



## Influence of Environmental Education Programmes on Solid Waste Management among Residents of Port Harcourt Metropolis, Rivers State

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### ABSTRACT

The study examined the influence of environmental education programmes on solid waste management among residents in Port Harcourt Metropolis, Rivers State. The study was guided by three objectives from which three research questions and null hypotheses were derived. The study was anchored on Protection Motivation Theory (PMT). The study adopted the descriptive survey design with a population of 2,500 stakeholders in solid waste management in Rivers State. Out of which 550 respondents were sampled using the proportionate stratified sampling technique. The instrument for data collection a self-designed questionnaire titled "Influence of Environmental Education Programmes on Proper Solid Waste Management Questionnaire". The instrument was validated by three experts. The reliability of the instrument was established using the Cronbach Alpha method. A cumulative reliability index of 0.73 was obtained. Data collected for this study were analyzed using the mean statistics, standard deviation and T-test statistics. Findings of the study revealed that health literacy, pollution education and climate change education programmes enhance proper solid waste management among residents in Port Harcourt Metropolis, Rivers State to a high extent. Based on the findings of the study, it was recommended among others that the Rivers State Waste Management Agency should partner with the Ministry of Health to organize periodic health literacy programmes to educate residents on the impact of improper waste disposal on their health. This will lead to better waste management practices among residents.

**Keywords:** Environmental Education, Solid Waste,

### Introduction

Waste includes all items that people no longer have any use for, which they either intend to get rid of or have already discarded. Many items can be considered as waste example, household rubbish, sewage sludge, wastes from manufacturing activities, packaging items, discarded cars, old televisions, garden waste, old paint containers (European Environment Agency, 2013). Therefore, all our daily activities can give rise to a large variety of different waste arising from different source. Many scholars through different empirical studies have established that waste disposal and management is very poor in most municipal cities in developing countries. Nguyen Matsui and Fujiwara (2011) observed that many cities in developing countries face serious environmental degradation and health risks due to poor municipal solid waste management system. Awuah (2018) observed that waste collection systems such as communal container collection methods (waste bins) appear most dominant in many nations and that this kind of waste collection system are provided at designated points within neighborhoods for households to drop-off their solid waste, after it is expected that trash collectors will use their trash collection vehicles to empty the container (waste bin) and then onward to a designated dump site, where the waste are trashed either by incineration or burning. Awuah (2018) further explained that this trash collection method is surrounded with several difficulties because most of the time the wastes end up not being collected by the authorized waste collectors, thereby leading to overflow of waste and ground dumping at collection sites. Places where wastes are left to overflow are usually accompanied with serious air pollution due to stench that ooze out of the rotten and decayed waste.

In Nigeria, solid waste (household) disposal has become one of the fundamental national problems despite environmental sanitation programmes and policies adopted by the government at various levels to manage it. Most states in Nigeria set aside either first Saturday or last Saturday of every month as monthly sanitation day which usually starts from 7am and ends at 10am. To also complement the sanitation days Lagos and Rivers State governments also set aside every Thursday starting from 7am to 10am as weekly sanitation in the markets and for all shops, store and any other category of business excluding the pharmaceutical stores. Most urban cities in Nigeria are daily littered with household generated solid wastes. Pedestrian walkways have turn to waste dump in most cities due to improper waste disposal habit among resident, non-availability of refuse collectors, and where there are refuse collectors, irregular collection habit of the refuse collection workers. Waste is directly linked to human development, both technologically and socially. The composition of different wastes varied over time and location, with industrial development and innovation has directly linked to waste materials. Some components of waste have economic value and can be recycled once correctly recovered (Awunyo, et al., 2013).

Wastes generated at home are generally called household wastes. These are also known as domestic or residential waste. Household waste can be hazardous or non-hazardous waste which can be recycled. Waste generated at home is mostly composed of solid waste particle such as garbage, broken bottles or plates, spoiled food items, papers, cartons, rage plastic and polythene, tins and metals, damaged home appliances, used batteries, insecticide containers, and so on. When residents generate these wastes and dispose them indiscriminately, which causes environmental pollution. Solid household waste generation varies, depending on location and time, used plastic water generated by different household are now sources of valuable materials for women that sells kerosene, zobo drink, tiger nut dink; and also, those that produce liquid soap, Izal, Dettol, bleach among others.

