



**INFORMATION DISSEMINATION STRATEGIES AND
SUSTAINABLE SOLID WASTE MANAGEMENT IN
EMERGING URBAN CENTRES IN NIGERIA. A CASE STUDY
OF UYO CAPITAL CITY DEVELOPMENT, AUTHORITY,
AKWA IBOM STATE SOUTH-SOUTH NIGERIA.**

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ABSTRACT

Solid waste Management has been a serious problem in urban centers in Nigeria. This is generally attributed to low level of awareness and information backwardness. This study therefore examines the role of information dissemination on the management of sustainable solid waste. A survey design was therefore adopted for this study. The population comprised all the residents of the Six Local Government areas that make up uyo capital city development area. Stratified and random sampling techniques were used to select a sample of 1000 respondents that were used for the study. Instrument for data collection was structured questionnaire and Pearson Movement Correlation was used for data analysis. The study revealed that there is a significant influence of effective dissemination of environmental information on efficient solid waste management and a significant relationship between residents' awareness of environmental challenges and their participation in sustainable solid waste management. It was therefore recommended among others that different information dissemination strategies and channels like TV programmes, radios, newspapers, jingles, posters and campaigns using local dialects should be used to bring home the importance of environmental friendly economic activities to residents.

KEYWORDS: Information Dissemination, Strategies, Sustainable, Solid Waste, Urban Centers.

INTRODUCTION:

Various governments in the past ventured unsuccessfully to manage solid wastes and realized that factors contributing to failure are social, cultural, economic and technological. Nigerian solid wastes which is

generated at the rate of about 0.43kg per person per day is rich in organic matter amounting to between 60 and 80 percent. Other prominent components are scrap metal and plastics including thin films. All other components such as glass, paper, grit and others are minor components and accounts for the rest of the wastes. Integrated waste management is in vogue globally. Effective participation of the citizenry is generally accepted as an ingredient in the success of programmes designed to improve their lifestyles, welfare and well-being. Such participation is found to be low among the urban dwellers in Nigeria especially as it affects solid waste. It is an undisputable fact that mitigating environmental degradation through effective information dissemination strategy is an issue that needs to be addressed. Solid Waste Management has been a major challenge in nearly all Urban Centers of the developing worlds in general and in Nigeria in recent years. This is more so as Solid Waste generation has consistently expanded both in volume and complexity because of growing businesses, various socio-economic activities, and increased human population, industrialization, technological advancement, changing life styles, economic activities and consumption patterns. It appears these developments have not been matched by adequate provision of funds and policy direction of how to sustainable manage the waste so generated. Through the wasteful production, underutilization and poor preservation technologies and systems in Nigeria and other emerging economics, colossal number of Wastes are generated and unscientifically disposed in all nooks and crannies of our cities and Urban Centers. The resultant effect is water, air, land pollution and various forms of environmental decays and degradation. Consequently, we observe all manners of Wastes-clog drainages, litter streets, highways, public places and in fact most-open places in Nigeria,

Akpan Atata (2019), Odusote (2019) and Ogundele and Ladele (2020). As opined by Odusote (2019) Nigeria's Solid waste management is characterized by inefficient collection methods, low coverage of the collection systems and improper disposal. The common constraint faced by the environmental agencies includes insufficient information on quantity and composition of wastes, insufficient financial resources and inappropriate technology which hinders the achievement of sustainable and effective Solid wastes management in Nigeria.

It is against this backdrop that most states of the federation are beginning to be more conscious of the essence of policy instruments aimed at prolonging the longevity and cleansing of the environment. One of such policy instruments is the adoption of various information disseminate strategies to create citizens awareness and gives directions on modern ways of solid waste management Information according to Evans (1992) forms the major base on which the growth of knowledge and so much else depends. While Dike (2009) argues that the ability to access, evaluate, and use information from a variety of sources is essential for any meaningful change to take place. In the same vein, Ogunombi and Sarim (2009), observed that no meaningful development can be achieved without appropriate information especially as information now being and agent of change and factor of production.

