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Stakeholder Participation for Sustainable Solid Waste Management in Ga West Municipality, Accra – Ghana

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Abstract

Purpose: This study assessed the participation of identified stakeholders in solid waste management (SWM) in Ga West Municipality. The specific objectives of the study included the examination of the interests, importance and influence of identified stakeholders as well as an assessment of their strengths, weaknesses, threats and opportunities.

Methodology: Qualitative research methods were used for data collection. This involved using semi-structured interviews with open and close ended questions, informal interviews, focus group discussion and observation. The study identified ten (10) stakeholders. They included households, market traders, food processors, schools, lorry stations, Ga West Municipal Assembly, skip site operators, scavengers, Private waste operators and waste disposal facility. The study employed multiple sampling techniques. Stakeholder analysis was used to understand stakeholder roles, responsibilities and power influence relations. Strength, Weakness, Opportunity and Threat (SWOT) analysis was carried out to assess the internal and external merits, prospects and challenges facing these stakeholders in sustainable SWM.

Findings: The findings of the study revealed that stakeholder involvement in SWM was low. Opportunities existed for compost and recycling but half of the total waste generated was uncollected and recovery rate was very low.

Recommendation: This study proposes stakeholder consultation and involvement, recognition and integration of scavengers and intensification of public education on solid waste collection, reduction, reuse, recovery and recycling.

Unique contribution to theory, practice and policy: Stakeholders had varying degree of interest, importance and capacity to influence SWM. All stakeholders had peculiar strengths, weaknesses, opportunities and threat which must be carefully exploited and managed for the achievement of a sustainable SWM.

Keywords: *sustainability, strengths, weaknesses, opportunities, threats and influence*

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1. INTRODUCTION

The need to manage solid waste sustainably is a matter of public concern in both developed and developing countries. This is because poor solid waste management (SWM) has adversely affected human health, underground water and marine ecosystems. Historically, solid waste was managed by collection, burying, feeding organic component to animal and via open dumping (Babanawo, 2006). However, these practices have proven to be inefficient, outmoded and unsustainable due to the quantity, complexity and toxicity of solid waste generated today (Puopiel, 2010).

A modern method of SWM is highlighted by the waste hierarchy which gives priority to waste reduction, reuse and recycling above disposal. It considers solid waste as a resource that can be reused and can provide employment opportunities that may contribute towards poverty alleviation (Gertsakis and Lewis, 2003). Proper management of solid waste is necessary to promote sustainability. Sustainability means meeting the needs of the present generation without compromising the ability of future generations to meet their own need (Sen, 2013). A sustainable SWM minimizes waste generation and disposal through waste reduction, recovery, reuse, recycling and composting (Agbesola, 2013).

To achieve a sustainable SWM, stakeholder participation is recommended by some authors (Saengsupavanich et al., 2012; Babanawo, 2006; Ahmadi et al., 2013). This is because stakeholders have the ability to influence SWM systems such as waste generation, transportation, reduction, reuse, recycling, recovery, treatment and disposal considering the environmental, financial, institutional, legal and socioeconomic aspects of sustainability (Saengsupavanich et al., 2012). The need for effective stakeholder participation in SWM is emphasized by principle 10 of the Rio Declaration, which states that "environmental issues are best handled with the participation of all concerned citizens, on a relevant level" (Steurer, 2009). More so, stakeholders must have appropriate access to information concerning the environment and an opportunity to participate in decision-making processes (Steurer, 2009). Authors such as Steurer (2009) and Babanawo (2006) have shown that to progress toward sustainability, both public and private sectors must be intimately involved in SWM. Further, Saengsupavanich et al. (2012) also stated that the co-operation and co-ordination between the different SWM stakeholder groups ultimately leads to a sustainable SWM. However, ignoring these stakeholder groups will result in an inefficient management of solid waste (Ahmadi et al., 2013).

Freeman (2010) categorized stakeholders into four types, namely, swing stakeholders, offensive stakeholders, hold stakeholders and defensive stakeholders. Swing stakeholders have high cooperative potential, high competitive threat and a strong ability to influence the outcome of a particular situation. Offensive stakeholders have high cooperative potential, low competitive threat and can help a great deal in achieving objectives, but pose little relative threat. Hold stakeholders have low cooperative potential, low competitive threat and can be of relatively little extra help or harm. Defensive stakeholders have low cooperative potential and high competitive threat. Stakeholders are also divided into primary stakeholders (those ultimately affected, either positively or negatively), secondary stakeholders (those with some intermediary role) and external stakeholders (those who are not directly involved, but may nevertheless be affected by a specific project or program) (Delmas and Toffe, 2004). Situating stakeholder participation within the Ghanaian context, many stakeholders are recognized (Babanawo, 2006; Puopiel, 2010). However for the purpose of this study, the following stakeholders were selected; Ga West

Municipal Assembly, food processors, scavengers, market traders, households, private waste operators, skip operators, schools, compost and recycling plants, transport stations, disposal facilities. Effective participation of these stakeholders on a relevant level in SWM activities and programs will help promote a sustainable SWM in Ga West Municipality.

