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Institutional Transformation:

Redefining Institutions to Guide Municipal Solid Waste Management in Accra (Ghana)

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requirement for the award of a
Master of Science Degree in Environmental and Infrastructure Planning

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DEDICATION

This thesis is dedicated to the memory of my late father, COP Wilfred Sam-Awortwi (rtd.).

ABSTRACT

The effect of society's solid waste is very evident in Accra; and its management is understood to be knocked about. This dilemma is often associated to the rapidly growing population and changing socio-economic patterns that lead to the generation of enormous volumes of solid waste per day. Institutional incapacities and resource deficiencies contribute to the management system's inefficiencies in such a dynamic social environment. The institutional structure constituting the 'rules of the game' cannot go unnoticed because they 'guide and give meaning to human interaction'. Governance processes are also embedded in, and thus defined by institutions. The main aim of this research was to empirically assess the institutional environment and arrangements to help propose an approach to (re)design institutions that accounts for the unknown. The qualitative approach to analysis was adopted. An area-based approach that embodies principles of what I call a '*pro-adaptive*' approach to institutional (re)design is proposed. This is basically a consolidation of being proactive (taking preventive initiatives rather than damage control) and also being able to adjust to changing social and environmental circumstances in a specific context. The root of this proposal is in two folds: the fact that traits of area specific patterns have already been established, but are (to a large extent) restrictive in practice; and the overall limited and reactive focus of institutional environments.

Keywords: *Institutions; institutional design and transformation; governance; management; solid waste; Accra*

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ACRONYMS AND ABBREVIATIONS

AMA	Accra Metropolitan Assembly
CAS	Complex Adaptive System
CBD	Central Business District
EHSD	Environmental Health and Sanitation Directorate
EPA	Environmental Protection Agency
ESP	Environmental Sanitation Policy
GSGDA	Ghana Shared Growth and Development Agenda
IBRD/world bank	International Bank for Reconstruction and Development
LI	Legislative Instrument
MESTI	Ministry of Environment, Science, Technology and Innovation
MLGRD	Ministry of Local Government and Rural Development
MMDAs	Metropolitan, Municipal and District Assemblies
MOH	Ministry of Health
MWRWH	Ministry of Water Resources, Works and Housing
NDPC	National Development Planning Commission
NESSAP	National Environmental Sanitation Strategy and Action Plan
SESIP	Strategic Environmental Sanitation Investment Plan
Sub-Metros	Sub-Metropolitan District Councils
TCPD	Town and Country Planning Department
WMD	Waste Management Department

CHAPTER ONE

INTRODUCTION

Recent events in major urban centres in Africa have shown that the problem of waste management has become a monster that has aborted most efforts by city authorities, states and federal governments, and professionals alike (Onibokun and Kumuyi, 1999, p. 2)

1.1 Background

Management of the rapid growth of urban centres has come to be one of the highly debated subjects in this globalising era. The uncontrolled nature of developments arising from the little or no direction to growth in most African cities (Fay and Opal, 2000) manifests itself in the weak and unsustainable approach to sanitation and solid waste management. This patent phenomenon is not different from what is experienced in Accra, the capital city of Ghana. Generation and the management of municipal solid waste has been a growing concern for many cities. It is the source of pollution, land degradation and various environmental concerns (Asese et al., 2009). Although the impact of waste puts the health of humans at risk, it also has the potential of affecting the ecological make-up communities.

The effect of the society's solid waste is very evident in Accra (Anomanyo, 2004; Owusu, 2010). This is often related to the increasing population in the city. Natural increase and the relative availability of economic opportunities - serving as a pull factor - have led to the generation of enormous quantities of waste on a daily basis. Besides, Accra's position as the capital city which houses most (if not all) head offices of government agencies and possibly most 'large-scaled' private organizations or businesses makes it an ideal location that attracts immigrants. This increases the load on the already burdened waste management system. With this population growth trend, the dilemma of managing solid waste in the light of society's unpredictable¹ nature is reflected in the physical state of the environment.

It is common to be walking in the streets of the so called *Millennium City* as broadcasted by the Accra Metropolitan Assembly (AMA) whiles literally kicking garbage, especially in the Central Business Districts. This case is common due to the high level of indiscriminate dumping of solid waste (Tsiboe and Marbell, 2004). Even without taking the adequacy of infrastructure such as skip bins into consideration, the available bins are either extremely over utilised or under-utilized. In most cases, there are waste overflows. But rather than dumping into bins, an attitudinal encounter is realised (Oteng-Ababio, 2011), which makes the available containers under-utilized.

The institution of rules and regulations to serve as guidelines in the management of solid waste may have yielded success in some neighbourhoods, especially amongst the affluent. But that cannot be said for the majority of low-income (and high-density) residential neighbourhoods and most market

¹ This is because human behaviour is unpredictable (Portugali, 2006)

centres. Regulating waste in public places for instance has been a concern for the city authority for decades. Public spaces such as market centres and transport terminals are characterised by heaps of solid waste. Although attempts are always made by the city authority to clear such common sights, solid waste continues to pile up daily. All these shortcomings are mostly as a result of institutional mechanisms that involve various actors at various levels (Mariwah, 2012). This, in its minimum form signifies a level of uncertainty within institutional structures and processes.

In a more comprehensive view, waste and in this case the management process is mishandled (Aziale and Asafo-Adjei, 2013). The management of solid waste in Accra is nothing to make known considering the unsustainable way in which it is carried out (Boadi and Kuitunen, 2003). The current system largely relies on landfill sites as the end of the management process. Moreover, it is principally characterised with feeble institutional capacities and resource deficiencies (Anomanyo, 2004; Boadi and Kuitunen, 2003; Owusu, 2010). With the institutional structure being an important constituent in promoting environmental sustainability, it is a concern that cannot go unnoticed. The purpose of this research therefore is to assess current arrangements to come out with an approach for redesigning institutions that accounts for the unknown; to guide the complex nature of municipal solid waste management in Accra.

1.2 Problem statement: The state of solid waste management in Accra

The volume of waste generation is a function of population size and standard of living (Mensah-Bonsu and Owusu-Ansah, 2011, p. 190)

A major contributor to environmental degradation is population growth (Hughes, 2005). With a growth rate of 4.4% per annum (IBRD/World Bank, 2010), Accra's booming population is a major contributor to its sanitary condition. In Ghana, it has been empirically established that solid waste generation has increased rapidly over the years. The amount of solid waste generated per day in Accra was 750-800 tonnes in 1994 (Asomani-Boateng, 2007), 1,800 tonnes per day in 2004 (Anomanyo, 2004), 2,000 tonnes per day in 2007, and an estimate of 2,200 tonnes of solid waste generated per day in 2010 (Oteng-Ababio, 2011). From the onset, the waste collection arrangement in the city is inadequate (Boadi and Kuitunen, 2003). Out of the total solid waste generated per day in the city, 75% is collected (Annepu and Themelis, 2013). The lack of political will and systems to check the performance of private contractors employed to collect waste are what accounts for this inefficiency.

Commonly, the uncollected waste is openly burnt or dumped into storm drains and water bodies. These eventually have major impacts on the environment and its inhabitants. Such consequences include the outbreak of diseases such as cholera (for example, the June 2014 cholera outbreak where 28,944 cases and 247 deaths were recorded (UNICEF, 2014)) and the perennial floods that hit the city at the slightest downpour. This habit of dumping into storm drains and water bodies begun in the

1990's when the shores of the Korle Lagoon was turned into an open dump site by the city authority (Boadi and Kuitunen, 2003). This action has motivated citizens residing near storm drains and water bodies to unceasingly dump their waste in drains although the city authority is currently on an agenda prohibiting such unsustainable approach. Accordingly, this situation is directly linked to the high level of indiscriminate dumping of refuse in the city (Tsiboe and Marbell, 2004). Although the city authority in association with private waste management companies and Non-Governmental Organisations (NGO) claim to provide skip bins to households and neighbourhoods, indiscriminate dumping is still common. Indiscriminate dumping is evident especially in low income neighbourhoods and public centres such as the markets and transport terminals. Creating public awareness has also been regularly embarked upon by the city authority and NGO's, and the setting up of the National Sanitation Day Policy; has not been able to address the indiscriminate disposal of waste in the country (Monney, 2015). The problem does not only fall on the city's management, but also on the undeniable culture of '*not really caring*' about what happens in the environment so far as it is not in individual homes. Perhaps, this insensitive attitude is a result of globalisation put forward by Hughes (2005) that there is an increasing commotion between the polluter and the bearer of its consequences.

Recycling of waste is hardly noticed because it is undertaken by private individuals and companies even though it is supposed to be an essential part of the solid waste management system by the city authority (Oteng-Ababio, 2009). At the individual level, 'waste pickers or scavengers' gather recyclables at the dumpsites to be sold to make ends meet. Currently, there is only one recycling plant in Accra and the entire country - a material recovery facility named Accra Composting and Recycling Plant (Annepu and Themelis, 2013). Although the facility is involved in the separation of recyclables, it is yet to work on a full scale since it does not have the requisite market to make it fully operational.

The Achimota dumpsite used to be the designated open-dump system used as a landfill site until it was decommissioned in 2013 (Graphic Communications Group Limited, 2013). This system of disposal had negative effects on the livelihood of people in the neighbourhood - from the pungent smell to the increased possibility of getting contagious diseases. Although it has been decommissioned, some residents continuously dump refuse at the site. This illegality, in addition to the formation of other informal dumpsites at various pockets of the city such as that of Agbogbloshie (a major commercial centre in the city) is a concern to be addressed. Interestingly, the central government has identified two sites to construct new landfills as a strategy to manage waste - the Ashalaga-Habor, and Ayidan sites in the Ga South Municipality (Graphic Communications Group Limited, 2015a). Were priorities made before deciding on this unsustainable venture that will rather increase the already scarce land in Accra? Is that the best way to judiciously use land in such an investor-attractive location? Well, it is a matter of political power.

Successive policy frameworks formulated by consecutive governments have all had waste management as one of its prioritized focus areas, yet the improvement in the sector is hardly noticed. According to Annepu and Themelis (2013), the Accra Metropolitan Assembly disbursed 82% of its financial resources in 2008 on the collection and transportation of waste. This shows the significance given to the collection and transportation of solid waste; so what happens next after collection which is not thoroughly done? Boadi and Kuitunen (2003) attribute the current practices of managing waste in Accra to the ill-mannered spatial planning system. This is mainly a result of the inadequate regulatory mechanisms that give way to indiscipline; further paving way for disorganized and poor upkeep of the insufficient infrastructure. In another dimension, these regulatory mechanisms – institutions - also suffer from implementation barriers that suppress the operation of rules and regulations.

