

Curbing/Mitigating Indiscriminate Waste Dumping Through Effective Stakeholder Relations

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Abstract: *Waste management in Nigeria and other developing countries has remained chaotic in spite of institutional and legal framework initiated to check the menace of reckless waste disposal. As a result of this scenario, this article undertakes a study of indiscriminate dumping of waste phenomenon and proposes effective stakeholder relations anchored on a combination of environmental participatory decision making tools as a mitigating measure. Survey method was used to discover issues, and reasons why stakeholders to environmental/sanitation projects showed laxity in taking ownership of and/or protecting their immediate environment. Stakeholder relations recognizes waste control/management as a project whose success aptly depend on the active role of each stakeholder; hence, those who manage waste control projects must identify, analyze the relevant stakeholders and engage them appropriately so that they can willingly participate and take responsibility and ownership of the environment. This article assumes that when effective stakeholder relations are adopted it will engender hygienic behavior change amongst relevant stakeholders. It concludes that active cooperation of individuals and community participation in waste management is a function of effective stakeholder relations.*

Keywords: stakeholders' relations, waste management, environmental sanitation projects

1. Introduction

Waste generation and disposal are among the pressing environmental and public health issues in the World today. As more countries develop and population growth rates increase around the World, the amount of waste produced becomes a major environmental issue [1]. The problem of waste is inextricably linked to changing life styles and consumption patterns occasioned by urbanization and emergence of modern civilization[2],[3],[4],[5]. In sub-Saharan Africa particularly Nigeria, refuse generation and its likely effects on the health, quality of environment and the urban landscape have become burning national issues. Major cities in Nigeria are grappling with mounting heaps of wastes dumped indiscriminately. These wastes emanate from household or domestic sources, markets, shopping and business centres, schools, etc. Also pathetic is haphazard dumping of hazardous commercial and industrial wastes which are a clear violation of clean Air and Health Edicts in the country's environmental sanitation laws, rules and regulation [6].

In its August 2004 report, the United Nations noted with vehement regret that while developing countries are improving access to clean drinking water they are falling behind on sanitation goals [2]. Similar gory picture was painted in a joint report by UNICEF and WHO [7].that: "about 2.4 billion people will likely face the risk of needless disease and death by the year 2015 because of bad sanitation-decaying or non-existent sewage system and toilets fuels the spread of diseases like cholera and basic illness like diarrhea, which kills a child every 21 seconds" [2]. The Worst hit by bad sanitation is rural poor and residents of slum areas in fast growing cities, mostly in Africa and Asia [5].

In the past, both legal and institutional frameworks have been established to mitigate the menace of indiscriminate waste disposal and other environmental problem. The Federal Environmental Protection Agency (FEPA), national policy on the environment and monthly environmental sanitation exercise were established as part of measures to ensure a cleaner environment.

Some states and local governments have evolved their own solid waste management (SWM) strategies based on the peculiarities of their environment. Also every state had set up waste management Board (WMB) in attempt to mitigate the menace of wastes.

Regrettably these institutional legal frameworks and other mitigating measures have not yielded enough positive results as wastes are dumped recklessly in various cities, towns and communities. Waste collection is irregular and restricted to major cities. Improper sited open dumps deface several cities, thereby endangering public health by encouraging the spread of odors and disease. Why is indiscriminate waste disposal a phenomenon in Nigeria and other developing countries? From a pragmatic point of view, our custom and traditions have not helped in mobilizing for the environmental protection and safety through neighborhood (stakeholder) involvement. Our communities or neighborhoods lack a system of collective action to keep our surroundings clean with penalties enforced to bring violators to bear the brunt of their transgressions. Further, the failure of relevant agencies to stem the tide of reckless waste dumping, littering of roads, streets and surrounding bushes indicate a clear pattern of non-enforcement sanitation laws [8],[6].

For these reasons, there is need for a change in existing waste management regime that adopts the top-down programmes created by bureaucrats or experts with little or no active community (citizens) participation. There should

be a stakeholder cum grassroots approach that enlists the support of the relevant rural and urban community stakeholders in stemming the tide of indiscriminate waste disposal. Reckless dumping of waste has remained phenomenal and intractable in most developing countries due to lack of stakeholder engagement and partnering in environmental protection/sanitation projects.

This paper is informed by this gap and strives to bridge it by identifying key stakeholders relevant to the unabated campaign/project on mitigating indiscriminate waste dumping. The core driving factors are to make the identified stakeholders own up to the waste menace by sitting together and through participatory decision making method identify and plan on ways to solve the sanitation challenges; and to assume ownership and responsibility of protecting their surroundings or immediate environment where they live. Based on the foregoing, the objectives of this paper include: to demonstrate that active cooperation of individuals and community participation in waste management is a function of effective stakeholder relations; to establish that through stakeholder education and engagement a high level of compliance to environment/sanitation laws, regulations and standards will be achieved; and finally to find out if effective stakeholder relations is ideal model for stemming indiscriminate dumping of waste rather than the confrontational approach being adopted by relevant solid waste management agencies in developing countries. Based on the above the following hypothesis shall be tested:

H1 Active cooperation of relevant stakeholders and community participation in waste management is a function of effective stakeholder relations.

H2 Stakeholder support is recognized as essential for successful implementation of environmental policies projects and programmes.

2. Literature Review

Literature is examined in four strands in order to present a logical and coherent discourse that reveals the extent of waste management efforts and the idea of enthroning stakeholder relations as a mitigating approach to indiscriminate waste dumping in developing countries. The first strand takes a critical look into the conceptual and contextual underpinnings/explanations of waste, typologies of waste and solid waste management. The second strand examined the nature of solid waste problem in sub-Saharan African and efforts made to combat them. A review of waste management models/approaches is the focus of the third strand. The fourth strand extensively discusses the stakeholder relations and its rationale for being a model in any environmental management project or campaign.