Stakeholder participation encompasses the full spectrum of interaction among stakeholders and decision-making process (Delmas and Toffe, 2004). Participation leads to interactions that can bring improvement than those provided through the traditional top-down municipal approach (Reed, 2008). Participation can take different forms, ranging from information sharing and consultation, to mechanisms for collaboration and empowerment that give stakeholders more influence and control (Reed, 2008). Through participation, local commitment and involvement is certain as the locals do not feel isolated. Therefore, participation is the best method to win community support and trust in the design and implementation of SWM decisions (Saengsupavanich et al., 2012). It spreads risks among several stakeholders and develops a sense of belonging and universal ownership of community initiatives.

Joseph (2006) and O'sullivan et al. (2016) identified six types of participation among stakeholders; passive participation, participation in information giving, participation by consultation, functional participation, interactive participation and self- mobilization. Other types of participation include; partnership and controls (Reed, 2008). Stages at which these stakeholders participate in SWM range from identification of problems to implementation of decisions (O'sullivan et al., 2016). Research findings by Guerrero et al. (2013) revealed that, local government is highly important and influential in SWM, municipal sweepers are of high importance but low influence, waste pickers are of low influence and low importance and no significant differences exist in perception among municipal officers, non-governmental organizations and community base organization groups regarding SWM.

To assess stakeholder participation, stakeholder analysis has proven to be an efficient tool. It is a strong qualitative tool that helps to understand the interests, importance and influence of stakeholders (Caniato at al., 2014). Stakeholder analysis also provides the framework where areas of conflict of interest can be identified, and assists in better understanding the interdependencies and interconnections between different groups of stakeholders, so that already existing and new partnerships can be detected (Caniato at al., 2014). However, it lacks efficacy in exploring the strengths, weaknesses, opportunities and threats. Therefore strength, weakness, opportunity and threat (SWOT) analysis is used to help understand these lapses. SWOT analysis takes information and separate it into internal (strengths and weaknesses) and external issues (opportunities and threats). Once this is completed, SWOT analysis determines what may assist an institution in accomplishing its objectives, and what obstacles must be overcome or minimized to achieve the desired results (Srivastava et al., 2005).

In Ghana, the specific characteristics, potentials, power influence and threats of relevant SWM stakeholders in their respective local settings have been under researched. This study employs stakeholder analysis and SWOT analysis to explore the participation of selected stakeholders in SWM in Ga West Municipality. Specifically, it (1) assesses the importance, influence and interests stakeholders have in SWM; (2) identify the roles performed by the identified stakeholders in SWM; and (3) examine the strengths, weaknesses, opportunities and threats of identified stakeholders.

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2. METHODOLOGY

2.1 Study Area

Ga West Municipal is one of the ten (10) Assemblies in the Greater Accra Region of Ghana. It is the third largest Municipality with Amasaman as its capital (Service, 2014). The Municipality lies within latitude 5°35' North and 5°29' North of the equator and longitude 0°10' West and 0°24' West of the Greenwich meridian. It shares common boundaries with Ga East and Accra Metropolitan Assembly to the East, Nsawam-Adoagyiri Municipality to the North and Ga South and Ga Central to the South. It occupies a land area of approximately 284.08 sq. km with about 412 communities. The population for Ga West Municipality for the year 2010 is 217,091 with a growth rate of 3.4%. Female population represents 49.9% of the total population whilst male population is 50.1%. Agriculture, industry and commerce are the three major economic sectors in the municipality. Agriculture supports about 55 percent of the economically active population. Settlement pattern is mainly dense with few scattered settlements. Most of the dense settlement forms slums. The major towns in the municipality include; Ofankor, Pokuase, Amasaman, Sapeiman, Medie, Kotoku (Service, 2014).