1.3 Research questions and objectives

The research will be guided by the following questions:

- ☆ What are the explicit causes of the perceived failure of institutions in managing solid waste?
- ☆ How are institutions established within societal and political dynamics; and what are the roles of institutions in the management of municipal solid waste?
- ☆ How can a possible redesigned institutional framework be made to enhance effectiveness of municipal solid waste management in our intricate environmental setting?

The questions guiding the research were formulated based on theoretical, empirical and synthesising contexts. Theoretically, understanding the institutional framework and practices were based on the concepts of institutions which give rise to planning and management in an unpredictable social environment.

A **hypothesis** is developed; *efficient use of the scarce resources will thrive in a well-structured framework of rules, regulations and actions*. The hypothesis postulates that increased efficiency can be achieved through well-organized, suitably focused and resourceful means.

Empirically, the research focuses on the management of municipal solid waste since it is an increasing phenomenon in the light of the increasing urbanization and globalization. The synthesis had to do with the relationship established between institutions and the multifaceted nature of solid waste management.

As a result of the formulated research questions, the overall objective of the research is to assess current arrangements to help come out with an approach to redesign the institutional structure that guides the complex nature of municipal solid waste management in Accra. The specific objectives of the research are to:

- ☆ Determine the explicit causes of the institutional situation to serve as a guide in the redesigning process;
- ☆ Appreciate the process of institutional design in our dynamic setting; and to establish its role in managing the complex system of municipal solid waste processes; and
- ☆ Come out with an approach to redesign institutions to improve effectiveness in the multifaceted management of municipal solid waste.

1.4 Methodology

The methodology employed in this research includes identification and definition of the problem, review of literature, and the collection and analysis of data to generate findings. The condition of Accra's municipal solid waste management system was expounded to come out with the notable concern. Intellectual writings about the concept of institutions and institutional design, solid waste management, and related disciplines emanating from the theoretical perspective of planning helped to come out with a conceptual framework to guide the research. Data was collected through primary and secondary means to analyse the institutional structure governing solid waste management in Accra. In turn, findings are generated from the analysis of the subject matter.

1.4.1 Research design

In the bid to explore and analyse the institutions guiding solid waste management in Accra, the case study approach was adopted. This allowed for the investigation into the institutional setting regarding Accra's municipal solid waste management system to enhance understanding within its real-life context (Yin, 1994). Institutions and institutional arrangements of the Accra's municipal solid waste management, in sync with two specific 'micro' cases within metropolitan area – Tema station and Korle Gonno – were looked at. Consideration of the 'micro' cases gives an added insight into different contexts for managing solid waste within the Accra Metropolis. The purposeful selection of cases was not based on any generic or specific criteria, other than subjective reasoning.

- Tema station was selected because of the role it plays in Accra's central business district (CBD). As the main lorry terminal within the heart of CBD, it serves as the central access point to all areas within and beyond the boundaries of Accra. With the CBD naturally being a high interest zone for various social and economic activities, the lorry station typically accommodates a considerably high percentage of people and commuters alike. In such a busy environment, the source of solid waste is considered to be in abundance. Thus, signifies a potential area of interest.
- Korle Gonno, a town in the Ablekuma South Sub-metro of Accra was purposefully selected because of its location, and partly due the role it played in the city authority's waste management history. The town is bordered to the east by the Korle lagoon, an inlet that

connects the Odaw River – the main drainage system of the Greater Accra Region – to the sea. It is also bordered to the south by the sea – the South Atlantic Ocean. Formerly, the shore of the lagoon was a dumping ground for waste.

1.4.2 Sources and methods of data collection

Both primary and secondary data sources were obtained for the research. Primary sources of data include regulations and policies in the field of solid waste management and the environment, and satellite imagery and aerial photographs. The regulatory frameworks and policies were mostly accessed online; with further cross-checks with the responsible organizations for validity and to make certain documents that are currently in use. The satellite imagery, obtained from ESRI Digital Globe was used to depict the specific land areas of the ‘micro’ cases considered in this study. Secondary data was also obtained from specific sources of interest with a considerable role and influence in the decision making and implementation scope of Accra’s municipal solid waste management. The following illustrates the data sources and their relevance (a brief description of their role):

- Waste Management Department of the Accra Metropolitan Assembly – responsible for the day-to-day oversight of solid waste management in Accra.
- Environmental Protection Agency – responsible for the regulation of all activities that has impact on the environment.
- Ministry of Local Government and Rural Development – responsible for policy formulation on environmental sanitation, development of guidelines, and the monitoring and evaluation of environmental sanitation.
- Ministry of Environment, Science, Technology and Innovation – responsible for ensuring a safe environment via the formulation of policies. The Ministry acts as the collaborator with other environmental stakeholders.
- Town and Country Planning Department – responsible for the zoning of spaces for solid waste management facilities such as collection points and transfer stations.
- National Development Planning Commission – responsible for the formulation of national development policies of which the issue of waste management is often addressed.

The use of semi-structured questionnaires guided the sessions of dialogues with a representative of the surveyed organizations. Two sets of the semi-structured questionnaires were used: the first (see appendix I) was designed for the Waste Management Department, and the second (see appendix II) to the identified departments, agencies and ministries with a direct involvement in the city’s institutions for solid waste management. Other secondary data acquired include reports, books, journals, and webpages on the internet that are of relevance in the field of institutions and solid waste management.

1.4.3 Data analysis

Data for this research was analysed using the qualitative approach. The qualitative approach to analysis allows for detailed understanding of the ‘real-life’ activity within its context. It employs an inferential method where the analyst is required to perceptively define important groupings in the data in addition to distinct patterns and relationships (Yin, 2009). Composition of the institutional network (that is, the key actors – organizations - and their relationship) and current institutional environment and arrangements were identified essential components that required being emphasized through-out the analyses; as well as their linkages. Deductions were made from data obtained from interviews with representatives of the selected organizations; as well as the institutions - guidelines, regulatory and policy frameworks, etc. With the focus of the research based on the ideals of efficiency, this approach provided a platform to make logical inferences from collected data.

1.5 Theoretical background and structure of the study

The theory underpinning this research is based on the concept of institutions and institutional design. Institutions play a critical role in our daily lives by ensuring orderliness because our activities are guided by institutions (Kim, 2011). Institutional design is therefore a necessity to be carried out with maximum efficiency in order to promote sustainability. The ideas of governance and management are also key themes to be looked at. The available institutions and institutional structure, and the governance and management strategies and mechanisms prevailing in a specific context are dependent variables that when in a well-organized sync can promote effectiveness in planned interventions. However with the purview of this research limited to the phenomenon of managing solid waste, the theoretical conception that focuses on complexity cannot be disregarded. Solid waste management can be viewed as a complex adaptive system (CAS) particularly from the societal point of view. The society is directly involved in the management of solid waste (Owusu, 2010); hence, the process can be classified as a CAS because the society is an open, interrelated and composite structure full of uncertainties (Byrne, 2003; Portugali, 2006; Rauws et al., 2014). Also, processes in developing institutions involve multiple actors at multi-levels that create an unpredictable environment for the formulation of institutional structures and processes. Thus, institutions in themselves are ‘complex’.

The research is presented in five chapters. The first chapter covers the overview of the study; which entails the problem statement and research methodology. Chapter two highlights the contextual background of the institutional structure guiding solid waste management in Accra. It provides a more detailed situation of the solid waste management arrangement in Accra. Chapter three presents the theoretical framework of the research. The fourth chapter is on the institutional analysis of Accra’s municipal solid waste management system. It further includes the elaboration of the specific cases in Accra. The final chapter (chapter five) concludes the study by answering the research questions; and an emphasis on the approach to redefine the institutional framework.

CHAPTER TWO

CONTEXTUAL BACKGROUND: THE INSTITUTIONAL STRUCTURE FOR MANAGING SOLID WASTE IN ACCRA

2.1 Introduction

In this chapter, a broad profile of the Accra is presented. An emphasis is made on the governing and institutional structure for the management of solid waste in the city. Having first-hand knowledge of the contextual nature of solid waste management is relevant to stir up a well-thought out institutional analyses. Existing legislations and guidelines for managing solid waste in Accra is presented. The key stakeholders involved in the management process are also highlighted. The practicality of the concerns involved in the management of solid waste is described. This is to establish the relationship between what the normative framework ought to be and what is actually happening in the real-life context. The output of this chapter is therefore an essential element in determining the input for the literature review in chapter three. It also serves as a component for the institutional analyses in chapter four.

2.2 Location and physical characteristics

Accra is the national capital of Ghana, West African. It is the capital of the Greater Accra Region and Accra Metropolitan Area which was established in 1898. It is a coastal city along the South Atlantic Ocean; bounded to the north by Ga West Municipal, east by La Dadekotopon Municipal, the west by Ga South Municipal and the South by the Gulf of Guinea (see figure 2). It covers a total land area of approximately 140km² (Ghana Statistical Service, 2014a).

Topographically, Accra is characterized by low plains. The Odaw River is the main drainage system in the city. A few degrees away from the equator, Accra lies in the dry equatorial climatic zone characterized by the wet (rainy) and dry seasons. It experiences a prolonged rainy season occurring from May to mid-July, and a second season beginning in mid-August to October. It has the lowest average rainfall of about 730mm in the country. Rainfall in Accra typically occurs in short-spanned but intensive storms. Drainage channels are usually obstructed due to the continuous growth of population and spatial developments (Abraham et al., 2006), thereby contributing to the local floods experienced.

According to Dickson and Benneh (2001), the temperature levels in Accra slightly differ throughout the year, with the mean monthly temperature ranging from 24.7°C in August to 33°C in March with an annual average temperature of 26.8°C. Such high temperatures have its negative sides. The 'hot' weather conditions increases the stench from heaps of uncollected solid waste in the city, especially in low income and high-density areas.

2.3 Demography and socio-economic structure

The population of Accra Metropolis is estimated to be 2.27 million; growing at a rate of 4.4% per annum. However, it is thought that the actual population may be underestimated due to the increasing commuting patterns from neighbouring settlements on a daily basis (Yeboah, 2000).

The region has experienced major transformations in all sectors over the years. A contributing factor to the growth of the Metropolis was the construction of castles in the colonial era; which served as the official abode of governors of the then ‘Gold Coast’². More recently, Accra being the major economic hub of the Region and the entire country has served as the fundamental component of growth and its multi-ethnic composition. It houses the Seat of Ghana Government (including the various arms of government); and an integral number of manufacturing industries, financial institutions and other prominent set-ups. These establishments serve as employment avenues, therefore attracting people from all walks of life to engage in economic activities within and around the Metropolis.