Mamady (2015) also pointed out that household and community groups' waste disposal practice is careless with the environment, possibly because of resident's socioeconomic status and geographic risk factors (residential area and residents' distance to municipal permitted dumpsite). That authorities should be encouraged to promote environmental information and education of the public. According to Khatib, Monou, Abdul, Hafez, and Despo (2010), solid waste generation (SWG) is an issue of concern everywhere in the world, particularly in all urban centers, that SWG is considered one of the most challenging issues faced by most developing countries that suffer from sever environmental pollution problems which are caused by the large quantities of SWG.

Solid (household) waste which comprises kitchen and other home-related waste are generated daily in large quantities across urban and rural cities and the mode of disposal is worrisome. Most residents dispose their trash indiscriminately due to their attitudes toward waste as something that is no longer valuable and can be discarded anywhere convenient despite its antecedence impact on the environment and to human health in general. This is in line with Lawal's (2004) observation that roughly two third of wastes generated by households in Port Harcourt Metropolis are dumped indiscriminately on the streets and in the drains thus posing serious environmental health hazards.

Every solid waste discharged inside drainage causes a blockage of the drainage and affects the movement of water. This activity is one of the major causes of ill-health among the people, soil erosion, flooding, and other environmental challenges. Bolanle, Odufuwa, Odufuwa, and Segun (2012) asserted that the methods of solid waste disposal in most of the developing urban areas of Nigeria such as Port Harcourt Metropolis are beginning to alter the pattern of the earth functions causing a significant impact on the ozone layer. Streets in most parts of Port Harcourt Metropolis are filled with piles of refuse due to proliferation of illegal dumping sites despite waste management authorities concerted efforts to get the city rid of refuse. Okorie and Amadi (2017) observed that waste disposal habit among residents in most urban cities in Nigeria is poor. This is due to the attitude of residents towards the preservation of the aesthetic value of the environment.

Attitude of residents towards waste disposal is a major problem with most urban low-cost residential areas. Most of the residents find it difficult to bag their waste before disposal, some even empty their waste to gutter as soon as it began to rain, while some carry their refuse to designated dump site and empty it on the ground, thereby littering the whole area with their refuse. Altmann (2008) also pointed out that attitudes determine the organism's orientation towards his social and physical environment including himself. Attitude, according to Venes (2001), is behaviour based on conscious or unconscious mental views developed through cumulative experience. Altmann (2008) thus explained that attitude has a cognitive, affective, and behavioral component: it is bipolar; and it is a response to a stimulus. These attributes extend to all aspects of intellect and behavior. In view of the definitions of attitude, it will be asserted that actions residents' exhibit towards solid (household) waste disposal is as a result of their mental disposition towards waste, and this requires a change in behaviour through requisite educational processes such as community-based health literacy education etc.

Furthermore, waste management is one of the environmental issues that is of global concern due to its relatedness to human health and environmental sustainability. Waste management to a high extent determines the wellness of people living in a particular place at any point in time because improper waste disposal constitute to favorable breeding grounds for vectors that transmit diseases to human. Several tons of waste especially solid wastes are generated daily from household consumption in different cities all over the world. Kyte in Hoornweg and Bhada-Tata (2012) pointed out that cities in the world generate about 1.3 billion tonnes of solid waste per year, and that the volume will probably increase to 2.2 billion tonnes by 2025.

In Nigeria, waste generation and management has been of critical concern to government through the different agencies and ministries responsible for human health and the environment. At different state levels, there are days set aside in every week for market sanitation and also Saturdays set aside once in a month for monthly sanitation. For daily generated waste, each state through their sanitation agencies have different strategies they adopt to collect waste generated from households, in spite of all these efforts, the issue of indiscriminate waste disposal is still eminent in most urban cities in Nigeria. It is in a bid to address this challenge that the Federal Government of Nigeria in collaboration with World Bank and European Union instituted a waste management project called State Employment and Expenditure for Results (SEEFOR). The overall objective of SEEFOR project as contained in Environmental and Social Management Plan (ESMP, 2015) is "to ensure employment generation through small public works and access to socio-economic services while improving the Public Financial Management system of participating States. This is tailored towards promoting accountability and transparency in the utilization of public finances which in turn translates into employment opportunities for the youths".