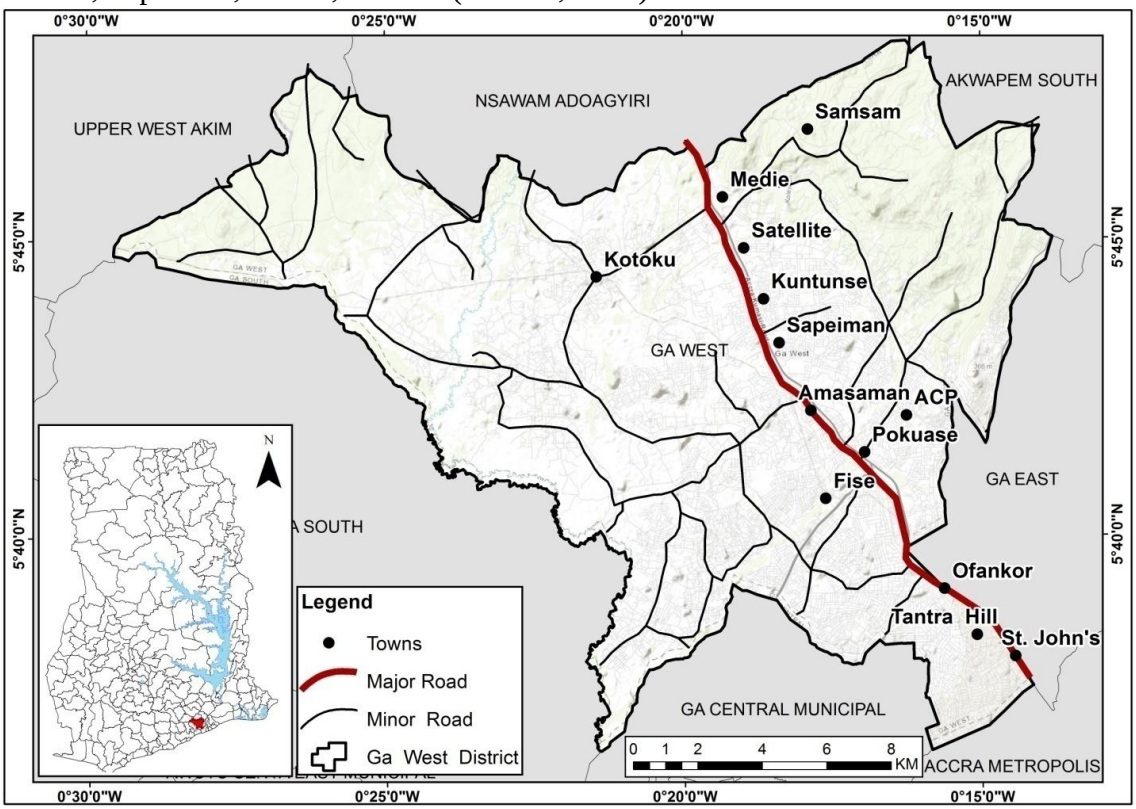

Figure 1: A Map of Ga West Municipal and Areas of study

Source: Center for Remote Sensing and Geographic Information System (CERGIS), University of Ghana, Legon.

2.2 Methods

The study used qualitative method to collect data. This involved primary data collection using semi-structured interviews with open and close ended questions, informal interviews, focus group discussion and observation on stakeholder participation in SWM. Qualitative method was used because it creates room for openness, depth and detailed description, as participants are allowed to freely express themselves (Weil, 2017). This study is a second phase of a major research the team is undertaking on assessing the sustainability of solid waste management systems and practices in the Municipality.

Ten stakeholder groups were selected. They were identified through review of literature and consultation with SWM experts. They included; households, market traders, food processors, schools, lorry stations, Ga West Municipal Assembly, Private waste operators, skip site operators, scavengers and waste disposal facility. They were chosen in this study because they are key actors in the SWM cycle of the municipality, right from generation to disposal. In this study, it is presumed that the efficiency of these stakeholder groups affects the whole SWM cycle.

Semi-structured interviews were carried out on Ga West Municipal Assembly (5 officers), Private waste operators (5 operators), Schools (10 school heads), households (heads and tenants) (150), market traders and waste disposal facility (2 officers). Informal interview was carried out on skip operators (10 operators), lorry stations (5 station masters), food processors (2 processors) and scavengers (7 people). Focus group discussion was done comprising of Ga West Municipal Assembly (2 officers), Private waste operator (1 operator), waste disposal facility (1 officers) and households (10 heads and tenants).

The study employed multiple sampling techniques. Facilities and places where waste management activities took place such as Ga West Municipal Assembly, Nsumia waste disposal facility, schools, lorry stations, skip operators and Private waste operators were purposively selected for the study. Random sampling was used to select households to be interviewed. Convenient sampling was used in public places to engage market traders, food processors and waste scavengers. Observation was done on all stakeholders. The participants were asked to state their main interest, importance and how they could influence SWM. They were also asked to state their strengths, weaknesses, opportunities and threat in the management of solid waste.