2.4 Governance and institutional set-up for solid waste management

The legal backbone for the management of solid waste in Accra originates from Local Government Act, 1993 (Act 462). The Local Government Act 462 decrees all MMDAs to institute a waste management department purposed to address the phenomenon in their jurisdictions. This is a result of the fundamental objective propagated by the 1992 Constitution of the Republic of Ghana to create a decentralized public governance system. This approach to governance is to enhance the efficiency of administrative and management activities in area-specific contexts.

Several national policies have been established to address the increasing challenges arising from the management of waste. A National Environmental Sanitation Policy (ESP) was formulated in 1999 to inform the development and implementation of strategic action plans in the field of sanitation. It has undergone several amendments to meet growing demands and changing dynamics over the years. However, the most recent revision is that of the year 2009 which was the effort of the Ministry of Local Government and Rural Development (MLGRD) – the ministry responsible for sanitation. The overall goal of the ESP (2010) is to “develop a clear and nationally accepted vision of environmental sanitation, as an essential social service and a major determinant for improving health and life in Ghana” (p. 8). The Environmental Assessment Regulations, 1999 (LI 1652), National Building Regulations, 1996 (LI 1630), and the Town and Country Planning Act 1945, (CAP 84) are also relevant legislations that control solid waste. These legislations provide a basis for sanitation and solid waste management policies to be integrated into other sectors.

² Gold Coast was the British Colony that became Ghana after independence in 1957.

There are other key governmental stakeholders directly involved in the management of waste. These are the Ministry of Health (MOH), Ministry of Environment, Science Technology and Innovation (MESTI), National Development Planning Commission (NDPC), and the Environmental Protection Agency (EPA). These organizations, in addition to the Ministry of Local Government and Rural Development complement the administration process by supporting the preparation of various guidelines and standards for waste management in Ghana. Most guidelines are developed in a top-down framework to be implemented in the local communities. The procedures and standards include the following: National Environmental Quality Guidelines (1998); Ghana Landfill Guidelines (2002); Manual for the Preparation of District Waste Management Plans in Ghana (2002); Guidelines for the Management of Healthcare and Veterinary Waste in Ghana (2002); and the Handbook for the Preparation of District level Environmental Sanitation Strategies and Action Plans (DESSAPs- 2007).

The Waste Management Department (WMD) is responsible for the implementation of sanitation related policies in the area, as well as the overall management of solid waste. As the supervisor of solid waste management activities, they are responsible for the mobilization of resources, and the enforcement of solid waste management strategies, action plans and bylaws (Schubeler et al., 1996). The waste management department is assisted by other organizations in the management processes. The Environmental Protection Agency (EPA) for instance gives technical support to the Assembly. This is done through the formulation of guidelines and standards on waste management and other environmental related activities. Another dimension of an alliance is seen in the physical planning point of view; where the Town and Country Planning Department (TCPD) (under the MESTI) is responsible for the allocation of space for sanitation infrastructure development.

The process of managing solid waste in Accra unquestionably adheres to the generally practiced phases in management: waste generation, storage, collection, transfer and transport, processing (or recycling) and disposal. Solid waste management is essentially seen as a public good (Obirih-Opareh, 2003); that is why it is seen as the responsibility of the central government (Oteng-Ababio, 2011). The whole process is hence undertaken or coordinated by the city authority due to the decentralization of governing powers. Decentralizing the entire governance structure as indicated by the Local Government Act, 1993 (Act 462) is meant to facilitate local participation and increase context specific knowledge in general affairs. This aims for effective and efficient coordination between various levels of stakeholders. Private involvement in managing waste has increasingly become part of current measures to ease pressure on the city authority. The private sector provides services ranging from the collection, transfer, treatment and the disposal of waste; characterized with the interest of making profit as a business entity. For instance, figure 2 illustrates the institutional arrangement for solid waste collection in Ghana; and the roles and responsibilities of the various key stakeholders.

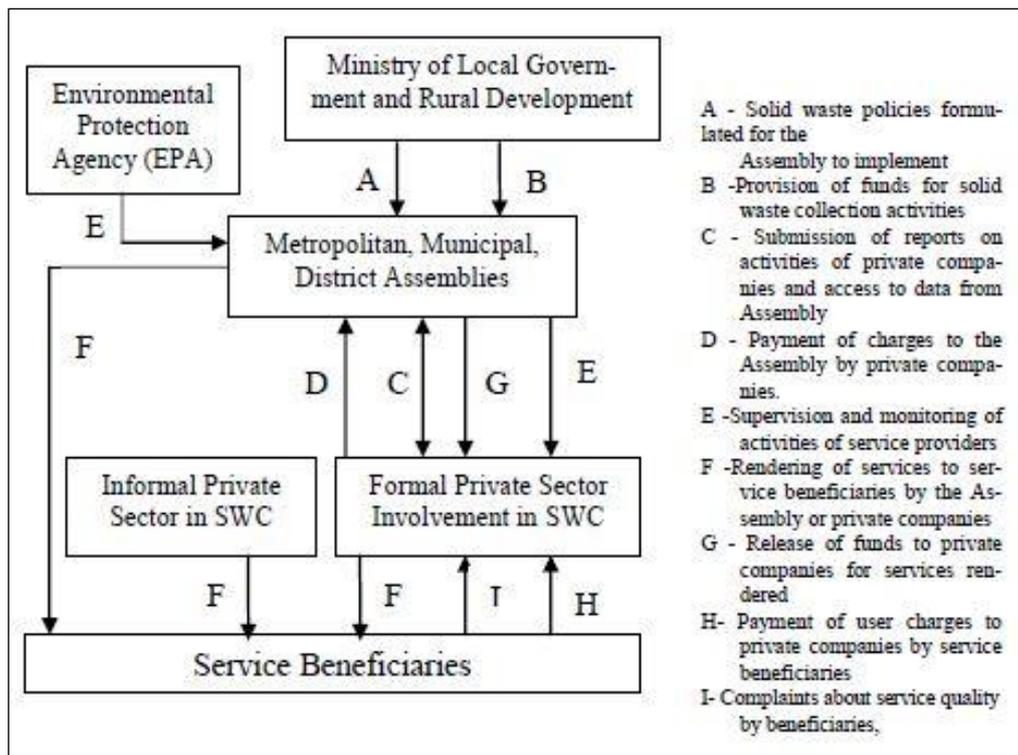


Figure 2: Institutional arrangements for solid waste management: Relationships and roles of stakeholders

(Source: Oduro-Kwarteng (2009), 34th WEDC Conference: as quoted in Oduro-Kwarteng, 2011)

2.5 Approaches to solid waste management in Accra

There are various strategies to the management of solid waste. Most approaches are context-specific due to the fact that variables including but not limited to the culture, economy, political and administrative structure differ between regions. The common approaches implemented in Accra's management process include the use of economic instruments, recycling, composting, incineration, and landfills (Thompson, 2012).

- *Economic Instruments*

One of the challenges in the management of solid waste is guaranteeing the sustainability of financial resources. Recovering costs of inputs is a necessity when it comes to the sustainability of management strategies. Hence, the use of economic instruments is a justifiable stance to promote a productive solid waste management process. Economic instruments include fees and charges, and incentives for waste minimization, reuse, reprocessing and recycling or a specific disposal alternative. Economic instruments can be categorized into two: revenue-raising instruments and non-revenue raising instruments (Thompson, 2012). The former includes licenses, fees and user charges; while the latter consist of performance-based management contracting, privatization, etc.

According to Thompson (2012), privatization is the main economic tool used in Accra. The proponents of this approach are certain that introducing competition in the management process

enhances efficiency, and stimulates innovative developments of advanced environmental control expertise and practices. Formally, the management process was entirely run by the government, but failed to sufficiently service all areas. Privatization has improved processes, particularly with regards to collection. However, low-income neighbourhoods are disadvantaged because they may have inadequate means to employ private bodies who seek to maximize profit.

- *Recycling and Composting*

Recycling of solid waste in Ghana is unconvincing. It is basically done on informal basis by private individuals and small-scale industries. It is characterized by individuals picking items of specific interest to sell to 'middlemen' or those informally involved in reprocessing of solid waste. Composting on the other hand involves the transformation of organic waste into fertilizer through a method called aerobic fermentation. This approach is insignificantly used in Accra.

- *Incineration and Landfilling*

This approach involves the burning of combustible waste at very high temperatures. It is method widely used in Accra. Though there are policies regulating the proper use of incinerators in Ghana, incinerators in Accra are commonly made up of ovens or open pits used to burn biological waste related with health care. The ashes of burnt materials are then transported to landfills to be disposed.

On the hand, landfilling is the favoured technique of solid waste disposal in Accra by the Metropolitan Assembly; for the reason that it is basically within the means of the Assembly, and necessitates less maintenance. The sites are usually non-engineered. They are open dumps. Therefore, there is little capability to safeguard the environment from extensively degrading; and protecting the inhabitants from hazardous substances that threatens human life.

2.6 Reality check! The solid waste management system

Accra, being the capital city of the nation with the maximum concentration of decision making bodies certainly has almost all the necessary institutions and agencies for managing solid waste. From the various Ministries and Agencies representing the national level through to the Departments at the Metropolitan level; to the lowest level on the hierarchy - unit committees – arguably all have the necessary policy frameworks to guide the management of solid waste. It is therefore ironic to recognize that almost all major cities in Ghana and across the developing world are battling with waste management problems (Mariwah, 2012). The causes of these problems are often related to the rapid rate of urbanization in the developing world, especially in Africa. Urbanization is usually accompanied by various social and economic tensions which affects the overall local capacity if not in constant sync with existing dynamics. A concern arising from such discussions relates to the way such uncertain or low predictability patterns are incorporated into interventions. The dilemma of managing solid waste is inherently becoming unsolvable in the light of the rapidly growing population.

Nonetheless, city authorities face general difficulties such as the following in the management solid waste: Inadequate resources for capital investments and administrative activities, insufficient by-laws and the deficiency in enforcement of the available ones, unscrupulous attitudinal traits of residents, poor infrastructure, among others (Asase et al., 2009).