Waste management and environmental sustainability and information have in the past been treated as mutually unconnected themes with environmental issues seen as an exclusive area for Environmentalists, Geographers and Educationists, and information being limited to librarians and other information practitioners. But the recent increasing interest of improving a fragile and depreciating environment and to curb the menace which this has exerted on our urban centers has prompted the Concern. Because as noted by Sinha, and Choudhang (2008) though man have excelled in technological, economic and cultural achievements, but for achieving sustainability, it requires that man should understand human beings as ecological entities because whatever challenges we have today are intended or unintended consequences of human decisions and the ensuing activities. It has now been accepted that environmental management is multi-disciplinary and anchored on principle 22 of the RIO declaration which states that indigenous people and their communities and other local communities have vital roles to play in environmental management and development because of their knowledge and traditional practices (Okoye, 2007). In short; the present depreciating environment has called for the concern of the humans to be cautious with its relationship to its environment.

Information, according to Popoola (2002), is a strategic resource for virtually any person, organization or establishment; be it public or private and valued at par with its human, financial and its material resources and is becoming a fourth factor of Production. To Aiyepoku (1992), Information can be equated with capital, labour and materials. Thus, information is seen as a resource that can liberate man. Aina (2004) refers to information as factors and Opinions provided and received during the course of life. A person using such factor generates more information some of which is communicated to others during discussions on radio and TV programmes, news, websites and internet services. Etim (2010) noted that most Information users need information for problem solving, current awareness services and even recreational purposes. According to this Author, the realization of the importance of Information by men to his development is becoming more meaningful to him/her as his/her information accumulation, dissemination and utilization abilities are taking new dimensions with the development of diverse and sometimes sophisticated information dissemination strategies.

Thus, if information can liberate man, its lack or inaccessibility can also inhibit man. Accessibility to the right information is necessary for the general well-being of the individual, institutions and organization. As such urban dwellers need information on multiplicity of issues that boarder around their daily existence. As a matter of fact, information is vital to the daily Life of Urban dwellers as it is an essential part of the economy of the nation.

LITERATURE REVIEW

Conceptual Framework: Solid waste management is a complex process involving steps as shown in fig. 1 below.

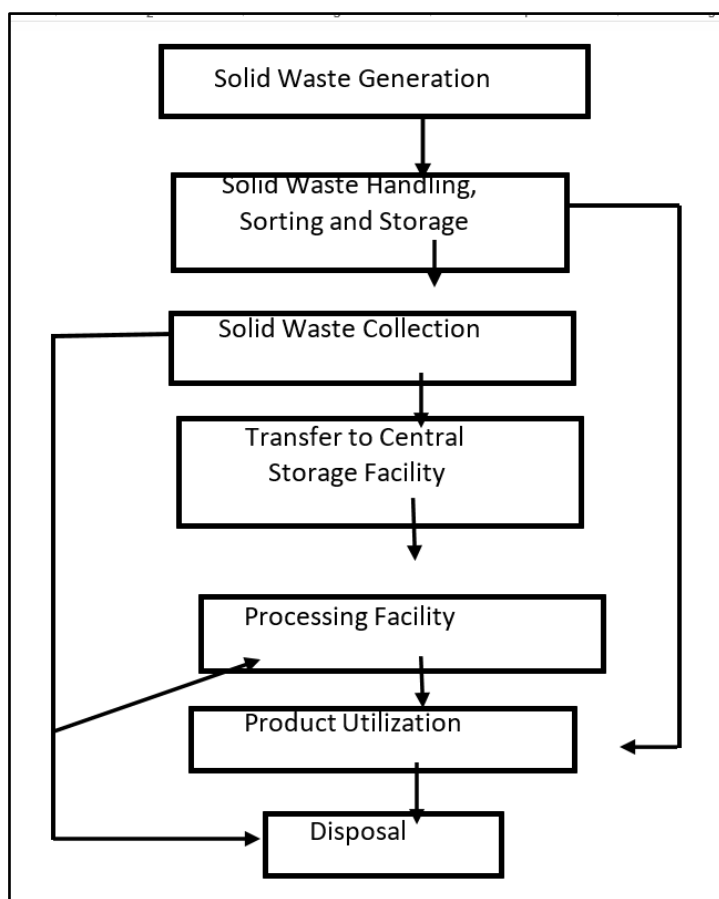


Fig. I: Elements of a Solid Waste Management System in Nigeria

The first step in solid waste management is the generation of waste. Sources of waste generated say in manufacturing industries are office premises, production, packaging and storage sections. The generated waste may be processed through the handling, separation or sorting and storage steps which enhance the application of the major 4Rs for effective disposal at the landfills. This step may also employ the public enlightenment approach and dissemination of information about relevant laws in waste handling, storage and recycling processes.