2.1 Waste: A conceptual and contextual overview

Waste has been variously defined by experts and environmental studies scholars. The common denominator in their descriptions is that waste is any material that is no longer in use and discarded for their lack of perceived value. Waste may be in solid and fluid forms; it is this feature that defines its typology or categorization. [8] (1998) describe

waste as “any movable substance or material that is perceived to be of no further use and therefore should be discarded”. [8] similarly define waste as any material that is discarded because it has served its purpose or is no longer useful. Solid waste comprises all the wastes arising from human and animal activities that are normally solid, discarded as useless or unwanted [5]. However, strategic environmental thinkers and exponents of the philosophy of ‘trash are treasure’, ‘waste is wealth’ and ‘refuse is resource’ are of the view that not all waste should be discarded as some can be transformed into useful products through recycling and reuse [10],[11],[12].

Man through its social, economic activities produces various forms of solid wastes such as garbage, rubbish and dirt that accumulate in residential commercial, industrial and institutional areas of towns and cities. These wastes can also emanate from household or domestic or kitchen sources, markets, shopping and business centres [15],[5]. Anchoring on the foreign descriptions, Makwara and Magudu (2013) aptly describe solid waste as the unwanted; useless and discarded non-liquid waste materials arising from domestic, commercial, manufacturing and trade industries as well as public service. [9]. Beside the concept of “waste is wealth”, waste is generally considered hazardous and therefore toxic to the biological environment, including urban lifestyles and economic activity. Refuse generation and its attendant effects on the health, quality of environment and the urban landscape have remained front burner issues in national discourse.

Studies have shown that right from the Adamic age and to this day, man has taken his environment for granted [3],[13],[14] man has neglected or not paid adequate attention to his environment. His major interest has being to exploit or use the environment for the satisfaction of his needs. This exploitation has worsened mainly due to urbanization brought about by emergence of modern civilization or development thereby endangering the environment and human kind. The changing life styles and consumption patterns of both urban and semi-urban dwellers added to waste/refuse generation and its indiscriminate disposal in developing countries [16]. Further, the affluence of western societies has given rise to unprecedented quantities of waste which Zerbock (2003); [12] and Miller (2005) [1] agree present one of the most intractable global environmental problems. It is evidently clear that all production processes produce waste yet its management, particularly in developing countries remains chaotic. Research has shown that in sub-Saharan Africa, waste generation is on the rise while level of collection is deteriorating [2],[17]. Therefore, there is need to manage indiscriminate waste disposal and its attendant danger to ecosystem and human health alike [18].

2.2 Solid Waste Management

Waste Management entails the generation, collection, transportation, processing or disposal of waste materials, usually ones produced by human activity in an effort to reduce their effect on human health and communities (<http://mr-gadget.hub-pages.com/hub/effect-of-waste-disposal-and-recycling-in-Nigeria>). Similarly, Booth, Martin and Lankester refer to solid waste management as a

range of activities in the handling of waste and should be understood to mean activities such as generation, storage, collection, transportation, processing, treatment and disposal of waste [20]. Focus in recent decades has been to reduce waste materials' effect on the natural world and environment, and to recover resources from the through waste management [1].

The goal of waste management is to ensure that its disposal does not lead to environmental pollution or degradation. This suggests that waste management should be undertaken in such a manner that garbage cum waste collectors/handlers, the public and the environment are not endangered in any way [9]. According to Wikipedia (2009) [19], waste management practices differ for developed and developing nations, for urban and rural areas, and for residential and industrial producers. An aggregation of human settlement always produces large amounts of waste. Waste generation is intractably linked with resource consumption. The collection, transfer and disposal of waste have generally been assumed by both public and private sector participation.

The public sector participation is coordinated by government through municipalities and Waste Management Boards (WMBs) or agencies. The waste management boards through the Ministry of Environment put receptacles in designated areas and evacuate same when they are filled with waste. Unfortunately these receptacles are not evacuated on time thereby allowing waste to accumulate and litter the environment. The waste management boards impose and collect sanitation levy. Due to enormity of waste management challenges, the private sector is consulted to bring its expertise to bear. Through public-private participation (PPP) waste is being managed in some cities. The approach adopted by waste management authorities has been confrontational city residents, shop owners, etc sometimes do not cooperate with the SWM boards especially during sanitation levy collection or drive. These stakeholders allege that even after paying sanitation levy, the Waste management boards and private concessioners do not provide them, with disposal cellophane bags or receptacles were waste are gathered before they are disposed.

Techniques or method of solid waste disposal management can be categorized into two forms namely traditional forms of waste management (Landfills, incineration) and environmentally friendly techniques (recycling, composting and source reduction[1]).The traditional waste management technique most adopted by developing countries is the sanitary landfill [2],[21],[5].The land fill technique is a process of collecting sold waste and conveying them by using vehicle, heavy duty dumpsters, Lorries and tippers to designated dumpsites. One of the advantages advanced for the use of land fill technique is that it helps to reclaim land topography ravaged by gully erosion. To traditional environmentalist, this approach saves cost and energy that would be expended in tackling erosion sites.

Compositing, recycling and source reduction are seldom used by waste management boards in developing countries. One of the reasons for that is that they lack the technology especially for recycling. However, the use of recycling

compositing and source reduction must be adopted because of their environmental sustainability factor.