To begin with, the sources of solid waste generation in urban areas are mainly from residential dwellings, commercial and industrial activities, institutional (schools, hospitals, government centres, etc.), municipal and public services (street cleaning, recreational area, etc.), and from construction sites (World Bank, 1999). Types of solid waste vary from housekeeping waste, food waste, plastics, metals, glass, wood, hazardous waste, tree trimmings, slags, and so on. As identified by Boadi and Kuitunen (2003), provisions for waste collection in Accra are inadequate. With Accra being the major economic hub of the country, the number of people moving to the city is hardly stable. This is because a lot of people commute to the city for economic or other reasons on a daily basis, without necessarily staying (Anomanyo, 2004). This to a large extent affects the number of waste facilities provided per area since it is typically based on standards. Even so, I also stand by the fact that there is general insufficiency with regards to waste collection facilities and arrangements. This is backed by an assertion by Obirih-Opareh (2003) that ‘the volume of waste generation is huge compared to the available capacity for its collection’ (p.153) in Accra. Although there is perhaps a lack of capacity, it is not only attributed to the facilities and services provided at specific, but the uncertain behavioural patterns of people. The changing consumption patterns of people due to varying desires and fiscal capacities also affects waste generated (Anomanyo, 2004). There is always a ‘surplus’ to be collected in the city because what is collected is usually less than the total amount generated.

According to Annepu and Themelis (2013), 75% of total solid waste generated in the city is collected. Paradoxically, waste collection and transportation accounts for the largest share of financial resources of the Metropolitan Assembly’s budget. The World Bank (1993) stipulates that the collection of waste without a doubt accounts for the largest cost share of Municipal budgets; 60-70% in developed countries and 70-90% in developing countries. In 2008, 82% of the financial resources of the Accra Metropolitan Assembly were channelled into the collection and transportation of waste (Annepu and Themelis, 2013). Collection is often done by private contractors, which is in line with the whole idea of decentralization and private sector involvement. It is done through house-to-house collection services and communal container collections (Oteng-Ababio, 2011). With the private sector characteristically operating as a business entity to maximize profit, low income areas have less priority to benefit from such services. Such low income areas therefore account for majority of the uncollected waste in the city. Also, a lack of systems to check the performance of these private contractors results in its current inefficiencies (Boadi and Kuitunen, 2003).

Uncollected waste is the basis of environmental degradation and exposure to health threats. Common features of African urban areas, especially in Accra, are stinking heaps of uncollected waste; waste disposed of haphazardly by roadsides, in open spaces, or in valleys and drains; and waste water overflowing with evident solid components. A question that comes to mind upon seeing such heaps of waste on the shoulder of streets and in other open areas of the city makes one to think whether it has to do with only the lack of capacity, lack of political will, lack of sanctions and enforcement of by-laws, or an institutional and management dilemma. As acknowledged by Oteng-Ababio (2011), it is indeed a complex situation with elements of governance crisis and attitudinal challenges.

Waste is indeed a public good when it is out of the house, or is away from the source. Therefore, its processing, treatment and recycling is typically on the agenda of successive governments in relation to enhancing the solid waste management process. Most of the solid waste generated in Accra is recyclable (Obirih-Opareh, 2003). It is therefore valid for initiatives to be directed towards recycling to reduce the volume of waste disposed to final disposal sites; which is to a large extent in the academic and policy making circles. But an increasing concern is how much is being put in recycling by the city authority? Perhaps, establishment of the Accra Composting and Recycling Plant in 2012 is enough to complement private sector involvement in recycling. However, the trend of recycling solid waste in Accra is dominated by small-scale informal industries; usually engaged in aluminium and iron scrap, paper and plastic waste (Obirih-Opareh, 2003). Recyclable are mostly collected by 'waste pickers or scavengers', who then hand in the materials collected to the industries as a way of earning sustainable income (Oteng-Ababio, 2009). Recyclable materials are collected directly from disposal sites, from house to house collections in rare cases, and on streets and open spaces (especially, the picking water sachets). In some cases, the waste pickers recycle or process the materials themselves. But a striking remark is the health risk these waste pickers face on their daily routines since they typically have no protective gears. This is clear indication of how processes self-organize (develop on their own) as the city authority is perhaps unperturbed to take control.

An intriguing observation with regards to the way decisions are generally made is always a debate in public circles. Although the current institutional landscape combines top-down and bottom-up approach to governance, it seems unclear whether the latter is actually an active component. An example is seen in the way the MLGRD identified two sites to construct new landfills as a strategy to manage waste (Graphic Communications Group Limited, 2015a). Perhaps, this is clearly an impromptu tactic which did not take variables such as the growing scarcity of land into account; knowing the vast land requirements of landfill sites. However, in addition to the environmental concerns, such hasty strategies may have consequences on the social landscape of the inhabitants (Vanclay, 2002).

Another aspect to the mismatch has to do with interactive mechanisms involved in the implementation of policies. There is often a disparity between the design of policies and its implementation (James et al., 2009; Leao et al., 2001). Policies are framed to direct the course of action for the required stakeholders to implement, but that is hampered by inadequate resource capacities. The decentralized mode of governance appears the suitable way to ensure efficiency due to its advantages. The advantages include the enabling of local participants to influence policy formulation and delivery; and also allow for area-based influence through ‘representative democracy’³ (Zuidema, 2016). All things being equal, the gap between policy development and its implementation is somewhat of a paradox unless it is not entirely in accordance to the decentralized mode of governance. Generally, successful implementation of policies progress from the acknowledgement of productive interactions between stakeholders; but these interactions in the context of Accra are insufficient (Tsiboe and Marbell, 2004). These poor interactive mechanisms may be a result of the weak political will to push for enforcement, but it also seems to be a matter of various communicative dilemmas between actors. There are often conflicting interests between actors, and the fact that nothing significant is done about that is a concern (Obirih-Opareh, 2003). Although the whole idea of the integrated approach is on course, it seems not to be fully embraced. For instance, waste pickers are understood to make a living out of the collection of recyclable materials, which consequently leads to a reduction in the volume of waste generation. In this case, they significantly contribute to the process of solid waste management albeit through an informal means. So are waste pickers considered to be principal actors? No, but they do contribute significantly. Solid waste management is indeed a multifaceted endeavour.

2.7 Summary

In this chapter, the governance and institutional set-up for managing solid waste in Accra has been presented. A key element is the decentralized structure in place; where the WMD of the Accra Metropolitan Assembly is responsible for the management of sanitation related issues in its jurisdiction. The WMD are further assisted by multiple agencies and government organisations including the EPA, NDPC, MOH, MESTI, etc., and private entities. It was identified that current approaches to solid waste management are unsustainable. There is a clear disparity between policy formulation and its implementation. Moreover although top-down and bottom-up approaches are adopted, the latter seems to be undermined in numerous ways. These necessitate the understanding of governance and management approaches that will enhance processes of managing Accra’s municipal solid waste. It also calls for understanding what goes into institutional design – decisions on rules that guide activities – because administrative proceedings are defined by institutions (North, 1990). This chapter has therefore paved the way for subjects relating to governance and institutions to be studied in the next chapter, the theoretical framework – chapter three.

³ It is an indirect democratic regime where elected representatives stand in for the local citizens.

CHAPTER THREE

THEORETICAL FRAMEWORK

3.1 Introduction

Processes and mechanisms of environmental management encompass a multidimensional framework of arrangements and actors. The administrative approach employed has over the years evolved; what more than a few scholars including Healey (1997) and Stoker (1998) recognize to be a shift from government to governance; "...the hollowing out of the state..." (Rhodes, 1996, p. 661). Regardless of this shift, the approach to control activities is dependent on 'institutions'. Institutions guide social actions (Droege and Johnson, 2007), therefore their significance cannot be overemphasized. Governance processes are embedded in, and thus defined by institutions (North, 1990). All planning and decision-making processes occur within a specific institutional setting (Alexander, 2005). The social environment where these processes occur represents an interrelated network of actors with diverse interests (Alexander, 2001; Byrne, 2003); and processes at different levels of authority (Forester, 1982; Flyvbjerg, 2003). Solid waste management being a social and institutional endeavour to promote sustainability and liveability take place in an unpredictable atmosphere stemming from various interrelationships among actors.

3.2 Governance and management

Environmental Policymaking has been confronted with a fundamental change of the structure and nature of the key environmental problems it has to deal with. Many of today's most pressing environmental problems can be characterized as 'persistent', meaning that over a longer period of time political attempts to solve them have failed or have not shown the intended effect (Jänicke and Jörgens, 2006, p. 167)

The 'government' system largely dominated the decision making circles until the notion of governance surfaced. The idea of governance developed as a reaction to the 'new planning and policy making context'; a consequence of the increasing mutual interdependencies in a dynamic and diverse society (Kooiman, 1993). This new context, denoted as a 'network society' (Hajer and Wagenaar, 2003) conceptualizes the move from government to governance. Proliferation of the concept of governance assisted in promoting a 'semi-political movement' that sought to redefine tasks and responsibilities of administrative endeavours (Kooiman, 2008).

'Governance' is a common word used in the social and policy sciences, as well as the administrative world. The concept has diverse meanings which are dependent on the interest and context. However, all definitions of 'governance' relate to the seeming role of the state (Kooiman et al., 2008). Not to be mistaken for 'government', 'governance' is about coordinating actors and processes in relation to decision making activities. It is a process that involves the regulation, harmonization, and

management of activities and the related actors (Pierre, 1999). According to Rhodes (1996), it is referred to as “self-organizing, interorganizational networks” (p. 660). It denotes an autonomous system based on interactive mechanisms influenced by collective actions between multiple actors; rather than the command and prohibitive approach by the government. It includes democratic approaches that give authority to members of a society. Governance can even be seen as a multi-level and multi-actor approach where both governmental and non-governmental actors participate (Lemos and Agrawal, 2006). Conversely, government focuses on the State (Jordan, 2008). It is associated to “the formal institutions of the State and their monopoly of legitimate coercive power ... characterized by the ability to make decisions and its capacity to enforce them” (Stoker, 1998, p. 17). It traditionally follows a hierarchical approach (top-down) to decision making in a centralized perspective; which however is globally changing towards a more decentralized approach (Ahmad and Brosio, 2006).

Management is however a subcategory of the broader concept, ‘governance’ (Hulbert and Gupta, 2015). Unlike governance, management is mainly about the implementation of interventions. It deals with the engagement and maintenance of the relationship between members of a society. It involves;

... the day-to-day operation of the program within the context of the strategies, policies, processes, and procedures that have been established by the governing body. Whereas governance is concerned with ‘doing the right thing’, management is concerned with ‘doing things right’ (World Bank, 2007, p. 9).