Waste collection involves picking up of solid wastes, recyclable materials from industries and emptying containers into suitable vehicles for transport and collection of recyclable materials. The collected waste can be transferred to a central storage facility or a processing facility. If processes occur, they usually include mass and volume reduction along with separation into various components that can be reused. The final steps include transport and disposal. The only means of final disposal is Land filling.

National Solid Waste Management Policy: In Nigeria, the policy which was formulated in collaboration with United Nations Industrial Development Organization (UNIDO) and other environmental professionals aimed at addressing indiscriminate disposal of solid waste in

Nigeria. It was designed to act as a guide for efficient and sustainable management of solid waste in the country. Some of the objectives of the policy according to Odusote (2019) are to;

- a. Develop an integrated, coordinated, environmentally sound, efficient, safe and economically sustainable solid waste management system.
- b. Provide a national direction on solid waste management for the federal, state, local governments, private sector and all stakeholders.
- c. Promote a healthy environment by ensuring proper sanitation and sound solid waste management system.
- d. Provide the necessary guidance to the decision makers regarding preferred waste management options and practices in line with best practices and waste management system.
- e. Establish an institutional frame work capable of ensuring an efficient waste management system.
- f. Provide a basis for an integrated waste management by-law to regulate waste generation and waste management service delivery.
- g. Ensure safe disposal of domestic, commercial and industrial waste in order to adequately protect public health during and after collection, transportation, treatment and final disposal.
- h. Create an enabling environment for waste minimization, sourcing at source, reuse, recycling and conversion to energy through incentives and/or disincentives including direct or indirect tariffs, rebates or other mechanisms.
- I. Facilitate cost recovery in waste management investment and ensure project replication and sustainability.
- j. Maintain adequate and regular waste management services at affordable cost.
- k. Ensure that private and commercial waste management services are provided in accordance with all relevant regulatory requirements.

To implement the policy the following laws and regulations have been made on waste management in Nigeria.

- i) National policy on Environment 1999, revised in 2016.
- ii) National policy of Sanitation, 2005.
- iii) National policy on chemical management, 2010.
- iv) Guidance manual on the management of waste from nuclear applications in Nigeria, 2004.
- v) National policy on Municipal & Agricultural waste management, 2012 (Draft).
- vi) Import prohibition act CAP 13 LFN 2004.
- vii) Environmental Impact Assessment Act of 1992.

- viii) Harmful waste (special criminal provisions) Act CAP HI LFN 2004.
- ix) National Environmental protection (pollution Abatement in industries and facilities generating wastes) Regulations S.I.9 of 1991.
- x) The National Environmental Protection Management Regulations S.I.15 of 1991.
- xi) National Environmental (sanitation and wastes control) Regulation S.I. 28 of 2009.
- xii) National Environmental (Food, Beverages and Tobacco sector) Regulation, S.I. No. 33 of 2009; xiii) National Environmental (chemicals, pharmaceuticals, soap and detergent manufacturing industries) Regulations, S.I. No. 36 of 2009;
- xiii) National Environmental (Domestic and Industrial plastic, Rubber and foam sector) Regulations, S.I. No. 17 of 2011;
- xiv) National environmental (Construction Sector) Regulations, S.I. No.19 of 2011;
- xv) National Environmental (electrical/Electronic sector) Regulations, S.I. No. 23 of 2011.
- xvi) National environmental (Base Metal, Iron and steel manufacturing/recycling industries sector) Regulations, 2011.
- xvii) Technical Guidance Manual for Disposal of Hazardous waste and impounded goods, 2010, Odusote, (2019)

Empirical Review:

There have been studies about the impact of Information on different user groups and professionals. Akpan Atata (2013) found that information needs and usage often reflect the age and changing Socio-economic, health, family, education and even personal circumstances of people and is therefore not permanent but ever changing. Etim (2010) opined that lack of information and its infrastructure perpetuates inequality of opportunities and puts people's lives needlessly at risk and adversely affects economic activities. While Poopola (2002) noted that the spectacular developments that have taken place in electronics and broadcasting have ushered in the most significant period of social change since the invention of printing press which was the basis for industrial revolution.

Odufuwa (2005), Ogudele and Ladele (2020) observed that environmental degradation and unscientific solid waste disposal has three damaging effects; these include harms on human health, retard economic productivity and loss of life sustaining amenities. The resultant effect is the health of hundreds of millions of people that all are threatened by contaminated drinking water, air particles and smoky indoor and outdoor air, soil pollution and degradation. Oyebede (2013), Opined that poor drainage of waste water and storm proliferation of ponds; that leads to habitats of mosquito vectors of various diseases including malaria. In support Ogunde and Ladele (2019) observed that lack of waste management facilities do also cause high health risks.