2.3 Solid Waste problem in Developing Countries

Irrespective of size of countries that make up the developing countries, the nature of the solid waste problem remains similar. Urban growth in some of these countries (Nigeria, Zimbabwe, Kenya, etc) continues at a much faster rate than the provision and expansion of infrastructure and services. Demographic changes and economic growth contribute to the generation of waste. Consequently, waste management has become woefully inadequate as evidenced by the rise in illegal dumping and the proliferation of the now seemingly permanent piles of rubbish (Waste) in some commercial, industrial and residential areas of the urban areas [9],[6]..

A cross country survey on waste disposal in sub-Saharan Africa reveals that waste collection has virtually collapsed causing its chaotic and rampant illegal dumping [6].. The media is awash with reports of how accumulated waste in such as metals, polythene, wood, vegetative matter, tins, glass, cans and other municipal refuse litter the streets and major roads. One key factor responsible for this uncoordinated Waste disposal is the attitude of the city residents to environmental protection and human health. As observed by Makwara and Magudu Urban residents characteristically dispense of the waste they generate without regard for the environment since it is treated as common property.[9]. The concoctions generated by these wastes are hazardous. This is because improper handling and/or disposal of waste cause substantial harm to human health, death of smaller animals and plant organisms and a general breakdown and loss to the immediate ecological systems.

Research has shown that some wastes could stay up to 100 years before decomposing and degrading completely in the environment. Hence, if the decomposition process is completed, these materials cause inestimable pollution to the environment [22],[23],[24].More importantly, this will disrupt normal cycles, nutrients flows and the interrelationships existing among biotic organisms. It must also be reported that chaotic dumping of both domestic and industrial waste has become a public health concern in countries of sub-Saharan Africa, including Nigeria. This practice has put the health and safety of both city and rural residents and that of the entire environment at great risk due to the toxic nature of some of the wastes.

Indiscriminate dumping of organic wastes poses sanitary hazards and constitutes public nuisance, particularly in over populated residential areas or cities. In Nigeria Kenya, Zimbabwe, etc, waste dumps cause environmental problems like aesthetic intrusion, offensive stench or odour and breeding ground for vectors of communicable diseases such as diarrhea, dysentery and typical [2],[25]. During rainy season, wastes dumped recklessly are washed away as a result of that water channels and drainage are blocked thereby causing excessive flooding, surface water contamination and ground water pollution [26].

2.4 Efforts Made to Ensure a Healthy Environment

The menace of improper waste disposal and management has not been totally neglected by developing countries in the sub-Saharan Africa. There are legal, regulatory and institutional framework put in place by countries Nigeria, Zimbabwe, South Africa, Kenya, Ghana and others to protect the environment from abuse [27], [28]. These countries have initiated or enacted National Environmental policy Act and established Environmental protection Agencies in response to the global report on environmental degradation and pollution.

The environmental policies and institutions are aligned with the United Nations Environmental Programme (UNEP), a body charged with global environmental monitoring and regulation. In Nigeria, there is the Federal Environmental Protection Agency (FEPA). This agency with its sister bodies and the Ministry of Environment formed a national policy on environment. The goals of the policy include securing for Nigerians a quality environment for their health and well being; to raise public awareness and promote understanding of the essential linkages between the environment and development, and to encourage individual and community participation in environmental protection and improvement efforts [29]. In the area of solid waste, FEPA drew an action plan desired for collection and disposal of solid waste in environmentally safe manner. It also set up standards, laws and regulations that forcefully encourage public participation and imposed penalties on defaulters to encourage compliance.

In the early 1980s, the Federal military Government of Nigeria revived the Environmental Sanitation Day initially established by the Environmental Sanitation Edict in 1972-73. The aim of the Environmental Sanitation Day model is to generate awareness and enhance enthusiasm among the citizenry particularly the youth. The Edict dedicated one day in a month as a civic responsibility toward the cleaning of the surroundings. The last Saturday of every month is adopted as the Sanitation Day. Residents are made to come out to clean roads, streets, neighbourhood surroundings, drainage channels, markets and public buildings. The Environmental Sanitation Day is being observed in most of the states, yet its impact left much to be desired. To complement and coordinate sanitation day project, various state and local governments have set up solid waste management (SWM) Agencies or board. These SWMAs formulate guidelines and policies on how wastes are disposed or managed through public/community participation. Sanitation levies are also imposed on the citizenry with appropriate sanction stipulated for defaulters. As a result of non-conformance and non-compliance to existing laws and poorly coordinated municipal solid waste clearance schemes, refuse heaps still dot most streets and cities, markets, shopping centres, public parks, residential neighbourhoods, etc.

In addition to environmental sanitation day, the introduction of private waste collectors (who collect money/levies for specific volume of waste generated) has not given enough relief nor reduced the accumulation of waste in urban neighbourhoods. This situation is the same in other sub-Saharan African countries earlier mentioned. So what should

be done as part of the mitigating measures to reckless or indiscriminate waste disposal and dumps in Nigeria and other developing nations? The next section gives answers to that.

2.5 Stakeholder Relations and Waste Management

The rate of accumulation of solid waste in Nigeria and other sub-Saharan Africa remain a challenge because there exist a lack of personal commitment by rural and urban residents. There is also passing of blame between residents and officials of waste management agencies. Each group of these stakeholders accuses the other of constituting to indiscriminate disposal of waste. The residents blame the waste management boards and private waste collectors/managers for not providing enough receptacles within short distances and untimely evacuation of waste bins provided in some areas. They also accuse the waste Management Boards of using confrontational approach when collecting exorbitant sanitation levy. They also allege poor supervision of the sanitation projects. The waste management boards in turn accuse the residents of lack of personal commitment to ensuring environmental cleanliness and safety [5]. Bulk passing and trading of accusations are never the solution to the public embarrassments reckless dumping of waste is causing the country. Since past independent, individual, commercial and industrial responses to waste generation and control have not yielded positive results, therefore, we need to employ an "all-inclusive approach" that recognizes the responsibilities, desires, needs, opinions and attitude of every stakeholder to waste management projects. This all-inclusive approach is effective stakeholder relations.