After interviewing all the stakeholders, the data were categorized according to the inquired questions. The categorization was assigned to the following main issues: (i) stakeholders' role and importance (ii) their interests (iii) their influence (iv) their strengths (v) their weaknesses (vi) their opportunities and (vii) their threats.

The following analytical strategies were employed in the study,

- Stakeholder analysis: This was done through data from primary sources such as interviews and focus group discussion. Literature on stakeholder interest, importance and influence were also used as well as consultation with experts in SWM.
- SWOT analyses. This explored the Strengths, Weaknesses, Opportunities and Threats of the various stakeholders. This was done through interviews with stakeholders and consultation with SWM experts.

3. RESULTS

3.1 Results from SWOT Analysis

Table 1 and 2 shows the Strengths, Weaknesses, Opportunities and Threat (SWOT) Analysis of households, market traders, food processors, schools, lorry station, scavengers and Nsumia waste disposal facility, Ga West Municipal Assembly, Private waste operators and skip operators in SWM.

Table 1: **SWOT Analysis of household, market traders, food processors, schools, lorry station, scavengers and Nsumia waste disposal facility in SWM**

Stakeholders	SWOT	CHARACTERISTICS
Household	Strength	Most have willingness to payment for door to door and skip collection. Households may be mobilized for communal labour. Existence of community groups and associations. Reuse of solid waste.
	Weakness	Few are unwilling to pay for solid waste collection. Indiscriminate disposal. Inability to store waste separately. Limited ability to reduce waste generation.
	Opportunities	There are opportunities for organic fertilizers production in the municipality as most of wastes are organic. Availability of inorganic waste for recycling. Payment of fees to private waste operators
	Threats	Unwillingness of some households to pay for waste collection. Potential conflicts between households and the Municipal Assembly regarding the sitting of skips and disposal facilities
Market traders	Strength	Generation of organic waste. Payment for waste collection.
	Weakness	Low level of education of traders. Indiscriminate dumping
	Opportunities	Abundant solid waste for recycling and composting. Payment of taxes to government towards solid waste collection.
	Threats	Absence of skips at some markets may exacerbate the indiscriminate disposal. Public health risk.
Food Processors	Strength	Ability to pay for waste collection. Generation of organic waste
	Weakness	Limited segregation of waste. Indiscriminate dumping
	Opportunities	Payment of taxes towards waste management. Abundant of waste for compost and Recycling
	Threats	Indiscriminate disposal may lead to environmental pollution and public health risk.
Schools	Strength	Ability to create awareness on SWM. Mobilization and supervision of students on SWM. Organization of debate and quiz on SWM.
	Weakness	Presence of dug out pits and waste heaps. Little or no budgetary allocation for solid waste collection and disposal.
	Opportunities	Incorporation of solid waste management into academic curriculum. Donor support. Frequent health talk by Public health professionals. Public education.
	Threats	Presence of sanitation related diseases due to indiscriminate waste

		disposal and incineration. Low patronage of Private waste collection.
Lorry Stations	Strength	Generation of plastic waste for recycling.
	Weakness	Low awareness on environment and sanitation. High level of illiteracy among transport operators.
	Opportunities	Tax generation to the government for solid waste management service. Generation of plastic waste for recycling.
	Threats	Indiscriminate disposal of solid waste. Low level of understanding on Polluter Pay Principle may hinder willingness to pay.
Scavengers	Strength	Recovery of solid waste (5% of total waste). Promotion of waste reuse. Segregation of waste for recycling
	Weakness	Illiteracy. Inadequate equipment & health protection, Lack of job security. They are involved in picking only inorganic solid waste**.** They are mostly unorganized.
	Opportunities	Reduced environmental health problems, Reduced dumping of refuse. Reduced waste in the environment
	Threats	Suffer social stigmatization from citizens. Waste pickers may suffer the risk eg. Tetanus
Nsumia Disposal Facility	Strengths	Sanitary disposal of solid waste. Expertise knowledge on landfill management. Operation based on environment and sanitation standards. Recovery of waste materials by scavengers on site.
	Weaknesses	Inability to control odour from site. Presence of vectors. Lack of equipment for waste-energy production.
	Opportunities	Operating under Public Private Partnership. Strategic location of landfill to Ga Districts Reduced pressure on the Kpone (Tema) landfill. Revenue mobilization.
	Threats	Complaints from the Nsumia Community. Delayed government funds. NIMBY syndrome. Competition from estate developers for available lands.