3.2.1 Modes of governance

Approaches to governance are virtually infinite. Kooiman and Bavinck (2005) distinguish between three types of governance: hierarchical governance, self-governance, and co-governance. *Hierarchical governance* incorporates a top-down approach to decision making and interventions uttered in policies and in law. Important elements of this approach are steering and control, which is characterized by a commanding interface between the State and its citizens. Although the diversity and complexity of the modern society requires complementary abilities, the state remains the focal entity in a redefined regulatory role instead of the commanding approach. The second mode, *Self-governance* refers to “the situation in which actors take care of themselves, outside the purview of government”. It involves the process where social bodies are capable of independently governing their own affairs (Kooiman and van Vliet, 2000). In reality, complete self-governing societies are non-existent because there is usually a minimum role for the state. The third type, *Co-governance* is based on intra and inter-societal interactions, collaboration and cooperation. In this type of governance, the society comes together with a shared objective to control affairs supportively.

In the same vein, Martens (2007) differentiates between three ideal models of governance: the coordinative model, the competitive model and argumentative model. *Governance through coordination* employs a bureaucratic style to steer the society. There is a clear division between state

and the 'governed' via the institution of coordinative instructions developed by the governing authority. This can be likened to the Kooiman and Bavinck's hierarchical approach to governance. The second model, *governance through competition* relates to competing actors with varying interests. With reference to market processes, actors come up with individual plans free from one another with the aim of realizing them through power struggles with opposing actors. Privatization, deregulation and decentralization are examples of processes that create competitive environment. The third, *governance through argumentation* relates to the 'communicative turn' in planning (Healey, 1997). This model emphasizes on a participatory approach to governance where all stakeholders jointly come up with action plans through dialogue. These three ideal types of governance are shown in a 'governance triangle' (see figure 3). The triangle depicts the extremes of each model; where there is total dominance of related actors, their interactions and the level of authority.

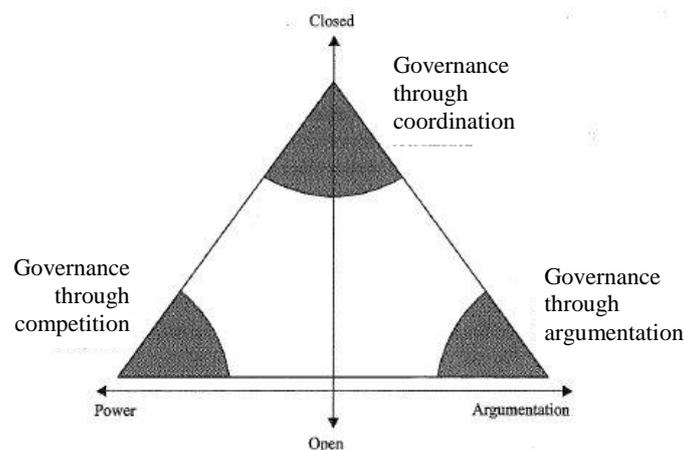


Figure 3: The 'governance triangle'
(Source: Martens, 2007)

Decentralization: the fall of centralization

Centralization is acknowledged to follow a coordinative and hierarchical approach to governance; with the government usually retaining absolute control (State control). This approach to governance predominantly dominated until the early 1980's; where governments were "seen as the institutional embodiment of state sovereignty and as the dominant source of political and legal decision-making" (Cheema and Rondinelli, 2007, p. 1). Max Weber (1920), a prominent advocate of this bureaucratic approach believed that an organized hierarchical system with a strong line of central control will produce greater efficiencies (Hill, 1991). However, a radical change towards a more decentralized system has been experienced in recent decades (Ahmad and Brosio, 2006).

By the early 1980s increasing international trade and investment; growing economic, social, and political interaction across national borders; and rapidly emerging technological innovations that increased the scope and reduced the costs of communications and transportation and helped spread knowledge and information worldwide, changed perceptions of governance and of the appropriate functions of the state. (Cheema and Rondinelli, 2007, p. 1)

This marks the on-going shift from the central state to decentralization – a shift from government to governance. Decentralization is based on the assumption that local authorities have the comparative advantage over central control in the formulation and delivery of practical, integrated and more appropriate strategies (Zuidema, 2016). Decentralization is basically about the transfer of power, resources and responsibility from central state to lower levels of administration (Rondinelli, 1981). The meaning of decentralization has taken many forms over the years, with its focus increasingly widening. Early meanings to the concept focused on a vertical change in authority; however there is also the horizontal perspective where power is given to non-governmental institutions, civil societies and the market. Recent conceptions add the component of enhancing extensive public involvement via civil society organizations (Cheema and Rondinelli, 2007). The main rationale for a decentralized form of environmental governance is summarized;

It can produce greater efficiencies because of competition among subnational units; it can bring decision making closer to those affected by governance, thereby promoting higher participation and accountability; and finally, it can help decision makers take advantage of more precise time- and place-specific knowledge about natural resources. (Lemos and Agrawal, 2006, p. 303)

Administrative set-ups increasingly pursue a decentralized system due to the increasing interactions between societies making them interconnected and complex; hence, decision making is brought closer to the people. This is done in a more inclusive and participatory manner where decisions will be tailor-made to fit and address concerns in specific contexts. It aims to facilitate decision making in an area specific context. Preference for decentralized governance has been boosted by globalization, and the influence of supra-national organizations. An example is World Bank's agenda to encourage decentralization as an 'element of good governance' (Porter and Young, 1998).

However, decentralization has its limits. Zuidema (2016) explored key constraints on the '*willingness and ability*' of local governments to undertake decentralized responsibilities. These include "the economies of scale involved in policy development and delivery, the possibility of issues with external effects and the 'weak profile' of the environment" (p. 42). *Economies of scale* provide an argument in contrast to decentralization because it has reduced dependence on common policy formats that can be routinely implemented (in a centralized system). The central government has a greater capacity to attract greater financial resources and knowledgeable and experienced staff as compared to the local units. For example, environmental guidelines such as the maximum distance to access a waste collection point can be implemented at a higher level. There will not be the need to implement such guidelines at the local levels again; a potential to conserve resources. *External effects* refer to 'spill over' effects that result from an activity in another jurisdiction. This is usually due to the interrelated nature of environmental issues faced in communities. The cause of some environmental problems may be outside the jurisdiction of local governments. For instance, a factory in another

community may dispose its solid waste into a near-by river which eventually ends up at the shores of another community. A central authority will be best suited to address the environmental concern in such a situation since it has a larger sphere of influence. The '*weak profile*' of the environment relates to the idea that environmental policies usually tend to be of lower priority compared to development oriented policies (with a socio-economic focus). This is because environmental policies are usually long-term based; so short-term benefits are typically given priority. Moreover, environmental benefits can be hard to express in financial terms (for example, air pollution from uncollected decayed organic solid waste), and are often invisible and felt gradually (for example, safety risks) (Jänicke and Jörgens, 2006). These limitations prove that the coordinative mode of governance still has much to offer; at least to 'guarantee minimum level of local performance' (Zuidema, 2016).

Adaptive governance

An evolving paradigm proliferating in the conception of governance is 'adaptive governance'. Demand for adaptive governance emerged as a result of increasing unpredictable nature of social actions and the environment. Thus, prompting a way of governing where adjustments can be made easily in the light of dynamics with low predictability patterns. Adaptive governance includes;

... a range of political, social, economic, and administrative systems that develop, manage, and distribute a resource in a manner that promotes resilience through collaborative, flexible and learning-based issue management across different scales (Hulbert and Gupta, 2015, p. 3).

Adaptive management, adaptive co-management and anticipatory governance are the three types of adaptive governance. *Adaptive management* assumes an iterative method of controlling and operationalizing activities in a technocratic way. It is based on the testing of hypothesis, monitoring and evaluation activities and outcomes. *Adaptive co-management* was developed in the 1990s together with the communicative turn in planning. It focuses on negotiations and consensus. It acknowledges the multi-actor, multi-level and multi-scale approach, thus, a 'flexible community-based' management approach. The third type, *anticipatory governance* is based on scenario planning, but the difference is it allows for adaptation. It employs a flexible decision-making structure which can integrate elements of participation, deliberative democracy and adaptive management.

3.2.2 Paradigms of management

The evolving governance structure of modern societies has instigated a stir in the accompanying management styles. Management approaches have also advanced primarily due to societal dynamics. Stoker (2006) distinguishes between three paradigms of management: the traditional public administration, new public management and public value management.

Traditional public administration is characterized by a hierarchical and bureaucratic approach to management, where managers are responsible to ensure the right procedures and rules are kept.

Beetham (1987) highlights hierarchy, continuity, prescribed rules and merit as four key features that bureaucracy embraces to promote organizational effectiveness in this approach. It symbolizes the classical top-down structure to management. The second paradigm, *new public management* is about economy and efficiency - 'a market-oriented approach to management'. It involves a way of managing resources in the most economical way by defining and achieving objectives based on performance. Unlike the traditional approach where public interest is defined by the expert (usually affiliated to the politician), new public management brings together individual interest. In practice, politicians play a key role by bringing the various interests together, supported by facts. With new public management being a response to the bureaucracies of the traditional approach, public value management is also a response to the mere preference based on the market of its antecedent (Kelly and Muers, 2002). *Public value management* is about achieving public value, which will in turn lead to greater effectiveness. Unlike the two preceding models, specific and communal preferences are produced through 'deliberative reflection over inputs and opportunity costs'- continuous interactions. Maintaining connections by means of shared values is an essential component that inhibits monopolies by the public sector.

Although each of the subsequent paradigms was to a reaction to the limitations of its predecessor, they exclusively exhibit their own merits and demerits. The adoption of any is highly dependent on the context. For instance, an intervention where a monopoly is required (such as the construction of a landfill) may need the hierarchical method (traditional public administration) to ensure stability and efficiency. The new public management approach will best fit situations where the maximization of efficiency is prioritized; and where dominant regimes are fragmented. This promotes competitiveness, but may challenge expert judgement. An example is seen in the collection of waste in Accra. Public value management alternatively seeks to maximize public value rather than mere economic and bureaucratic methods. This means aiming for higher public value may not necessarily be the most economical way. However, the system of constant deliberation to determine public value may hinder action-oriented management since it encourages a 'talking shop' (Stoker, 2006).

3.3 Solid waste management and the waste management model

Solid waste refers to the compact materials that are deemed useless; resulting from activities involving domestic or residential, commercial and industrial undertakings (Parvathamma, 2014). It is the unwanted end-product of human activities that has no value to those who possess it. They are composed of everyday items including remnants of food, papers, rubber, glass, metal, and plastics.