The stakeholder relations approach goes beyond awareness creation but deeply initiate strategies that aid in understanding levels of personal commitment of each stakeholder group in the waste control programmes or projects without necessarily applying force. Stakeholder relations recognizes waste control/management as a project and for the project to succeed, every stakeholder has a role to play, and those who coordinate the waste control projects must identify the stakeholders, engage them appropriately so that they can willingly participate and take responsibility and ownership of the project [30].

To be able to understand the role of stakeholder relations in waste control projects, we may first understand who the stakeholder is. A stakeholder means any one, a person, group of persons, organization that has interest or concern in an organization or project [31]. Stakeholder can affect or be affected by the organization's actions, objectives and policies. Stakeholders can be individuals working on a project, groups of people or organization, or even segments of a population [32].

Having explicated the term stakeholder, it is imperative to identify the stakeholders in environment sanitation projects before we explain stakeholder relations. Integrated solid waste management recognizes three important dimensions in waste management: (1) Stakeholder, (2) Waste system elements and (3) Sustainability aspects. We are concerned with the first dimension-- stakeholders. Different stakeholders have different roles in creating an integrated

cradle – to – cradle solid waste/materials management system that recognizes and promotes mutual best outcomes. The United Nations Environmental Programme (2009) identified the following as stakeholders in waste management [33]:

- (1) Waste generators (Domestic, commercial, Industrial, Medical, community Based organization, etc.
- (2) Regulators
- (3) Service providers
- (4) Recyclers
- (5) Community

This taxonomy of stakeholders have been further modified by exponents of integrated sustainable waste management to include local authorities, NGO/CBOs, service users, private informal sector/private formal sector, and donor agencies.[24]. Literature agrees that stakeholder relations and management are domiciled in public relations practice. Therefore this study adopts the public relations approach in defining the term. Stakeholder relations is a specialized public relations function aimed at ensuring consistent planned two-way communication activities and sustained mutual relationships, respect and understanding between an organization/project and its stakeholders who are directly or indirectly affected by the activities, policies and actions of the organization/project [34].

Effective management of stakeholder relations is growing as a key focus of public relations and organizational activity. Whether we are tackling waste generation/disposal problem through environmental sanitation day, municipal waste management board or through private-public participation (PPP) approach, one thing is glaring: these approaches deal with different categories of people, individuals, organizations, etc. as stakeholders.

The waste disposal/generation approaches are projects with stakeholders that must be managed appropriately through sustained stakeholder relations and management. The common or important internally and externally stakeholders involved in waste management projects include officials of Waste Management Agencies, government, household, community/urban or city residents, land lords, community based organizations, churches, market women associations, traders/traders unions, corporate bodies, etc. Each stakeholder group must understand its role, responsibilities, interest, and level of commitment required to make the indiscriminate waste disposal projects achieve their desired objectives.

The waste management strategies/projects already being implemented have achieved minimal results because of confrontational and uncoordinated models of their implementers[9]. Instead of understanding the needs, desires, problems, characters and perception, etc of the stakeholder groups to environmental sanitation projects, the operators/managers of the project (WMBs, private waste management operators) use compulsion to gain compliance. It is important to remind us that false compliance is euphermal and leads to sabotage of projects. Research has shown that lack of personal commitment of the stakeholders is a function of unpersuasive efforts and false compliance [34]. The multiplier effect of this scenario is accumulation of

heaps of waste and reckless disposal of solid waste in the cities and streets.

2.5.1 Proposed Models for Effective Stakeholder Relations in Waste Management Projects

As identified earlier, sanitation solutions are often defined by experts and imposed on local communities; although these communities may not necessarily perceive the solutions as beneficial as the experts for social, cultural, or even economic reasons. It has been widely recognized, but not yet widely applied in practice, that decision making on sanitation improvement for the urban poor should involve community members; that is households that are the ultimate generators of waste [38]. For this reason, the participatory decision-making method is proposed as a sure way to actively involved stakeholders in the mitigation project of indiscriminate waste disposal across the cities in Nigeria and Africa in general. The adoption of this method means that the focus of experts in sanitation policy making has to change from a preoccupation with only scientific expertise to one with wider contributions to accommodate the needs and demands of different stakeholder group.

2.5.2 Participatory Decision Making Method

Stakeholder support is recognized as essential for successful implementation of many (environmental) policies and programs. Since Arnstein described the “ladder of participation” in 1969, it is known that significant degrees exist in stakeholder involvement and participation and the extent of their influence during decision-making process is a crucial factor in determining their future stakeholder [35],[32],[36],[37]. This generally is not different for sanitation policies and programming (Astrid et al 2012) and can be also extend to environmental waste management projects.[38].

In programmes or projects for mitigating indiscriminate waste disposal, experiences and ideas of specialists and official decision makers should be coalesced with those of the community, the users, who are affected by sanitation problem [39],[40]. As alluded, the focus of experts in sanitation policy making has to change from a preoccupation with only scientific expertise to one with wider contributions to accommodate the needs and demands of different stakeholder groups. Interestingly, involving local community members (e.g. households) in any environmental sanitation planning and project need further explanation.