In Rivers State, waste management has been an issue that successive administrations have grappled with. The highlight of government's effort in addressing the issue of waste management is evident in the establishment of the Rivers State Waste Management Agency (RIWAMA). The Rivers State Waste Management Agency (RIWAMA) is a governmental agency responsible for waste management towards achieving positive and substantial change in living conditions as well as reducing diseases or health problems in the state. With the establishment of this agency one would expect that the issue of waste management would have been resolved. Unfortunately, this is not the case as most streets in Port Harcourt metropolis are still littered with wastes and in some places these household wastes are disposed at the centre of major streets and roads.

Among other things, the poor attitude of residents towards waste management contributes to this unending issue. There is dire need for attitudinal change. To bring about this attitudinal change, however, people need to have a modified perception of and positive behavior towards the environment. This way, they will have better attitude towards waste management. This change in attitude can be fostered through environmental education. According to UNESCO in Tommy (2018) the goal of environmental education is to develop a world population that is aware of, and concerned about the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and prevention of new ones.

Environmental education programmes include health literacy programmes, climate change education, pollution education programmes among others. Health literacy was designed to create critical awareness of dangers associated with improper waste disposal among residence and how they can overcome these dangers through proper waste management attitude, skills and habit. Health literacy is the ability of individuals to understand needed health care information and also to be able to utilize this information in making appropriate health related decision. Institute of Medicine of the National Academies (2004) defined health literacy as the degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions. Awunyo, et al., (2013) observed that every task associated preparing a meal to manufacturing a computer for example is accompanied with waste generation and that the waste generated needs to be disposed properly. But if the waste is not handled appropriately and in sanitary manner, there are great chance of creating favorable conditions for causing public health problems such as diseases like cholera, diarrhea, typhoid including favorable breeding ground for flies, cockroaches, mosquitoes as well as potential environmental and air pollution. Thus, improper waste disposal habit among resident has been posing dangers of disease transmission; causing the residents and passerby to inhale foul odors which emanates from the stench if decayed waste; improper waste also to obstruction of drainage system which in turn houses breeding sites for disease vector, and so on. Health literacy is meant to equip residents with adequate health literacy awareness, knowledge and skills needed to process and understand health information and services in other make appropriate health decision.

Climate change education is a programme which enables individuals to understand the essential principles of earth climate system, communicate about climate and climate change in a meaningful way and is able to make informed and responsible decision with regard to actions that may affect the climate. It is against this background that the researcher investigated environmental education programmes for proper solid waste management among residence in Port Harcourt Metropolis

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### Statement of the Problem

Port Harcourt metropolis is one of the urban cities in Nigeria that is faced with improper household solid waste disposal problem. The city is populated with people from different parts of the county that reside in it due to their quest for better means of livelihood. This large number of residents generates tons of solid waste which aresometimes dumped along the roads and also littered on streets, pedestrian walkways or road damarcations on daily basis. This improper waste disposal habit of the residents of Port Harcourt Metropolis contributes to land and air pollution and pose health hazard to the people.

It is even more pathetic during the raining seasons. Most residents seem unaware of the implication of their actions and inactions on their immediate environment and health at large. They are blinded by their belief in the local parlance of “*dirty nodey kill African man*”. This belief in this local parlance is generally carried and nurtured by the residence and contributes to their indiscriminate waste disposal habit. The residents also have the belief that anything can be thrown into gutters and canals, that it will be washed away to river, that river does not run dry; and that their tiny household waste cannot pollute it. This explains why many drainage and canals are blocked within Port Harcourt Metropolis

This improper waste disposal has contributed to the blockage of drainages which have resulted in flooding in some parts of the metropolis during rainy seasons. It has also increased cases of malaria and other diseases since there are many breeding grounds for mosquitoes. Worse still is the fact that the aesthetics of the city has been damaged. Port Harcourt once referred to as the “garden city” is now known as a “garbage city”.