Table 2: **SWOT Analysis of Ga West Municipal Assembly, Private waste operators and Skip operators in SWM.**

Stakeholders	**SWOT**	**Characteristics**
Ga West Municipal Assembly	Strengths	Availability of elected representatives of the citizens. Availability of skilled and unskilled human resource. Provision of logistics for waste management. Availability of internally generated fund. Part owner of Nsumia solid waste disposal facility. Organization of in-service training. Ability to collect 20% of total waste generated. Treatment and Processing of waste through Accra Compost and Recycling Plant (ACARP).
	Weakness	Financial challenges. Poor community perception on waste and SWM. Presence of slum communities. High rate of illiteracy in the municipality. Scarcity of land for landfill purposes due to NIMBY syndrome. Poor road network preventing meaningful house to

		house collection. Dictatorship, poor consultation and information flow from municipal assembly officers. Inadequate tools, skips and vehicles for waste collection. Lack of political will.
	Opportunities	Working in partnership with NGOs and CBOs to facilitate primary collection schemes. Donor support. Partnership with private waste operators, District Assembly common fund. Partnerships with other institutions.eg. Magistrate court, Environmental Protection Agency, Forestry Commission, Urban roads etc. Availability of a National Environmental Sanitation Strategy and Action Plan. Legislative and regulation eg. Bye laws, Act 462 criminal code.
	Threats	Low level of compliance with bye laws from waste generators. Waste continues to be dumped on open areas. Insufficient staff. Inadequate salary and poor service conditions for workers. Lack of sufficient vehicles in operation Ineffective financial management. Traffic congestion delay waste transportation. Political interference, Chieftaincy disputes, Overlapping of function. Outdated laws. Low fines.
Private waste operators	Strength	Door to door collection of solid waste (30% of total waste). Higher operational efficiency than public sector. Provider of income and employment. Provision of skills and training to personnel's.
	Weakness	Inadequate equipment & health protection. Inadequate experts. Uncovered waste may drop on the streets, Low remuneration vis-à-vis work load, Lack of recognition of informal sector. Low community awareness and logistics hamper waste segregation at source. Delay in waste collection.
	Opportunities	Convenient for residents. Helps reduce indiscriminate disposal of waste. Low charges for collection. Supply of waste bins to households. They have contract with municipal Assembly. Availability of new government policies and programs that support and encourage private sector partnerships.
	Threats	Lack of reliability. Wastes that are awaiting collection may be scattered by wind, animals, children or scavengers. Unwillingness to pay by some households. High import duties on imported waste collection vehicles and spare parts. Bad road networks and presence of slum communities. Low patronage of solid waste collection services. Inadequate support from government. Inability of the collection vehicles to collect the segregated waste separately.
Skip Operators	Strength	Dump of waste at a specified location. They are supported and supervised by municipal Assembly. Most people dispose waste at skip sites
	Weakness	Conflict between households and Assembly over the sitting of skips. If containers are not maintained, they quickly corrode or are

		damaged. Inadequate logistics. E.g. Tools, vehicles, skips (only 20), fumigant and disinfectant. Lack of regularity in final disposal of waste at skip sites.
	Opportunities	Low per capita cost to generators. Reduced waste in the environment. Revenue generation from waste generators.
	Threats	Indiscriminate dumping occurs when households are unwilling to pay. Public and environmental health is hampered due to odour and flies. Some operators do not tidy up the place. Incineration of waste could lead to pollution.

3.2 Results from Stakeholder Analysis

Table 3 presents information on the importance, interest and ability of the selected stakeholders to influence SWM decisions. Among the service providers, Ga West Municipal Assembly had the greatest interest, importance and influence over SWM.

	Ability to Influence SWM	Interest of stakeholders	Importance of stakeholders
I.	Little influence	Little interest	Little importance
II.	Some influence	Some interest	Some importance
III.	Moderate influence	Moderate Interest	Moderate importance
IV.	Significant influence	Significant interest	Very important
V.	Very influential	Very high interest	Critical player

Table 3: **Stakeholder Analysis**

No	Stakeholders	Interest	Importance	Influence
01	Households	III	III	I
02	Market traders	III	III	I
03	Food Processors	III	III	I
04	Schools	III	III	I
05	Lorry Stations	II	II	I
06	Ga West Municipal Assembly	V	V	V
07	Private Waste Operators	IV	IV	III
08	Scavengers	III	IV	I
09	Skip Operators	III	III	I
10	Waste Disposal Facility	IV	IV	III

Table 4 presents information on the types and stages of participation of the selected stakeholders. Participation type include; Self-Mobilization and Initiative, Consultative, Partnership, Collaborative, Informative, Advocacy, Supportive, Prosecution, Enforcement and Compliance, Implementation, Regulator and Partnership. Stages at which they participate include; decision making, implementation, monitoring and supervision of SWM projects.