The main problem is that excluding the ultimate waste generators in decision-making process can lead to considerable planning shocks. Recognizing the importance of incorporating households/ultimate waste generators perspective in decision making on environmental sanitation projects is paramount. Based on the above issue, there are certain methodologies that give experts (Waste management authority) and local stakeholders a justified role and position in planning and decision-making on environmental sanitation programmes/projects.

2.5.3 Participatory Environmental Sanitation Planning Tools

Over the years, many participatory decision-making tools have been developed, some specifically for sanitation policy but many others destined for more general use in

environmental decision making. The participatory sanitation planning tools which have been found feasible in unplanned urban settlements and can be adopted in planning environmental waste management projects include the participatory Hygiene and Sanitation Transformation (PHAST) approach, open planning of sanitation systems, Household-centered environmental sanitation planning approach. Others include sanitation 21 and Multicriteria Decision Analysis Systems.

The different participatory sanitation planning tools anchor on multiple stakeholder involvement. These tools have their specific characteristics and focus as outlined in the Netsaaf (2008) frameworks for participatory planning tools in the domain of sanitation [41]. A brief explanation of these tools follows.

The Participatory Hygiene and Sanitation Transformation (PHAST) approach is designed to promote hygiene behavior, sanitation improvements, and community management of waste and sanitation facilities, building on people's ability to address and resolve their own problems [41],[38]. Decision making with PHAST is, among other things, based on the principles that "those who create decisions will be committed to follow them through" and "every community understands its own best". Community involvement is believed to result in higher levels of effectiveness and sustainability than could be expected from externally imposed solutions[42].

The PHAST approach relies heavily on extension workers, who organize workshops for the community and guide communication members through the different steps of the sanitation planning process. Although experts say the focus is on hygienic behavioural change, this approach also stimulates improvements in the sanitary conditions of communities by encouraging them to set up their own systems for monitoring community behaviour based on the criteria they identified themselves [38].

The PHAST approach, the open planning of sanitation systems and the household-centered environmental sanitation planning approach have in common is stakeholder analysis, which is a part in the first phase of problem identification. More discussions on stakeholder analysis are provided in the section that treats stakeholder relations planning. However, all the approaches emphasize that the probability of success will increase if the users/or waste generators are seen as participants in the planning process and therefore they need to be involved right from the start. All three approaches assume that involving the users of waste disposal/sanitation facility or waste generators in every step of the planning process is essential for a successful and result.

The household-centered environmental sanitation planning approach combines PHAST and the open planning sanitation system in a 10-step planning process. Sanitation 21 aims at closing the gap between households and urban sanitation systems. The focus of the decision-making tool is an analysis of the different technical options that are relevant within a sanitation system that covers all levels of the urbanized area, including households, neighbourhoods, districts, the city, and beyond.[43]. Multicriteria Decision

Analysis (MCDA) constitutes an approach that is nowadays used in environmental projects to support multiple stakeholder involvement. It provides an ordering of alternatives – from the most preferred to the least preferred ones – based on different technological, economic, social and ecological criteria [38]. The involvement of multiple stakeholders is crucial in MCDA, but it can be organized in different ways, such as focus group meetings, workshops, interviews, or surveys. This methodology is widely applied during participatory decision-making processes in complex problems [44]. The core of the MCDA method is a decision-making model, which is a formal specification of how to combine different kind of information to reach a shared solution [43]. From critical analysis of the participatory decision making tools, the PHAST approach and the multicriteria decision analysis systems (MCDA) is recommended or adopted in the study because of their advantages over others. The capacity for PHAST approach to promote hygiene behavior among household or communities and its ability to build on people's ability to address and resolve their own problems are commendable. This can be replicated in the ongoing project/campaign to mitigate indiscriminate waste disposal in major cities/urban settlements in Nigeria and African in general.

However, it is important to acknowledge here, that the participatory decision making model is an offshoot of the various steps in the stakeholder relations planning in environmental sanitation project. Key regulators and managers of the physical environment should integrate the methodologies of participatory environmental sanitation planning tools with the key components of stakeholder relations planning in their effort to rid off the challenges posed by indiscriminate waste disposal.

2.5.4 Stakeholder Relations' Programme Planning for Management

Stakeholder management supports and organization's strategic objectives by interpreting and influencing both the external and internal environments and by creating positive relationships with stakeholders through the appropriate management of their expectations and agreed objectives. Stakeholder management is a process and control that must be planned and guided by underlying principles[45]. Stakeholder management/relations anchored on waste management projects/schemes needs a strategy that utilizes information (or intelligence) gathered during the following processes:

(a) Stakeholder identification:

This process catalogues interested parties either internal or external to the project or campaign through a stakeholder map. In waste management schemes/projects and other related programmes, the first step in planning is the identification of stakeholders especially those who impact or affected by the project [34]. This phase is similar to the PHAST approach in participatory decision methods. Depending on the complexity and scope of a project there may be very few or extremely large numbers of stakeholders. In terms of mitigating indiscriminate waste disposal various strategic stakeholders are involved. Those whose responsibility is to manage the sanitation projects/schemes must identify all the relevant

stakeholders by asking these questions: who are those that generate and dispose waste? Which category of the stakeholder group can positively impact the crusade against indiscriminate waste dumping? Which stakeholder suffers the negative impact of reckless dumping of waste? The possible stakeholders in the crusade to mitigate/curb reckless waste dumping may include city/urban residents, landlords, tenants, house to maids, traders etc. These stakeholders need to be prioritized in order to ascertain their order of importance.