Ogundele and Ladele (2020) noted that one of the factors responsible for increasing solid waste in a rapidly growing urban area is population growth. Observing that poor management of solid waste and similar wastes generated from Urban areas can and do have direct impact, on public health and the environment concluding that there appears to be no corresponding planning and creation of awareness in relation to increase population dynamics. This again leads to many problems of sanitation and despite government efforts in providing waste collectors the whole exercise seems hindered by poor waste management techniques and poor disposal methods. The resultant effect is dumping of solid waste, flooding and proliferation of ponds, all types of pollution; air, soil, water etc.

Policy makers therefore set up priority policies like sanitary inspectors of the 1990s and of recent targeted information dissemination strategies: radio and television jingles and bill boards to intimate the citizen of the need for environmental health and solid waste management; though according to findings, these strategies have been largely limited by paucity of real technical data and research information on the environmental management of waste resources, Areda (2001) and Odusote (2019). This therefore implies that solid waste management policy has never been viewed in a systematic or holistic manner in Nigeria. Thus; its adoption approaches reveal the weakness of official planning machinery and often times the lack of political will and honesty of purpose (Areola 2001) and (Akpan-Atata 2013).

In Nigerian Society, sustainable solid waste management through effective information dissemination has to contend with traditions and customs which are patently antiethical to modern scientific oriented precepts of environmental management especially waste disposal and management of solid waste, Danes and Grove (2001, Ahmed; Nathaniel and Shaba 2016).

Odigie (2005), Ekeocha (2020 and 2021) in their findings while confirming that environmental pollution in general and solid waste disposal has a direct adverse effect on human health and threatens amenities, upon which economic and social wellbeing of the inhabitants are based, concluded that environmental injury by its nature can hardly be adequately compensated by monetary rewards as it is often permanent or at least of long duration. The authors opined that to create awareness through liberalization of information by public enlightenment should be the main policy of environmental protection agencies concerning solid waste disposal at all levels of government in Nigeria, emphasizing that awareness of and properly packaging and dissemination of information will enhance the knowledge that is crucial to the living standard of the citizenry. Busari (2005) in his findings observed that the nature and degree of damage done to the environment vary according to and is dependent on the prevailing physical, technological, cultural and political circumstances. Sustainable development can only be achieved through the developing and promotion of policies, methodologies and instruments to increase people's awareness and catalyze action in order to ensure the integration of environmental concerns socio- economic development among the people.

Ahmed et.al (2016) have found out that improving environmental solid waste management conditions in emerging urban centers depends on increasing the efficiency of information dissemination and in turn depends on training and knowledge and skill development and creating favorable information for a successful living. This is in support of an earlier study of Agade and Agade (2004) in their study of solid waste management in South Western Nigeria, who concluded that a major step toward controlling pollution, effective waste and environmental management is to raise public awareness through effective information dissemination strategies, not only on the importance of health environment but also on the mechanism of controlling generation of waste and alternative disposal system.

STATEMENT OF PROBLEM

The Uyo capital city Development Area Authority which also serves as the central business district is noted for sole and cooperate proprietorships. Being a state capital most if not all government establishment are located there. Due to sprouting other businesses establishment and the proximity of International Airport many fast food and restaurants, big or small enterprises continue to rise all over the major streets and highways thereby generating more solid wastes, motor services such as air conditioning, electrical, vulcanizing, mechanical, vehicle repairs are located in various corners of the area apart from the central mechanic village and they provide a lot of waste.

Construction sites, asphalt sites supply software outlets and hard ware are also abound with increase economic prosperity thereby increasing Solid Waste challenges. Entertainment businesses, like the Ibom Five Star Hotels, Ibom Tropicana entertainment centre and other hotels abound.

Fabrication plant, welding, glass cutting, aluminum fabrication, iron works all have their registered effect of solid waste contamination in the environment. Also; construction of residential homes, offices and other services as products offered such as medical, dental, beauty parlors, cycle transportation, sachet and bottled water, bakery products, fuel and gas are among other significant business that generate a lot of solid waste.