Successive governments in Rivers State have made efforts in the past to tackle the issue of poor solid wasted among residents of Port Harcourt metropolis. These include establishing the Rivers State Waste Management Agency (RIWAMA), contracting waste manage to private contractors and so on. In spite of these efforts, waste management is still an issue in the metropolis. This underscores the need for education and awareness creation as an alternative measure to solving this problem. The question then is will the use of environmental education programmes enhance solid waste management among residents of Port Harcourt metropolis? Providing answer to this question is the problem of this study.

#### Purpose of the Study

The purpose of this study was to examine the influence of environmental education programmes on solid waste management among residents in Port Harcourt Metropolis, Rivers State. Specifically, the study sought to achieve the following objectives:

1. Find out the extent to which health literacy programme influences solid waste management among residents in Port Harcourt Metropolis, Rivers State.
2. Determine the extent to which climate change education programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State.
3. Ascertain the extent to which pollution education programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State.

#### Research Questions

1. To what extent does health literacy programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State?
2. To what extent does climate change education programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State?
3. To what extent does pollution education programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State?

## Method

This study adopted the descriptive survey design with a population of 2,500 stakeholders in solid waste management in Rivers State. The participant is made up of (900) Rivers State Waste Management Agency (RIWAMA) direct, contractors, and ad hoc staffs (gardeners, sweepers, waste collectors); and 1600 residents from various Community Based Organizations (CBOs) in the area of study. The sample of the study was 550 stakeholders in solid waste management in Rivers State (200 RIWAMA staff and 350 members of CBOs in the area of study). The Taro Yamane formula was used to determine the sample size. However, the sample was selected using the proportionate stratified sampling technique. 22 percent of the population of RIWAMA staff and members of CBOs were selected to arrive at the sample size of the study. The instrument for data collection in this study was a self-designed questionnaire titled "Influence of Environmental Education Programmes on Proper Solid Waste Management Questionnaire (IEPPSWMQ)". The questionnaire was divided into two Sections A and B. Section A collected bio data of respondents while Section B contained statement items designed to answer the research questions of the study. Responses to the items were designed on a four point summated rating scale of: Very High Extent (VHE) = 4, High Extent (VHE) = 3, Low Extent (VHE) = 2, Very Low Extent (VHE) = 1. The validity of the instrument was determined by two experts. The internal consistency of the instrument was established using Cronbach Alpha method. The questionnaire was administered on ten (10) residents and 10 staff of the Ministry of Environment in Yenagoa LGA, Bayelsa State which is outside the study area. Reliability indexes of 0.87, 0.81, and 0.79 were obtained for the various clusters of the instrument. Data collected for this study were analyzed using the mean statistics and standard deviation. The mean and standard deviation were used in answering the research questions raised in the study.

## Results

**Research Question 1:** To what extent does health literacy programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State?

**Table 1: Analysis of the Extent to which Health Literacy Programme Influence Solid Waste Management**

S/N	Items	RIWAMA Staff N=184			Residents N=344		
		X	SD	Remark	X	SD	Remark
1	Sensitizing residents that disposing their wastes in drainages causes stagnant water which breeds mosquitoes and causes malaria makes them stop such practice.	2.79	0.89	High Extent	2.61	0.87	High Extent
2	Informing residents that exposing their household wastes attracts rodents that can cause sicknesses will make them bag their wastes properly.	2.88	0.85	High Extent	2.66	0.91	High Extent
3	Residents will better manage their household wastes when they are aware that flies that such wastes attract can spread diseases.	2.94	0.79	High Extent	2.72	0.87	High Extent
4	Educating residents on personal hygiene will reduce the disposal of wastes closed to living houses.	2.85	0.76	High Extent	2.73	0.98	High Extent
5	Residents will bag their waste properly when they are aware of the health dangers that exposed wastes can cause to those who collect these wastes from residents.	2.99	0.77	High Extent	2.99	0.84	High Extent
6	Educating residents on the fact that it costs less to properly manage their wastes than pay high medical bills for sicknesses will encourage better waste management among them	2.50	1.06	High Extent	2.61	0.87	High Extent
7	Educating residents that it has been proven that improper waste disposal causes respiratory infection will reduce such habits.	2.88	1.17	High Extent	2.72	0.87	High Extent
8	Residents will bag and properly dispose their household wastes if they are aware it can cause cholera and dengue fever.	2.53	1.08	High Extent	2.73	0.98	High Extent
	<b>Grand Mean</b>	<b>2.87</b>		<b>High Extent</b>	<b>2.76</b>		<b>High Extent</b>

