentally sound and sustainable demand global, regional and local initiatives and commitments on practical strategies and action plans to be developed and implemented.

In view of the above submission the researcher of this work therefore presents the following recommendations;

- i. In the light of the fact that people are fully aware of the impact of waste disposal system on environmental sustainability, the indiscriminate waste dumping should be tackled by re-engineering the sanitary inspection units at the local level, which should be adequately staffed, remunerated and equipped to enforce compliance to relevant environmental sanitation laws and regulations.
- ii. There should be a continuous orientation programme on the danger of people's neglect of their awareness of the impact of waste disposal system on environmental sustainability.
- iii. The government should always endeavour to make machineries needed for waste disposal available and accessible to the people.
- iv. Local authorities should be fully prepared to take over the responsibility for the collection and disposal of domestic waste within individual localities and should be supported by the federal and state governments with adequate funding

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