From the above observations, the Nigerian environment especially the urban centers face lots of environment problems. Just recently, the Nigerian Environmental Study Team (NEST) has described the Nigeria environment as “threatened”. This can be particularly attributed to an increased population and dynamic economic activities coupled with irrational human behavior of dumping refuse like empty cans, polythene bags and others at drainages. In Uyo capital city development area especially around the major markets, of Akpan Ndem, Itam, Ikot Oku Ikono, Afaha, Ewet, UruaOkpokpo, Ikot Oku Ubo and other smaller markets along Aka Etinan and Oron roads etc. more waste have been generated and carelessly dumped, thus creating unpleasant environment. The resultant effect is soil degradation, pollution, annual flood, sheet/gully erosion. It is also disgusting to observe that these areas are characterized by mass

littering of solid waste aggravating to the extent that mountains of heaps of waste now adorn the road and market sides despite the provisions of waste pans and dumps. This reckless dumping of waste can be attributed to the fact that invariably the dwellers do not seem to appreciate the adverse health, social and economic consequences of their activities. For a state wishing to avoid these consequences, comprehensive information packaging, repackaging and enlightenment is highly advocated. It is only the provision of adequate information which seeks to strike a balance between conservation, sustainability and ecological environmental exploitation and protection. Thus, Akpan-Atata (2008) linked proper information dissemination strategies with positive public concern for the quality of urban environment. In this case, the concept becomes perceived as a policy aimed at the provision of acquisition and utilization of proper information for the prevention of environmental ugliness and pollution. This study therefore, seeks to investigate the role of adequate provision and utilization of environmental information plays in the efforts to improve citizen participation in solid waste management in Uyo capital city development area of Akwa-Ibom State south-south Nigeria.

OBJECTIVES OF THE STUDY

This study aims to investigate the influence of environmental information dissemination on effective solid waste management in Uyo capital city development area. The study specially aimed at identifying various impacts of environmental information dissemination and their influences of creating awareness and thereby enhancing resident's management of their solid waste and their environment.

HYPOTHESIS

The following two null hypotheses were formulated and tested to guide the study.

NULL I: There is no significant relationship between dissemination of environmental information and enhanced solid waste management in Uyo capital city development area.

NULL II: There is no significant relationship between residence awareness of environmental challenges and participation in solid wastes management in Uyo capital city development area.

RESEARCH METHODOLOGY

DATA COLLECTION

1,000 questionnaires were distributed, out of which 835 were returned. Again only 600 were selected for use as the rest were either returned unfilled, wrongly filled or mutilated to serve any useful purpose.

The structured questionnaire called Information Dissemination and Solid Wastes Management Questionnaire (IDSWMQ) with opened and closed ended questions was used. The questionnaire sought to obtain information about environmental management in general. It also sought to obtain information on ways of storage, collection and disposal of solid waste. How

and where information is obtained. The level of satisfaction or dissatisfaction with dissemination of environmental information, the regularity of information and role of government agencies and regularity of refuse collection control.

DATA ANALYSIS

Null I: The null hypothesis states that: There is no significant relationship between dissemination of environmental information and enhanced solid waste management in Uyo capital city development area.

TABLE I: Pearson Correlation on Relationship between Dissemination of Environmental information and solid waste Management.

Effective Dissemination of Env. Information.	N	R	F	R	Remark
Enhanced solid waste Mgt	600	0.726	<0.05	0.05	Sign

Table 1 above shows that at 0.05 alpha level $r = 0.621$ and $P < 0.05$. Since the value of r is greater and significant the null hypothesis is rejected. This means that there is a significant relationship between effective dissemination of environmental information and solid waste management in Uyo capital city development area.

NULL II: The null hypothesis states that: There is no significant relationship between resident awareness of environmental challenges and their participation in solid waste management in Uyo capital city development area.

Table 2: Pearson correlation on resident awareness of environmental challenges and their participation in solid waste management.

Variable	B	R	P	R	Remarks
Awareness of Envir. challenges	60	0.72	0.11	0.0	Sign
Participation in solid wastes management	0	6	5	5	

From Table 2 above shows that at 0.05 level of $r = 0.726$ and $P < 0.05$ since the value of ' r ' is greater than p , the null hypothesis is rejected. This therefore means that there exist a significant relationship between resident awareness of environmental challenges and their participation in solid waste management.