Waste management is ... that discipline associated with the control of generation, storage, collection, transfer and transport, processing and disposal of solid wastes in a manner that is in accord with the best principles of public health, economics,

engineering, conservation, aesthetics and other environmental considerations and that is also responsive to public attitudes” (Tchobanoglous et al., 1993, p. 7).

Solid waste management therefore includes the process of regulating generation, collection, storage, transportation, processing and disposal of solid waste. It refers to the activities undertaken to reduce the aesthetic, well-being and environmental impacts of solid waste (Maheshwari, 2012). According to the United Nations Environmental Programme (2005), the management method is a challenging scene for the city authorities, especially in developing countries. City authorities are faced with challenges first from getting wastes off the street before subsequent management processes that generally focus on disposal are undertaken.

The model for waste management came about due to the fact that the continuous practice of disposal-based strategies is not sustainable. This predates to the 1970's when environmental activists advocated for approaches that encourages waste prevention ahead of recycling and disposal (Gertsakis and Lewis, 2003). 'More' sustainable approaches were required to counter the various threats of direct disposal, be it, environmental degradation, loss of biodiversity, and the threat to human life. This follows the widespread adage, 'prevention is better than cure'.

The model is usually seen within academic, political and administrative circles as the waste management hierarchy. 'Reduce Reuse Recycle – 3Rs' is a shortened version that is regularly used in community and neighbourhood campaigns to educate the masses on the potentialities regarding various approaches. The 3Rs agenda has gradually become a well-recognised catchphrase to promote reduction and resource recovery. The core agenda of this hierarchy is to push for strategies that can significantly prevent or reduce the volume of waste disposed into the environment. Reducing the amount of waste that goes into the environment can substantially decrease environmental problems, as well as health concerns (Asomani-Boateng, 2007; Gertsakis and Lewis, 2003; Zurbrügg, 2003). This requires a shift from reactive measures that seek to manage consequences, to proactive approaches.

The waste management hierarchy is usually depicted triangularly; where the priority of solid waste management diminishes from top to bottom (Zurbrügg, 2003) (see figure 4). Definitions of the hierarchy differ; some interpret it as 'most preferred to least preferred', while others have a preference for an integrated method that embraces all options rather than constraining to the exact pyramid definition. The waste management hierarchy is influence by multiple local factors. These include prevailing institutions and legislations, technical knowledge and capacity, the economic structure, and the awareness and participation of the locals (Zurbrügg, 2003). Environmental attributes and outcomes of the waste management hierarchy are further outlined in table 1.

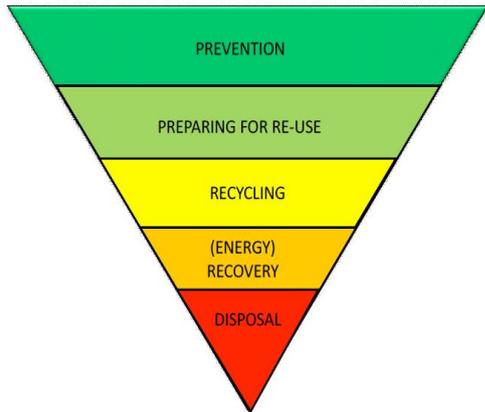


Figure 4: Waste management hierarchy
(Source: European Union, 2008)

Table 1: Attributes and outcome of the waste management hierarchy

Goal	Attribute	Outcome
Reduce	Preventive	Most desirable ↑ ↓ Least desirable
Reuse	Predominantly ameliorative Part preventive	
Recycle	Predominantly ameliorative Part preventive	
Treatment	Predominantly assimilative Partially ameliorative	
Disposal	Assimilative	

(Source: Gertsakis and Lewis, 2003).

Prevention and minimization should always be the ideal choices in order to avoid environmental and social impacts (Gertsakis and Lewis, 2003). Recovery options should also aim at maximizing waste to enhance its value. Integrating the broad notion of ‘sustainability’ is a necessity because decisions taken do not only impact waste, but the environment as a whole; as well as the consideration of foreseen and unforeseen socio-economic effects.

3.4 Defining institutions

The term ‘institution’ is an extensive word which is used in various walks of life. It is defined differently within varying contexts. Although it is a concept proliferated in the academic world, there is yet no unanimity in its meaning (Hodgson, 2006); as Kim (2011) ascertains that the definition has been changing over the past three to four decades.

Institutions are humanly devised constraints that structure political, economic and social interactions (North, 1991, p. 97).

... man-made structures that guide and give meaning to human interaction (Buitelaar et al., 2011, p. 930).

Institutions represent the instructions that govern the interaction between actors involved in making a system operational (Koppenjan and Groenewegen, 2005). They are our customs, in-built lifestyles, our political inclinations, our pecuniary interest, and our rules and regulations controlling our actions (Kim, 2011). They constitute rules that are either planned deliberately or unplanned, through interactions (Klijn and Koppenjan, 2006). Institutions are particularly important in the ‘social realm’ (Hodgson, 2006) because they play a major role in the promotion of change and order (Olsen, 2009). According to Klijn and Koppenjan (2006), institutions basically encompass the “social infrastructure of our behaviour” (p. 143). In the absence of institutions, it becomes impossible to enhance a united front for collective behaviour and actions.

Even though we make institutions, we are surrounded by institutions, and thus planners plan in institutions. It is therefore necessary to recognise the significance of institutions since it is entrenched in all planning endeavours (Alexander, 2005). Nonetheless, it is important to note that not all rules and regulations are synonymous to institutions (Koppenjan and Groenewegen, 2005). Rules and regulations guiding actions can be seen as institutions in the circumstance that they are publicly acknowledged and accepted by those involved (stakeholders); and are used in daily activities while maintaining a constant level of resilience (Buitelaar et al., 2011; Koppenjan and Groenewegen, 2005). For instance, an undocumented rule that is not publicly accepted is not an institution.

Power is an important trait that cannot be overlooked when dealing with institutions. According to Kim (2011), considering power structures are essential in enhancing our understanding of how institutions work. This can be likened to Van Assche et al.'s (2014) notion of power on planning where it is stipulated that the society in an extensive sense has influence on the planning system. Likewise, the society has influence on institutions because institutions are socially constructed (Buitelaar et al., 2011). In principle, actors with more influencing abilities have larger capacities of instigating and facilitating change.

A major distinction made in the epistemology of institutional theory is the classification of institutions into formal and informal structures. It is against this background that this report categorises the classification into formal and informal structures as discussed in the sub-sections below.

3.4.1 Formal institutions

Perhaps, formal institutions are the most commonly known category; and often misunderstood as organisation. A stable formal institutional framework is believed to be a pre-condition for development. Formal institutions constitute laws of the state (government) which are supported by a legal framework (Buitelaar et al., 2011). Helmke and Levitsky (2004) define formal institutions as institutions that are openly codified, in the logic that they are developed and communicated via networks that are widely acknowledged as official.

Formal institutions guide the rules of behaviour determined by regulatory framework; which could be legal or administrative. They structure processes of activities; create a legally protected environment and streamline general decision making process by enhancing social, economic or environmental awareness. For instance, Ghana's Environmental Sanitation Policy (ESP 2010) by the Ministry of Local Government and Rural Development was to address limitations of the old policy published in 1999 and redirects the country's efforts of meeting the Millennium Development Goals (MDGs) target. Many of such regulatory frameworks include; the 1992 Constitution of Ghana, the National Urban Policy Framework of 2012, and the Zoning Guidelines and Planning Standards of 2011.

3.4.2 Informal institutions

Informal institutions can be likened to the social heritage present in a society. According to Buitelaar et al., (2011), they are ambiguous rules that materialise due to the strengthening and continuous replication of human actions. Informal institutions are socially shared rules, usually unwritten, that are created, communicated, and enforced outside of officially sanctioned channels (Helmke and Levitsky 2004). These are equally known but not laid down in writing and they tend to be more persistent than formal rules. Examples of informal institutions include taboos, sacred beliefs and ethical standards.

According to the Mayor of Accra, ‘culture’ – or a set of attitudes – is at the root of the waste management problem (Daily Graphic, 2013, as cited in Obeng-Odoom, 2013). The chief director of the Ministry of Local Government and Rural Development is reported to have stated that “solving the problem of poor sanitary conditions begins with us; it is highly an attitudinal issue” (The Ghanaian Times 2013; as cited in Obeng-Odoom, 2013). Thus, informal institutions such as the role of religion, social capital, and culture in general have been identified as locally responsive to the waste menace.

3.5 Institutional design and transformation

Increasing interaction between the society and the environment due to the world becoming a ‘*global village*’ makes construction and reconstruction of institutions more a normative reality. Institutions go through a life cycle: they are “born, grow, change and die” (Alexander, 2005, p. 210). This means they can be made insignificant over time.

Institutional design means ... designing institutions: the devising and realization of rules, procedures, and organizational structures that will enable and constrain behaviour and action so as to accord with held values, achieve desired objectives, or execute given tasks (Alexander, 2006, p. 4).

Institutional design involves understanding the rules and regulations that allow and limit social behaviour and arrangements. It is not only about changing formal rules and regulations, but the informal as well. These rules and regulations as identified by Olsen (2009) are to a degree able to self-implement because there is an internal perceptions that some actions are proper and legal. This perception has to do with the values and norms the society holds. Nonetheless, this system of being able to self-enforce rules replicates a characteristic of the complex adaptive system (CAS - to be explained in the subsequent section – 3.7) propagated by Portugali (2006); where self-organization offers an in-built mechanism of adaptation. Moreover, designing institutions involves multiple actors in a multi-level environment. These interactions provide processes and outcomes that are unstable and unpredictable (Klijn and Koppenjan, 2006); also replicating a characteristic of complex system. Therefore, viewing institutions as a CAS is not out of place because of the social aspect implanted in institutions which introduces instability.

Approaches to institutional design differ significantly depending on the contextual status quo. Alexander (2005) classifies the various diversities into ‘objective’ and ‘subjective-dialogic’ institutional design. Objective institutional design is superficial. It relates to circumstances where the institutional framework and processes to be altered is not in the institutional design and transformation agents’ setting. The second approach, subjective-dialogic institutional design relates to what is within the institutional context of the design agent. An important difference between the two approaches put forward by Alexander (2005) is the ‘reflexive-dialogue approach’ which comes about due to awareness of the fact that the agent is a central part of the institutional design.