(b) Stakeholder Analysis

As we move on toward stakeholder identification, we must analyze the project landscape and determine what individuals or groups can influence and affect the project (waste management/sanitation project) or affected by its performance and outcome. The stakeholder analysis recognizes and acknowledges the needs, concern, wants, authority, common relationships, and interface to stakeholders and aligns this information with the stakeholder matrix. Stakeholder matrix positions stakeholders according to the level of influence, impact, or enhancement they may provide to the project [45]. The stakeholder matrix relates to stakeholder prioritization. Understanding stakeholders as well as their needs, desires characters, levels of influence, perception, etc. in waste management projects requires strong and consistent communication, and skills. A key part of this is to know what information they have, how accurate it is, how it aligns with national policy goals on environment and information they need.

(c) Stakeholder Engagement

Based on the outcome of stakeholder analysis, the stakeholders are now engaged. Engagement is the opportunity to discuss (during enlarged meetings/forums) and agree on expectations and primarily to agree on a set of values and principles that all stakeholders will abide by. This helps identify existing relationship between stakeholders that can be leveraged to build coalitions and potential partnership that go on to build valuable trust and collaboration among the stakeholders.

In order to be effective, engagement should be two-way. Stakeholders need a forum to air concerns and grievances while having the comfort of knowing they will get a response. Neglecting this element of communication is bound to undermine the ultimate goals of waste management through effective stakeholder relations. Both the Waste management agencies and private waste management operators should engage the identified stakeholders in order to achieve success in the project of mitigating indiscriminate waste disposal. The stakeholders must be part of decision making so that their support will be solicited, roles or responsibilities assigned to them [45]. This reaffirms the participatory decision making model adopted in this study as a theoretical guide model.

A part of the engagement rule is to discuss and proffer solutions on problems like improper location of

receptacles and dumpsites, late evacuation of Waste bins at designated points, non provision of disposable waste bins and double collection of sanitation levy. Other problems hindering their active participation in environmental sanitation schemes or projects must be identified and discussed. There should be a paradigm shift from the existing waste management regime to one where perhaps local authorities neighbourhood residents; tenants, landlords, the private sector and the community can collaborate as stakeholders to improve the situation. A number of critical actions need to be taken at household commercial enterprise, neighbourhoods, town and national levels. Robust public awareness campaigns on the need to properly dispose waste are vital but can only succeed when relevant stakeholders are carried along. Each stakeholder group must be given a role to play and must see the environment protection as a personal affair where their active affair while their active commitments are required.

(d) Communicating Information

The waste management agencies as managers and coordinators of environmental sanitation exercises/projects must maintain two-way communication channels. Appropriate communication plan must be established using most relevant channels to reach-out to stakeholders particularly those who are disposed to generating and disposing waste recklessly. Neighborhoods and street residents should maintain environmental communication/information desk. This will enable coordinators of street/neighborhood sanitation committee to quickly receive and disseminate information concerning waste disposal matters.

3. Material and Method

The popular survey research method common in behavioral science and communication studies was used in the execution of the study. The population of the study includes relevant stakeholder groups (urban/city residents, traders/traders associations, market associations, landlords and tenants, etc) who are affected by indiscriminate waste disposal and activities of environmental protection and solid waste management agencies in Nigeria. 1000 sample were selected by means by purposive sampling technique taken from cities of Port Harcourt, Enugu, Aba, Onitsha and Owerri. The research instrument used was 14 – item structured questionnaire that bore questions relating to respondents' demographic variables and questions that specially pertain to research objectives.

The questionnaires were administered through the help of four research assistants trained for that purpose. Of the 1000 copies of questionnaires administered face – to – face, only 826 copies were correctly completed and usable resulting to an effective response rate of 82.6%. Descriptive statistics such as frequency tables, percentage and mean were used in data analysis. Further, analysis was done using five – point likert scaling. The five point likert scale was to show the respondents feelings or perception on the research objectives/questions. The data collected was analyzed using the mean. The scale was assigned weighting's as follows:

strongly agree (5), Agree (4), undecided (3), strongly disagree (2) and disagree (1). These guess a total of 15. A cut off point was determined by finding the mean of the nominal value assigned to options using the formula:

$$\text{Mean} = \bar{X} = \frac{\sum F}{n}$$

Where: \sum = summation value

n = number of item

f = frequency

The mean = $\frac{15}{5} = 3.00 + 0.05 = 3.05$ level of significance. For the purpose of decision making 3.05 and above was accepted as agree while values below 3.05 was accepted as disagree.

4. Results and Discussions

Demographic data showed that 506 (61.31%) respondents were male, 320 or 38.7% were female. 216 (26.1%) respondents were within the ages 25 – 30 years, 308 (37.2%) fall within the ages of 31 – 39 years, 100 (12%) fall between ages 18 – 24 years, 91 or 11% aged 40 to 47 years while 111 (13.1%) fall within the ages of 48 to 55 years. More than half of the respondents (562 or 68%) have either National Diploma or degree while 264 accounting for 32% have senior secondary certificate or its equipments. Data on stakeholder representation show that 581 (70 1%) respondents are either city/urban residents or shop owners/traders while the remainder of 245 (30%) belong to stakeholder groups such as Traders Associations, Corporate bodies, etc.

Table 1 reveals reasons why wastes are dumped recklessly. Two reasons rank tops why stakeholders dump wastes indiscriminately. These are improper/long distance location of receptacles and inadequate/non enforcement of environmental laws by waste management authorities. These two reasons had a mean score of 3.84 respectively. Confrontational and intimidating attitude of waste and environmental management officials ranked second. It had a mean response score of 3.82 followed by residents’ lack of personal commitment to environmental safety/health, with a mean score of 3.74. Lack of monitoring stakeholders’ attitude to waste disposal by solid waste management agencies had a mean score of 3.46 followed by non availability of waste dump/site with a mean score of 3.03. The implication of this result is that the impact of the reasons on indiscriminate waste disposal/dumping is determined by their strength as shown in the table.