Table 1 shows that responses from RIWAMA Staff responses on items 1-10 gave mean scores that ranges from 2.50-2.99 with standard deviations scores that ranges from 0.68-1.17; and that of members of residents had mean scores of 2.61-2.99 with standard deviation scores that ranges from 0.87-0.98.. The responses from the two sets of respondents resulted to grand mean scores of 2.87 and 2.78 respectively, since the mean scores fall

within the range of high extent, the answer to research question one is that health literacy programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State to a high extent.

**Research Question 2:** To what extent does climate change education programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State?

**Table 2: Analysis of the Extent to which Climate Change Education Programme Influence Solid Waste Management**

S/N	Items	RIWAMA Staff N=184			Residents N=344		
		X	SD	Remark	X	SD	Remark
9	Educating residents that improper waste disposal increases the earth surface temperature which negatively affects humans will lead to better management of wastes.	2.74	0.91	High Extent	2.61	0.87	High Extent
10	Educating residents that burning of solid wastes makes the air warmer which leads to climate change will reduce such practices	2.82	0.87	High Extent	2.66	0.91	High Extent
11	Educating residents that improper waste disposal contribute to the unpredictable weather conditions being experienced in Rivers State will lead to better waste management practices.	2.90	0.81	High Extent	2.65	0.88	High Extent
12	Residents will manage their wastes better if they are aware that these wastes generate gases such as methane which leads to global warming.	2.81	0.78	High Extent	2.66	0.99	High Extent
13	Educating residents of the generation of greenhouse gases such as nitrous oxide which causes global warming will make them adopt better ways of managing their solid wastes.	2.87	0.80	High Extent	2.80	0.85	High Extent
14	Educating residents that improper waste disposal contributes to natural disasters such as flooding will make them seek better ways to manage their solid wastes.	2.56	1.02	High Extent	2.51	0.90	High Extent
<b>Grand Mean</b>		<b>2.72</b>		<b>High Extent</b>	<b>2.69</b>		<b>High Extent</b>

The analysed data in Table 2 shows that the mean scores for items 9-14 for RIWAMA staff and residents fall within the range of high extent. This implies that majority of the respondents agreed with all the items. With grand mean scores of 2.72 and 2.69 for RIWAMA staff and residents respectively, the answer to research question two is that climate change education programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State to a high extent.

**Research Question 3:** To what extent does pollution education programme influence solid waste management among residents in Port Harcourt Metropolis, Rivers State?

**Table 3: Analysis of the Extent to which Pollution Education Programme Influence Solid Waste Management**

S/N	Items	RIWAMA Staff N=184			Residents N=344		
		X	SD	Remark	X	SD	Remark
15	Educating residents on the negative effects of improper waste disposal on air quality in Port Harcourt will lead to better management of wastes.	2.90	0.97	High Extent	2.64	0.86	High Extent
16	Residents will stop dumping their wastes in rivers and canals if they aware that this pollutes the rivers and kills some aquatic lives.	2.97	0.74	High Extent	2.72	0.91	High Extent
17	Informing residents about the pollution that burning of wastes cause to the air will reduce such acts.	3.08	0.84	High Extent	2.65	0.88	High Extent
18	Educating residents on the land pollution that disposing wastes on drainages and gutters cause will reduce such practice.	3.04	0.80	High Extent	2.72	0.98	High Extent
19	Educating residents that exposing their solid wastes pollutes the air will make them bag their wastes properly.	3.01	0.81	High Extent	2.83	0.86	High Extent
20	Educating residents on how poor waste disposal releases hazardous chemicals that contaminate the soil which affects plants and humans will reduce such practices.	2.50	1.10	High Extent	2.58	0.91	High Extent
21	Informing residents on how improper waste disposal contaminates water that causes diseases to humans will lead to better management of wastes.	2.66	1.17	High Extent	2.81	0.91	High Extent
<b>Grand Mean</b>		<b>2.85</b>		<b>High Extent</b>	<b>2.70</b>		<b>High Extent</b>

The analyzed data in Table 3 shows that all the items for RIWAMA Staff and residents had mean scores that fall within the range of high extent. With

mean scores of 2.85 and 2.70 for RIWAMA staff and residents respectively, the answer to research question three is that pollution education programme influence proper solid waste management among residents in Port Harcourt Metropolis, Rivers State to a high extent.