Also, Table 5 indicates the various activities performed by the selected stakeholders in the management of solid waste.

Table 4: **Stakeholders, Stages and Types of Participation**

Stakeholders	**Types of Participation**	**Stages of Participation**
1.Ga West Municipal Assembly	Regulation and supervision, Consultation, enforcement and Compliance, informative, Prosecution, Public- private partnership and supportive	Decision making on SWM issues, Implementation of SWM issues and Monitoring and Supervision of SWM projects
2. Private Waste Operators	Public- private partnership, collaboration, informative, supportive.	Decision making on SWM issues, Implementation of SWM issues.
3.Skip operators	Supportive	Implementation of SWM issues
4.Scavengers	Supportive, self-mobilization and Initiative	None
5.Food Processors	Supportive and collaboration	Implementation of SWM issues
6.Schools	Informative, self-mobilization and Initiative	Implementation of SWM issues
7.Households	Supportive, collaborative, Informative, self-mobilization and Initiative	Implementation of SWM issues
8.Market traders	Supportive, collaborative, Informative, self- mobilization and initiative	Implementation of SWM issues
9.Nsumiawaste disposal facility	Public-Partnership, collaborative and supportive	Decision making and Implementation of SWM issues.
10.Lorry Station	Collaboration, self-mobilization and Informative	Implementation of SWM issues

Table 5: **Stakeholders and SWM Activities Performed**

No	Stakeholders	Activities
01	Households	Solid waste generation, collection, incineration and disposal
02	Market traders	Solid waste generation, collection, incineration and disposal
03	Food processor	Solid waste generation, collection and disposal
04	Schools	Waste generation, collection, disposal and education
05	Lorry stations	Solid waste generation, collection and disposal
06	Ga West Municipal Assembly	Partnership with private waste operators. Setting of policies and bye laws. Capacity building programs, seminars and workshop. Collection, storage, Transportation and disposal of solid waste. Expected to create stakeholder involvement in SWM
07	Private waste Operators	Solid waste collection, transportation and disposal
08	Scavengers	Solid Waste (Inorganic) picking and selling
09	Skip operators	Solid waste collection and storage. They clean up the sites, incinerate waste, collect fees and in some cases, pay for final waste disposal.
10	Waste disposal Facility	Solid waste disposal, Pushing, Compaction, Covering, Spreading and Spraying.

4. DISCUSSION

4.1 SWOT Analysis

This study found that most households were willing to pay for solid waste collection and disposal, a result that is similar to a study by Amfo-Out et al. (2012) which showed that 93.7% of participants in their study were willing to pay for waste collection and disposal. Indiscriminate waste disposal and unwillingness of few households to pay for waste collection and disposal may militate against the realization of sustainable SWM (Agbesola, 2013). Indiscriminate dumping and illegal dumps found in this study have been criticized by some authors (Gugssa, 2012; Agbesola, 2013). Taiwo (2011) has explained the need to reduce, separate and reuse solid waste. However, this study found waste separation and reduction at source to be low. The situation of low waste separation and reduction in Ga West municipal is similar to what exist in Sekondi-Takoradi metropolis and Lagos-Nigeria respectively (Fei-Baffoe et al., 2014; Agbesola, 2013). Nonetheless, with intensive public education, people will understand and practice source separation, waste reduction and desist from indiscriminate solid waste disposal.

The study found that market women were willing to get involve in initiatives that enhanced composting of waste from the market. This is because market traders generate bulk of

organic waste, and thus see composting as a sustainable means through which the fallout of their activities on the environment can minimize environmental pollution. This point is in synch with studies by Klunbut et al. (2017) in Thailand. Nevertheless, indiscriminate disposal, coupled with absence of skips near some market sites may pose risk to public health as foodstuff may become contaminated.

Food processors have the ability to support a compost project. This is because of the high volume of organic waste generated through fruit processing. Those into pure water manufacturing may also provide used sachets for recycling through the activities of scavengers. Therefore, the municipal Assembly has more avenues to secure materials for composting and recycling. Indiscriminate disposal on the part of food processors is an eye sore as waste can adversely affect food safety.

Furthermore, the study found that the selected schools were able to create awareness on SWM. This is important as it can help change the mindset and attitude of student towards waste reduction, reuse, recycling and proper disposal. Students may be taught to be innovative in the search for alternative ways to transform waste into resources. The active role of teachers and school employees can motivate students towards sustainability and good environmental practices (Rada et al., 2016). To this end, efforts must be made by government and school management to organize seminars, workshops, debates and quizzes as well as the release of funds towards sustainable SWM. This will help reduce indiscriminate disposal and environmentally related diseases found in the schools.