Table 2 indicates that 85% or 701 respondents have not attended any stakeholder meetings/engagement either organized by Solid Waste Management Boards or neighbourhood associations/traders union. Only 15 percent agreed to have attended or participated in stakeholder meetings with agenda revolving around environmental sanitation. Table 3 shows mean score of different form/strategies of stakeholder relations/engagement for attaining compliance to environmental sanitation laws.

Table 1: Reasons why People dump Waste Recklessly

S/N	Reasons	SA	A	N	SD	D	Mean
1.	Non availability of designated waste dump site	(25%) 204	(17%) 138	(15%) 124	(24%) 200	(19%) 160	M = 3.03 N = 826
2.	Improper/long distance location of receptacles	(41%) 341	(19.6%) 162	(24%) 200	(12%) 96	(3.3%) 27	M = 3.84 N = 826
3.	Lack of monitoring of stakeholders attitude to waste disposal by solid waste mgt authorities	(36%) 294	(17.4%) 144	(7.4%) 61	(37%) 304	(2.8%) 23	M = 3.46 N = 826
4.	Inadequate/non enforcement of Environmental laws by Waste mgt authorities	(38%) 312	(31%) 251	(15.3%) 127	(12%) 98	(4%) 38	M = 3.84 N = 826
5.	Residents’ lack of personal commitment to environmental safety /health	(39%) 324	(24%) 200	(16.5%) 136	(12%) 102	(8%) 64	M = 3.74 N = 826
6.	Confrontational and intimidating attitude of waste management officials	(39%) 323	(26.3%) 217	(15%) 124	(17%) 140	(3%) 22	M = 3.82 N = 826

Table 2: Respondents Attendance to Stakeholder Meetings/Engagement with SWM Authorities or Neighbourhood Association/Traders Unions.

Options	Frequency
Yes	125 (15%)
No	701 (85.1%)
Total	826

Table 3: Respondents Ratings’ of Forms of Stakeholder Engagements for attaining High level compliance/Adherence to Environmental/Sanitation Laws, etc

S/N	Stakeholder Relations Strategies	SA	A	N	SD	D	Mean
1.	Organizing regular meetings involving waste management board/agencies & officials of town unions, community based-orgs, Traders unions, shop owners, market women unions, etc to stakeholder groups will stop indiscriminate waste disposal.	406 (49%)	160 (19%)	104 (13%)	102 (12.3%)	54 (6.5%)	M = 3.92 N = 826
2.	Inaugurating Neighbourhood Environmental/Sanitation Committees to apprehend offenders and coordinate waste disposal.	42.7% 353	(29%) 238	(8.5%) 70	(13.3%) 110	(6.6%) 55	M = 3.87 N = 826
3.	Setting up neighbourhood	(40%)	(32%)	(14%)	(12.3%)	(2.4%)	M = 3.93

	information desk for disseminating/reporting on environmental sanitation information by city residents	327	261	116	102	20	N = 826
4.	Taking individual ownership & responsibility of protecting immediate surrounding disposing waste properly.	(38%) 310	(30%) 246	(22%) 180	(8.5%) 70	(2.4%) 20	M = 3.91 N = 826

Table 4: Stakeholder Active participation on reducing/mitigating indiscriminate waste disposal is ensured by effective stakeholder relations

Question	SA	A	N	SD	D	Mean
Do you agree that your active participation in reducing/enhancing indiscriminate dumping of waste can be achieved through stakeholder relations?	(39.2%) 324	(29%) 236	(17%) 141	(12%) 102	(3%) 23	M = 3.89 N = 826
Do you agree that consistent stakeholder engagement is better than the confrontational approach being used by solid waste management agencies?	(40.4%) 334	(28%) 228	(21%) 170	(9.2%) 76	(2.4%) 20	M = 3.95 N = 826

Organizing regular stakeholder meetings involving different stakeholder groups (see table 3) with environmental/waste management agencies to proffer and agree on ways to stop indiscriminate waste disposal was rated high. A total of 566 (69%) respondents agreed to that option. It had a mean score of 3.92 which is above the cutoff point of 3.05. Community involvement by setting up neighbourhood information desk for disseminating/reporting information on environmental sanitation had a mean score of 3.93. Also the percentage of those who accepted this strategy was 71.1%. 591 (72%) respondents agreed that inaugurating or establishing neighbourhood environmental/sanitation committees to apprehend sanitation offenders and coordinate waste disposal exercise/projects is good option that can trigger active community involvement and adherence to environmental laws and standards. This option had a mean score of 3.87.

Another form of stakeholder engagement that will induce compliance to environmental/sanitation laws is by every stakeholder taking ownership and responsibility of protecting their immediate surroundings by disposing waste properly. Table 4 shows that active participation of various stakeholder groups in reducing/mitigating reckless waste dumping can be achieved through effective stakeholder relations anchored on participatory decision making. Respondents who agreed to this notion were 560 accounting

for 68 percent with a mean score value of 3.89. About 562 (68%) agreed that consistent stakeholder engagement is better than confrontational approach, used by solid waste management agencies or board (SWMA).

From the results as shown in tables 1, 2, 3, and 4, our hypothesis is supported given that all the options had a mean score value above 3.05 which is the cut off point for decision making. It then means that active cooperation of individuals and community participation in waste mitigating measures or management is a function of effective stakeholder relations. Again through stakeholder meetings, education and consistent engagement, a high level of compliance to environmental/ sanitation laws, regulations and standards is achieved. Because the stakeholder groups vary in their behaviours, attitude and make-up; engaging them through the options in table 3 will make them willingly participate in waste disposal projects while confrontational approach being used by waste management agencies will only yield non-challant attitude and disobedience to environmental safety laws.