## Discussion of Findings

The findings of the study for research question one revealed that health literacy programme influence proper solid waste management among residents in Port Harcourt Metropolis, Rivers State to a high extent. The responses of the respondents revealed that sensitizing residents that disposing their wastes in drainages causes stagnant water which breeds mosquitoes and causes malaria makes them stop such practice. Also, residents will better manage their household wastes when they are aware that flies that such wastes attract can spread disease. Residents are more likely to bag their waste properly when they are aware of the health dangers that exposed wastes can cause to those who collect these wastes from residents. This finding is in line with the findings of Orion and Carmi (2014) who reported that health literacy knowledge can actually be applied to the protection of the environment (example proper waste disposal, consumption of products that are less harmful to the environment, energy and water conservation).

The findings of the study for research question two revealed that climate change education programme influence proper solid waste management among residents in Port Harcourt Metropolis, Rivers State to a high extent. Educating residents that improper waste disposal increases the earth surface temperature which negatively affects humans will lead to better management of wastes. Respondents also agree that educating residents that burning of solid wastes makes the air warmer which leads to climate change will reduce such practices. Furthermore, educating residents that improper waste disposal contribute to the unpredictable weather conditions being experienced in Rivers State will lead to better waste management practices. This finding is in line with the findings of Yang, Jan and Lee, (2013) which revealed that there was a positive relationship between climate change education and waste disposal behaviour of university undergraduates. This result was also in support of the views of Chawla, (2017) that climate change education helps individual show expression of care and positive feelings towards the environment. Yang et al (2013) also revealed that climate change education triggers an individual's empathy for the environment, interest in learning about the environment, concern for the environment and tendency to act to protect the environment.

The result of the findings for research question three revealed that pollution education programme influence proper solid waste management among residents in Port Harcourt Metropolis, Rivers State to a high extent. Respondents were of the view that educating residents on the negative effects of improper waste disposal on air quality in Port Harcourt will lead to better management of wastes. They further agreed that residents will stop dumping their wastes in rivers and canals if they aware that this pollutes the rivers and kills some aquatic lives. Also, educating residents on the land pollution that disposing wastes on drainages and gutters cause will reduce such practice. This finding is in line with the findings of Ziraba, Haregu, and Mberu (2016) which revealed that Pollution education creates awareness of the health danger associated to indiscriminate waste disposal behaviour of residents. This educational programme exposed residents of Port Harcourt Metropolis to the different properties of solid waste (corrosivity, explosivity, flammability, ignitability, and reactivity); health safety implications and health (carcinogenicity, infectivity, irritability, mutagenicity, toxicity, radioactivity, and teratogenicity). Through pollution education, beneficiaries of the programme are exposed to health risks associated to improper waste management.

## Conclusion

Based on the findings of the study it was concluded that the environmental education programmes for management of solid wastes among residents in Port Harcourt metropolis are health literacy, climate change education, pollution education, civic environmental education and environmental literacy education programmes. These programmes expose residents to the health implications of improper waste management. They also become aware of the implication of indiscriminate waste disposal on the pollution of the environment and climate change. This awareness leads to better waste management practices among residents of Port Harcourt metropolis, Rivers State.

## Recommendations

Based on the findings of the study, the following recommendations were made:

1. The Rivers State Waste Management Agency should partner with the Ministry of Health to organize periodic health literacy programmes to educate residents on the impact of improper waste disposal on their health. This will lead to better waste management practices among residents.
2. RIWAMA should partner with relevant environmental experts and agencies to organize periodic climate change education programme on radio. This will reach large number of respondents and help in better waste management practices.
3. RIWAMA and the Ministry of Environment should organize periodic seminars on pollution education where experts can educate residents on how improper waste disposals pollute the environment. This education will create the needed awareness that will lead to better waste management practices among residents.

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