This study also found that lorry stations generated more plastic solid waste. This is because plastic products such as pure water, bottled water and drinks are sold to passengers and drivers at the station. These plastic wastes may be collected and sold to recyclers or itinerant waste buyers. More so, separate waste bins can be placed at vantage points at the station to promote waste separation at source. Drivers could help with public awareness campaign on waste reduction, reuse, recycling and composting. Stickers could be attached to buses as they move on the roads to crusade against the “throw it anywhere” attitude, the “NIMBY syndrome” and unwillingness to pay. For this to become possible, drivers must be sensitized as they are also culprits to the waste disposal problem.

The study shows that Ga West Municipal Assembly is able to compost and recycle waste through Accra Compost and Recycling Plant (ACARP). This puts the municipality ahead of Sekondi-Takoradi metropolis where wastes generated mostly do not go through processing or treatment (Fei-Baffoe et al., 2014). On waste collection, the Assembly is able to collect only 20% of the total waste generated in the municipality. This finding is similar to waste collection in Accra metropolis (Annepu and Themelis, 2013) but at variance with Sekondi-Takoradi metropolis where collection rate is found to be 31% of total waste generated (Fei-Baffoe et al., 2014).

Various studies have shown that stakeholder involvement and consultation is crucial for a successful SWM (Oteng-Ababio, 2010; Annepu and Themelis, 2013). Although partnership existed in this study among the Municipal Assembly, Private waste operators, ACARP and Nsumia disposal facility, the level of consultation and information flow was low especially with the informal sector and waste generators. The study found that dictatorship is seen on the part of municipal officers. This tendency may only result in anarchy and passivity on the part of the people. This may be the reason for existence of many open dumps in some communities. More so, the NIMBY syndrome which is found in this study has made it difficult to acquire land for

landfill purpose. This is because landfills have caused many problems for communities at the waste site such as underground and surface water pollution, odour and stigmatization. However, with a good stakeholder involvement, landowners may freely release lands for landfill purposes.

The study has shown that some Private waste operators do supply standard waste bins to households. This is similar with what exist in Sekondi-Takoradi metropolis (Fei-Baffoe et al., 2014). This can help enhance waste collection. However to promote waste separation at source, two or more bins may be needed and Private waste operators must device appropriate means to collect wastes separately. This study also found that Private waste operators sometimes delayed in waste collection. This finding is parallel with studies conducted in Accra metropolis (Gugssa, 2012; Annepu and Themelis, 2013). Possible reasons for the delay may be due to break down of vehicles, traffic congestion and other technical challenges.

The study revealed that scavenger recovered only 5% of solid waste from the total waste generated. This is below what exist in Lagos where scavengers' recover 30% of solid waste from the waste stream (Ogwueleka, 2009). A possible reason may be because scavengers are poorly organized and improperly integrated into the SWM stream in Ga West Municipality. There is an emerging consensus that scavengers must be properly integrated into SWM programs (Annepu and Themelis, 2013).

The study showed that skips are used for waste collection and temporal disposal in the municipality. However only 20 skip were reported to be in good condition. Given a population of 217,091 people and 20 skips in good condition, then the ratio of skips to total population is approximately 1:10855 in Ga West Municipality. This is above what existed in Tamale Metropolitan Area where skip to population ratio is 1: 9378 and far above the recommended ratio of 1:700 (Puopiel, 2010). Also, the study showed that skips were full and were over-spilling. This finding is consistent with what Mangizvo (2007) discovered in his study. Skip sites may become breeding places for vectors of communicable diseases such as fever, dysentery, diarrhoea, and malaria.

Nsumia Waste Disposal Facility is the official disposal site for Ga West Municipality. The five stages of managing waste namely; push, spread, compact, cover and spray used at the site is supported by authors such as Mancini et al. (2007) and Omar & Rohani, (2015). According to them, coverage of waste on a daily basis would help to reduce stench from disposal sites, curb vector activity, control moisture and littering. In spite of these interventions, emission of odour from the facility pervades the locality which may be described as awful. Odour from landfill has significant potential to call for complaints (Sironi et al., 2005). It is therefore not out of place for the Nsumia community to protest against the operation of the landfill. Additionally, the delay of government payment to the facility may exacerbate the problem, since funds may not be available to manage the site.