Designing institutions requires specific elements and tools. Alexander (2005/2012) refers to these instruments of institutional design as ‘institutional-agent interaction’. The interactions have two roles; as the subject of institutional design signifying the public and formal domain, and the object or intended institutions to be affected representing the tacit-informal interactions. The public-formal interactions include laws that are manifested through agency and social processes, and organization (structures). The tacit-informal interactions relates to concerns affecting behaviour and actions such as customs and traditions. The institutional-agent interaction is shown in table 2.

Table 2: Institutional-agent interaction - elements of institutional design

<i>Type</i>	<i>Public/formal</i>	<i>Tacit/Informal</i>
Performative	<u>Transactions</u>	Episodes <u>Events</u> <u>Customary behaviours</u>
Structural	‘Cultural’ institutions <i>Laws</i> <i>Rules/regulations</i> <i>Standards</i> <i>Governments</i>	‘Ontological’ institutions <u>Norms</u> <u>Habits</u> <u>Practices</u> <u>Knowledge/world-views</u>
[Agency, process]	Markets: <i>‘hybrid’ markets</i> <i>artificial/quasi-markets</i> <i>Inter-organizational networks</i> <i>Organizations</i>	Languages ‘Games’ Informal social networks Associational/kinship networks
[Structure]		

Note: Elements of institutional design in the table (e.g. Laws) are shown in italics. Intended Impacts of institutional design in the table (e.g. Practices) are underlined

(Source: Alexander, 2005)

Institutions are hard to change although they continuously evolve in relation to environmental processes and structures (Koppenjan and Groenewegen, 2005; Klijn and Koppenjan, 2006); all the same they do not operate in a ‘vacuum’. According to Alexander (2005), effecting change in the society can be achieved by changing the individuals who collectively make up the people, and by changing institutions. Institutions offer steadiness by enhancing certainty involving multiple actors to

reduce the possibility of unscrupulous or strategic behaviours, as well as decreasing cost of communication. Thus, they facilitate interactions; enhance stability and predictability and serves as the foundation for actors to have some level of trust (Klijn and Koppenjan, 2006).

Institutions are changed or redesigned either through a conscious effort, or an unconscious one (Klijn and Koppenjan, 2006). Nonetheless, institutional design is typically a thoughtful action. Attempts to change or redesign institutions are visible in our daily endeavours. These are seen in the continuous promotion of innovative ways to effect change in governmental and societal processes all in the name of ‘sustainability’.

Reasons for institutional (re)design may include the following: new systems need institutional arrangements; systems produce unwanted outcomes: systems are inefficient (public services: privatisation): systems processes stagnate: complexity reduction (physical planning): systems have to be integrated (mergers, integral planning): systems do not have the right scale (regional government): systems have undesired processes (Koppenjan and Groenewegen, 2005, p. 249).

Institutions constitute the fabrics that guide and give meaning to activities in our socio-economic landscape. As indicated by Koppenjan and Groenewegen (2005), their (re)design is triggered by several factors. The basic reason for designing or redesigning institutions is to enhance efficiency in the operationalization of the system. This ranges from the arrangements involving structures and agents at various levels, and the interactive mechanisms that harness a progressive environment.

3.5.1 Levels of institutional design

Institutional design defines the implementation process of policies, projects, programmes and plans (Alexander, 2012). Largely, putting strategies into practice towards the wide-reaching view of sustainable development is ubiquitous at all levels of societal discussions. Institutional design can be illustrated in three distinct, yet intertwined levels. These levels as presented by Alexander (2005), arranged in a chronological order from the highest are the macro-level, meso-level and micro-level.

- *Institutional design at the ‘Macro-level’*

This is the uppermost level at which institutional design takes place. At the macro-level, institutional design is purposed to address issues of national and supra-national interests. It is associated to constitutional writings; which constitute formal institutions. For example, the ‘written’ constitution of a country represents an institutional design at the national level; and that of the Economic Community of West African States (ECOWAS) represents that of the supra-national institutional design. Institutional design at the macro-level is not restricted to constitutions. Rules, regulations and guidelines of global interest such as that related to biodiversity and climate change which have direct impact on the environment also fall under the macro-level of institutional design. Statesmen or

representatives of governments typically design institutions at this level; and are customarily supported by inputs from legal and administrative representatives.

- *Institutional design at the 'Meso-level'*

The meso-level of institutional design can be seen as the planners' arena because it is linked to spatial planning, the environment and social services; which fall under the domain of professional planners. This level involves the institutional design of 'planning and implementation' arrangements and procedures. It involves the formation and culture of inter-organizational set-ups, establishment of new organizations and alterations to the existing, and innovatively putting forward guidelines and resources to strategize and implement policies, projects, programmes and plans. For example, urban revitalisation and regeneration programmes, environmental management programmes and organisations such as waste management departments of municipalities constitute the institutional design at the meso-level. Institutions at this level are usually designed by administrators and experts in their respective fields of knowledge; with elected or appointed officials typically playing important roles in the design process.

- *Institutional design at the 'Micro-level'*

The micro-level of institutional design being the bottommost level is seen in almost all endeavours. It involves institutions within organizations; and are purposed to address specific sub-organizational components, procedures and their relations such as the formation of task forces and committees. This level is usually established to increase the efficiency and effectiveness in the performance of intended actions. This form of institutional design practically involves all those responsible for shaping and running processes in an organization to ensure the dominance of an effective performance.

3.5.2 An institutional framework and its environment

Institutions are useful for the basic reason of defining our behaviour by providing a tolerable environment that enhances co-operations and interactions. Building an institutional framework involves extensive procedures due to the involvements of many actors at different levels. Therefore, the design of institutions is more or less an enduring planning process involving multiple interactions.

Institutions can be designed in diverse dimensions. According to Klijn and Koppenjan (2006), they can be looked at from these three management strategies; network composition, network outcomes, and network interactions. The use of networks in this context means institutions such as policies, guidelines and standards are developed within multifaceted interactive mechanisms of autonomous actors. These actors form an interconnected system to develop strategic activities and improve communication between actors within a network; and also aim at creating new networks, abolishing defunct ones and revamping existing networks. The three strategies as propagated by Klijn and Koppenjan (2006) are elaborated:

- 1) The first strategy of institutional design emphasizes on the composition of networks. Attention is given to concerns related to those that make up or influence the network. This is because the structure of a network and its modifications has an influence on communications within it; and thus, has an impact on the outcomes. There are various ways of altering the composition of networks. These include measures that adjust or modify position of actors, or by adding new actor. On the other hand, procedures can also aim at redistributing the level of access rules granted to actors within the network by encouraging network development, self-regulation and adaptations to arrangements.
- 2) The second strategy focuses on the outcome of activities within networks. Strategies aimed at network outcomes are determined by the choices made by actors within the network. This involves strategically influencing choices towards the set justifiable targets. Measures to create or modify institutions in this classification include modification to professional codes and undertakings, improving monitoring and assessment standards, and changes to monetary and incentive arrangements linked to choice making.
- 3) The last, but not the least strategy focuses on network interactions. This is closely linked to the second – network outcomes. Emphasis is on the mechanisms that influence communication and cooperation between actors in a sustainable manner. Specifically, approaches to influence rules and procedures that guide activities within a network to ease and advance interactions. Conflict resolution mechanisms for actors; introduction of context specific measures to address certain structures within interactive processes; authorization of values and principles used in interactions; and controlling managerial relations are all examples of methods that aim at network interactions.

Institutional arrangements are usually context specific (Alexander, 2005: Koppenjan and Groenewegen, 2005; Olsen, 2009). Institutional frameworks for the functioning of municipal solid waste management systems in this case is most likely to be different from arrangements for urban management as a whole. However, some components may overlap. This signifies the interconnectedness of most institutional processes. Coordination between actors is a necessary component of an institutional framework. But, ensuring an effective and sustainable communication usually proves a hurdle to surpass due to the varying interest among actors. Institutions thus play an important role of bringing the different interests held by actors together.

Additionally, Koppenjan and Groenewegen (2005) make a distinction between four levels of analysis and design schemes with regards to institutions. The layers denote four kinds of institutions; actors, formal and informal institutional arrangements, formal institutional environment, and the informal institutional environment. The layers of the four-layer model continuously interrelate (see figure 5).

Actors make up the first level of the four-layer model. They constitute individual agents such as firms and organisations that have its own internal procedural arrangement within its pecking order. The agents of institutional design and transformation unceasingly interact to create and influence processes and consequences of change strategies.

Institutional provisions represent the second category. This is made up of both formal and informal institutional arrangements. Examples of formal arrangements include contracts, strategic alliances, and joint ventures: and that of the informal include directions and codes, norms, values and orientations. This stage of analysis involves the definition of procedures to manage dealings between the multiple actors. These arrangements are developed to simplify the operations of networks.

The formal and informal institutional environments account for the third and fourth levels of the four-layer model respectively. The former constitutes rules and regulations that are acknowledged by law to facilitate interactions amongst actors. Examples include corporate laws, development policies, and constitutions. The informal institutional environments consist of unofficial rules of proceedings that influence and determine our way of life. These include values, norms, codes and orientation that has an effect on how we perceive happenings.

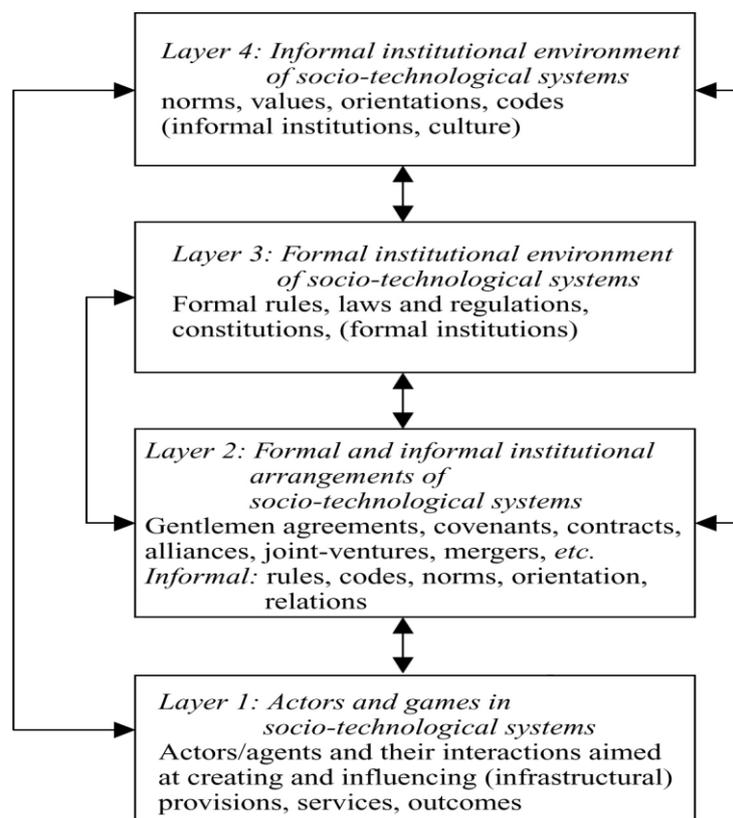


Figure 5: The four-layer model: levels of institutional analysis
(Source: Koppenjan and Groenewegen, 2005)

Understanding the levels of institutional analysis in the four-layer model is an essential phase in the (re)designing of institutions. Primarily, the model differentiates among the various categories of

institutions at the different levels. Each layer addresses a separate, but interconnected concern; and can be developed and be influenced in diverse ways. The perpendicular connections between layers allows for layers at the lower level to be shaped in a way that conforms to layers at the higher levels.