For these reasons, effective stakeholder relations (which involves) identifying the stakeholder, analyzing and engaging them and communicating with them consistently is the ideal model for stemming indiscriminate waste dumping in developing countries, particularly the sub-Saharan Africa. This notion is supported by environmental communication studies of Nwosu and Uffoh (2005); Uchegbu (1998) and Aliede (2000). The common denominator in those studies are that identifying and communicating directly with stakeholders primarily involved in waste generation and disposal is the key to ensuring active participation in environmental protection. This goes to affirm that effective stakeholder relations in waste management projects must be strongly anchored on participatory decision making & using tools such as PHAST and MCDA as participatory environmental sanitation tools.

More importantly, the findings of this study support the environmental policy document submitted by the federal ministry of Environment to the United Nations Agency on Environment. Paragraph seventeen of that document recognizes the involvement of public participation in decision making on matters concerning environmental sustainability and cleanliness. The paragraph reads in part, “in recognition of the fact that broad public participation in decision making is a fundamental prerequisite for achieving sustainable development, Nigeria has made concerned effort to involve the relevant groups (stakeholders) in all its major activities geared towards implementation of Agenda 21”. Agenda 21 is part of agenda that topped discussion during RIO conference on environmental sustainability.

5. Conclusion

Nigeria and other Sub-Saharan African countries claim they have made significant effort since RIO Conference by addressing the core environmental and sustainable development issues which were identified and agreed upon at the United Nations Conference on Environment and Development (UNCED). Unfortunately, environmental problems are still visible many years after UNCED. One major environmental problems sweeping across developing

countries is problem of indiscriminate dumping/disposal of waste. This problem has remained intractable in spite of many institutional framework and measures deployed to curtail its menace.

In this study a lot of factors have been identified as causes of the poor/indiscriminate and chaotic waste disposal in major urban countries and cities. These factors range from human factors to inadequate waste management infrastructure. Based on this reason this study proposes a shift in waste management regime that entails identifying, analyzing engaging and communicating consistently with all relevant individuals, groups, organizations, etc. that are affected or affect waste management schemes/projects. This people or organizations makeup the stakeholders. Those who manage the environmental/sanitation projects need their cooperation understanding and trust. And these attributes or active public participation/cooperation can be attained through effective stakeholder relations. Nowadays stakeholder support is recognized as essential for successful implementation of many (environmental) policies, projects and programmes. Stakeholder relations recognize relationships with stakeholder groups that are based on two-way communication mutual understanding, accommodation and negotiation and participatory decision making [3]. It recognizes the interests, needs; perception and problems stakeholders may have regarding waste generation, control and disposal. It is believed that effective engagement of stakeholders in the environment/sanitation project will not only engender hygienic behavioural change but yields desired results more than the old regime of confrontation and intimidation of citizenry by waste/environmental managers. Therefore, effective stakeholder relations remain the ideal model for curbing indiscriminate dumping of waste in developing nations, including Nigeria.

6. Recommendations

This paper recognizes environmental sanitation and waste management efforts as project with various stakeholders. These stakeholders are affected by the menace of the indiscriminate waste disposal and are themselves culprits in this chaotic approach to waste disposal. As identified in this paper some critical stakeholders (such as city residents, landlords, tenants, traders shop owners etc.) have not shown enough commitment in waste management due to lack of proper engagement and education. Based on the results of the study the following is recommended:

- (1) Since most people regard the environment as everybody's own, effort should be made to educate the various groups or individuals on the need to take ownership of the environment. This will be specifically achieved through effective stakeholder relations guided by the participatory hygiene and sanitation transformation and MCDA approaches.
- (2) Waste management boards or agencies should adopt the stakeholder relations approach if they must succeed in their task of ensuring a cleaner and safer environment. Public awareness and community participation would assist in obtaining guidance in carrying out strategic planning of solid waste management. And to enhance appropriate levels of community participation, a two-way communication planning and implementing must

be part of the integrated solid waste management services

- (3) There should be stakeholder coordination and negotiation with waste management agencies or Ministry of Environment. The negotiation will help to understand their needs, desires, problems, and perception concerning waste management regime already in use. More importantly, through engagement of the stakeholders, roles are assigned to specific groups, individuals or institutions.
- (4) There should be establishment of neighbourhood environmental/sanitation committees that will coordinate and implement sanitation laws within neighbourhoods or streets. This committee will also apprehend and sanitation defaulters.

There should be environmental stakeholder forum where waste management agencies and primary stakeholder groups (e.g. city/urban residents, shop owners, traders etc) will interface to discuss issues relating to indiscriminate waste disposal and environmental protection

7. Future Implications of this Study

This study has a lot of implication to policy makers and managers of waste /environmental projects in Nigeria. First, Waste Management Agencies will realize that the use of confrontation and intimidation to gain compliance of stakeholders, particularly the community members should be confined to trashcan of history. Stakeholders' relations through proper identification, engagement, prioritization and mutual communication must be adopted if stakeholders must actively participate in mitigating indiscriminate waste dumping. Secondly, it poses challenge for policy makers who must now frame environmental policies in such a way that it encourages willful participation of stakeholders. If participatory decision making is not adopted by WMAs as a way to involve stakeholders in the management of the environment, they will surely remain adamant to any policy directive to curb indiscriminate waste disposal in Nigeria.

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