4.2 Stakeholder Analysis

This study also showed that stakeholders had various interest, importance and influence in SWM. Finding shows that Ga West Municipal Assembly has the greatest interest, importance and influence. This is because the Assembly is the lead institution of government and is mandated to champion SWM in the municipality. As such the Assembly sees to decision making and implementation, monitoring and supervising projects on SWM as well as education, enforcement, compliance and prosecution of culprits. It is expected to build partnerships and

create an enabling environment for all stakeholders to contribute to SWM (MLGRD and EHSD, 2010). If these responsibilities are discharged faithfully, SWM problems may be reduced in the municipality. Nonetheless, the presence of open dumps, indiscriminate disposal and sanitation related diseases are signals that show that to a larger extent the Assembly's roles have been compromised. Many challenges may be given for this, such as inadequate vehicles and personnel for sanitation inspection, lack of political will and inadequate support from other stakeholders.

Private waste operators had significant interest and importance but moderate influence on waste collection. This is because the Assembly determined their partnerships, negotiated waste collection fees and zones where each operator could collect waste. More so, operators seek to maximize profit and therefore collect waste from only those who are willing to pay. They cannot force people to patronize their service. Therefore may not to blame for the wide gap between waste generation and collection. Similarly, Nsumia disposal facility had a significant interest and importance but moderate influence on waste disposal. It managed only waste brought to the site. Existence of partnership between the facility and the Assembly makes it moderately influential. Hence, it collaborates and supports the Assembly in sanitary disposal of solid waste. There by reducing illegal dumping and its health implications.

Findings from this study show that scavengers have significant importance, moderate interest and little influence in SWM. They are at the receiving end of SWM decisions. They are interested in collecting recyclables for sale in order to make a living but not for environmental consciousness. However, their activity is critical because they collect, sort and alter plastic and metal waste for sale to recycling companies (Sironi et al., 2005; Wilson et al., 2006). Similarly, skip operators have moderate interest and importance but little influence in SWM. This is because they are unable to influence the decisions of the Assembly since they are hardly involved. More so, they are mostly interested in earning a living at the site but their service is moderately important to the community since they acted as transit stations for solid waste. Market traders, households and food processor had moderate interest, moderate importance but little influence in SWM. Market traders and food processors may not have buyers when they compromise on personal hygiene. Moreover, public health is adversely affected when food is contaminated. Households mostly collect waste from their immediate environment and may not care if it causes nuisance at disposal sites (Puopiel, 2010). As long as waste is not in their backyard they care little. They have little influence because they are at the receiving end of SWM decisions. Nonetheless, effective door to door collection is dependent mainly on willingness of households to pay for solid waste collection (Oteng-Ababio , 2010).

Schools have moderate interest, moderate importance and little influence in SWM. This is because schools as institutions of learning are able to create awareness on SWM through debates, drama, clean up exercises etc (Ifegbesan et al., 2017). But they could not influence SWM decisions. Lorry stations have little influence but some interest and importance in SWM. This is because they pay levies to the Assembly which may be used for SWM activities. Findings show that waste generators are able to mobilize themselves and take personal initiatives for waste collection. This is a significant virtue needed to improve SWM; however, it should not be limited to their immediate environment. Effective mobilization must extend into the community. For instance households could come together and organize community clean up exercises. Moreover, they may serve as watch dogs against those who practiced indiscriminate solid waste disposal. Compliance to Municipal Assembly bye laws on SWM is critical to

enhancing effective SWM. Therefore, Assembly men and community leaders must instill in the people a sense of responsibility for waste collection and sanitary disposal.

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Stakeholder participation is identified in this study as a very important tool in achieving sustainable SWM in Ga West Municipality. This study explored the participation of selected stakeholders in SWM in Ga West Municipality. Specifically, it (1) assessed their importance, influence and interests; (2) identified their roles performed and (3) examined their strengths, weaknesses, opportunities and threats in SWM. The study found that stakeholder consultation and involvement in SWM was low, most stakeholders were ignored in decision making, stakeholders had varying interests, importance and influences in SWM. More so, opportunities existed for compost and recycling but half of total waste generated was uncollected and recovery rate was very low. All stakeholders have peculiar strengths, weaknesses, opportunities and threat which must be carefully exploited and managed for the achievement of a sustainable SWM.

5.2 Recommendations

The study recommend that Ga West Municipal Assembly must find appropriate means to promote stakeholder consultation and involve all stakeholders in the management of solid waste, recognize and integrate scavengers efficiently to recover waste and lastly, intensify public education on solid waste collection, reduction, reuse, recovery and recycling. The study used qualitative approach to describe and assess stakeholder participation. However, further studies may be conducted using quantitative approach.

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