DISCUSSION OF FINDINGS

The data analysis in Table 1 shows that there is a significant relationship between effective dissemination of environmental information and solid wastes management by residents of Uyo

capital city development area. This is in support of Busari (2005) findings that the general public could be better educated and informed about environmental activities which constitute misuse of the environment through enlightenment programmes on the electronic and print media, debate and symposia. The findings of this study is also in line with Dienne and Dienne (2007) that effective and efficient dissemination of environmental information is first step to Nigerian environmental problems through education equips with knowledge to be more conscious of environmental problems and challenges. According to Odigie (2005) the link between adequate dissemination of environmental information and proper environment management is so strong that without informing or educating residents, environmental problems would not only thrive among the people, it would receive enough support to destroy the very existence of humanity. According to the researcher, for instance the effect of urbanization such as unsightly and unhygienic disposal of refuses in large urban centers and sewage leakages can and do lead to health hazards and flooding in cities. It may also lead to other ecological disasters. Nevertheless, through appropriate dissemination of environmental information appropriate laws and policy formulation sustainability can be obtained. Sridhar 2012 observed that providing and utilizing information on the appropriate methods and technologies for the treatment, reuse, recycle of solid wastes as well as the recovering of valuable products from wastes and establishing an early warning system for the identification of potential wastes disposal hazards should be effectively disseminated to avoid solid wastes crises in our urban centers.

Findings from Table 2 also revealed that there is a significant relationship between resident awareness of environmental challenges and their participation in environmental management, especially solid waste management. This is in line with Adekola (2005) finding which identified inadequate knowledge as one of the hindrances achieving people's participation in environmental sanitation in Lagos. Odigie (2005) in support opined that environment protection agencies at Federal and state levels appear to be in a slumber, ignoring one of their primary responsibilities to create awareness through public enlightenment programs. Their presence is being felt only on pages of newspapers without any visible pragmatic measures to impact on the people. According to this finding, awareness if properly created and disseminated will enhance knowledge that is crucial to our living standard concluding that "knowledge is crucial for development and because everything we do depends on knowledge. And if we want to raise our living standard as a household or on a country and improve our health, better educate our people and preserve our common environment that takes knowledge".

In support, Busari (2005) similarly opined that for any problem to be solved, it must first be recognized, assessed at its enormity fully understood and appreciated. According to the author, participation as a development tool is a process of playing active though not necessarily direct role in community decision. Thus, Okonmah (2003) linked proper creation of awareness with public concern for the quality of urban environment. In this case it became perceived as a project aimed at the acquisition of proper knowledge for the prevention of environment ugliness and

pollution. Concluding that, adequate awareness seeks to strike a balance between the recklessness of dumping of waste to avoid the consequences. Thus proper provision of environmental awareness information is seen as a modifying value for environmental management in our city centers.

In order to sustain the environment for the future, those economic activities engaged in by man to produce livelihood for them and to improve his life must be done utmost caution. This can only be achieved through proper information dissemination to create awareness, interest and attitude to find solutions to challenges facing humanity.

CONCLUSIONS

This study reveals that enhancing effective solid waste management in our environment is achieved through articulated and sustained development and promotion of information policies, methodologies and instruments that harnesses people's awareness and catalyst actions on their own. Similarly, for efficient solid waste management to be achieved, information production processes, products and services must be oriented towards the achievement of the same goals. The citizenry should be made fully aware that their economic life could be improved without much damage to their environment. This is more so as the research shows that low compliant with applicable environmental laws is as a result of ignorance on the part of most of the residence. Based on these, the following recommendations are made.

RECOMMENDATIONS

While open dumping of solid waste is practiced all over the country, efforts by the federal government to ensure valuable methods for hygiene disposal and legislation have not been widely disseminated. Segregation and recycling, in incineration, composting and waste to energy conversion is one option that could be adopted.

Although recycling is regularly carried out by the private sector or informal sector, it has not been brought into the mainstream of waste management by government.

As some commercial activities that are inherently associated with environmental pollution and inimical to the convenience of urban dwellers are carried out without much knowledge; the general public should be enlightened about the implication of utility and proper management of the environment.

Enforcement and monitoring department of town planning authorities and environmental protection agencies should be adequately funded and equipped with trained personnel to handle information dissemination.

Information gate keepers: market women leaders, religious leaders, youth leaders, women organization leaders should be trained in the act of disseminating and management of environmental information especially on solid waste disposal.

Existing laws and regulations should be strengthened and where necessary, appropriate new ones should be enacted and the machinery for their enforcement provided that would prevent environmental pollution.

Finally effective public enlightenment campaigns using much tested information dissemination like television, radios, programmes, jingles, posters and newspapers about environmental management should be vigorously pursued and sustained.

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