3.6 Institutionalization theory

The concept of institutions and institutionalization has seen an upsurge in its usage in both academic and political spheres. The persistent desire of man to enhance events in and around his surroundings has given rise in attention to the idea of institutions and institutionalization (Scott 1987). This ranges from the definition of policies and its agents of change, the interactive mechanisms and values between agents, and comprehensive organizational motives and structures (Tolbert and Zucker, 1996).

It is noteworthy to firmly understand the different variants about institutions in order not to reduce its obscurity. According to Alexander (2005), our approach to institutional analysis, design and transformation is determined by theories of institutionalization. These modules about institutions mutually interrelate between what 'ought to be' (institutional design) and ideas that arise from the rational and exploratory dimension (institutional analysis). Hall and Taylor (1996) differentiate between three 'schools of thought' of institutionalization; the historical, the rational choice, and the sociological methods. These procedures were established from the behavioural point of view; and strive to clarify how institutions can be used to enhance socio-political processes and results.

The 'historical' school of thought originated from group theories of politics, and structural-functionalism in the political science arena between the 1960s and 1970s. It goes beyond the basic idea of both approaches. From the perspective of group theorists, it pursues a critical analysis in the variation of nationwide political consequences and discriminations; while from the structural-functionalism perspective, historical institutionalism acknowledges the political landscape as a key element that defines mutual actions and creates different results. The historical approach is seen as the conventional approach to institutions (Alexander, 2005). It encompasses formal and informal guidelines, norms, agreements and activities realized in political structures; hence, usually associated to formal and recognized organizations. Attributes of this approach include: the abstraction of the connection between institutions and individual deeds; focus on power balances in the making of institutions; focus on path-dependencies and unforeseen outcomes; and the incorporation of institutional analysis into all possible factors that influence outcomes. According to Alexander (2005), this approach is barely applicable for 'normative institutional design' because it is pragmatically based on the past and partisan lines.

The second 'school of thought', rational choice institutionalism is related to the idea of rationality within behavioural patterns of actors and their values. It also came into existence around the same time as the historical approach. It originated from a study in the behaviour of the United States of

America Congress. It hinges on the idea of institutional economics since decisions taken using this approach seeks to maximize productivity by primarily reducing transaction costs within agreements. Also, the notion behind this approach is that the institutionalization of institutions has the greatest potential of addressing concerns relating to shared actions. Institutionalization in this approach is perceived as “a process of creating reality” (Scott, 1987, p. 495). Attributes of this approach include: a set of social and communicative assumptions based on rational actors with fixed inclinations and ideals; politics is seen as a dilemma hindering cooperation; and the prominence placed on the roles of deliberate interaction in the realization of political effects. The rational choice approach is very much well-matched with institutional analysis since it is founded on the reasoning of ‘efficiency’ (Alexander, 2005). Thus, there is a direct impact on the outcomes of an institutional design.

Sociological institutionalism was largely developed in the field of sociology. It came about as a ‘subfield of organizational theory’ during the late 1970s. It focused on institutional techniques and arrangements in organizations. The sociological approach relates to institutional arrangements that are seen in a culturally specific context; analogous to the traditions in societies. It relates to the notion of ‘context-bound rationality’ that focuses on the societal content emanating from diverse interests (Mackay et al., 2009). With reference to the rational choice approach that emphasizes on the maximization of efficiency on the basis of instrumentality, the sociological approach focuses on the acceptability related to ‘social appropriateness’ in cultural terms. Sociological institutionalism sees the ‘way of life’ – culture – as an institution in itself. Institutions are broadly defined in this approach to cover the relationship between formal procedures and informal practices and culture, and the resulting effects of these continuously changing aspects (Alexander, 2005; Mackay et al., 2009).

It is handy to merge ‘rational choice’ and ‘sociological institutionalism’ to provide an advantageous basis for developing institutional analysis and design (Alexander, 2005). The former offers valuable models and systematic tools and techniques, while the latter introduces a hypothetical basis for analysing and making inference from individual and shared inclinations, morals and values.

3.7 A link to planning practice and theory

Planning is a decision making activity aimed at optimizing the use of available resources (Conyers and Hills, 1984). It is a continuous and iterative endeavour that seeks to improve the general well-being of people and their environment. Planning theory offers a platform for new ideas to be integrated into practice. Literally, it is a broad continuum that represents diverse but related ‘clusters’ of thoughts (Allmendinger, 2009). It is an unending debate that has experienced several evolutions over the past decades as planners continuously encounter new challenges in this fast globalizing world. There is always a rationale behind ‘choice’ (decision making); undertaken on the basis of ‘institutional design’ (de Roo, 2006a).

Developments within planning theory can be illustrated on the ‘spectrum’ with two extremes; where ‘technical rational’ is at one end, and ‘communicative rational’ at the other (de Roo, 2006b/2010a) (see figure 6). Earlier planning practice (up to the 1970’s) was dominated by a ‘positivist’ approach (*technical rational*) that presents an absolute control regime. This is based on the assumption of certainty - “the possibility to predict our future and – in the end – to control this future” (de Roo, 2010a, p. 22). This approach assumes to view the world objectively; thus, a direct correlation between relations and where decisions are based on facts (one truth). It supports a command planning approach that is used to produce blue-prints by following one sort of procedure. However, the 1980’s saw the rise of the *communicative rational*. This approach views the world in relative terms. Increasing interactions and the uncertain behaviour of society requires a participatory and interdependent approach to decision making. In order to gain certainty, a form of interactive action to reach an agreement is used – ‘agreed reality’. Both the technical and communicative approaches have specific strengths and shortcomings. Technical approaches for instance thrive in straightforward and simple situations, while the communicative model works in situations involving negotiation and consensus.



Figure 6: The spectrum - two extremes
(Source: de Roo, 2010a)

It can be seen that technical rationality supports the hierarchical (Kooiman and Bavinck (2005) or coordinative form of governance (Martens (2007)), and the traditional public administration approach to management (Stoker (2006). It is mostly evident in centralized systems; where there is a command and control approach represented in a top-down manner. It is usually based on expert judgement. An example is the government’s identification of two sites to develop new landfills for managing waste in the Accra metropolis. Also, communicative rationality can be seen to support self-governance and co-governance (Kooiman and Bavinck (2005) or governance through competition and argumentation (Martens (2007) since they involve negotiations and agreements between various actors. New public management and public value management paradigms (Stoker (2006) also involve interactions between different actors. An example is seen in the various interactive processes involving multiple actors that are undertaken in the waste management chain in a bid to maximize efficiency. Also with regards to Hall and Taylor’s (1996) ‘schools of thought’ on institutionalization, the rational choice and sociological approaches acknowledge interdependencies between actors to attain maximum efficiency and social appropriateness; therefore, are inclined towards communicative rationality.

Yet, contemporary planning is seen to surpass these two extremes. The emergent form of rational is the non-linear (see figure 7); which incorporates uncertainty of developments over time (de Roo, 2010a). This is because the physical and social structure of communities keep evolving due to its dynamic nature (Byrne, 2003: Batty, 2008), thus changing the demands of society and the environment. An example is the continuously changing consumption patterns that affect solid waste

generation. It is therefore hard to foretell actions of people in their environment (Van Assche et al. (2014) as a result of the ‘complexity’ of human behaviour (Portugali, 2006). According to de Roo (2010b), complexity characterizes the changing aspects of realities and unpredictable actions and ideas. As an illustration, the various interpretations of the complexity of our society by postmodernist as a ‘post-modern reality’ against what modernist term as ‘modernism in disguise’ (Portugali, 2006) is a clear indication of how difficult our opinions make our world unpredictable. Hence, giving room for uncertainties is a necessity because change occurs as a result of the interactive nature between human beings and the environment (Duit and Galaz, 2008).

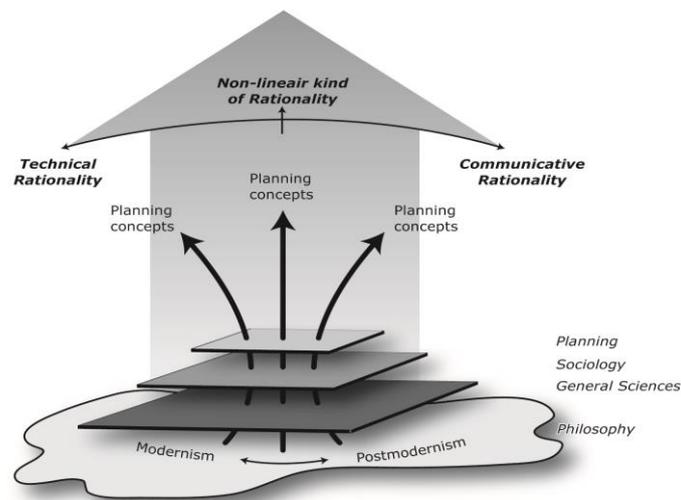


Figure 7: Beyond contemporary planning theory: The inclusion of non-linear development over time (Source: de Roo, 2010a)

The dynamic and volatile nature of societal processes requires that approaches to decision making are continuously reconsidered. Viewing settlement processes from the standpoint of a complex adaptive system (CAS) offers useful and flexible perspective to environmental interventions (de Roo, 2010b: Rauws et al., 2014). CAS represents the robust nature of societal processes. They enhance stability while being dynamic to meet the changing demands of spatial interactions (Rauws et al, 2014). They exhibit characteristics of non-linearity, co-evolution and adaptation, and self-organisation. *Non-linearity* is based on the idea that processes that cause change do not necessarily follow a pre-determined path, but can be interrupted by ‘unforeseen’ forces. The instability experienced allows a system to evolve and transform as a unit; thus allowing the option of flexibility within predictable and unpredictable conditions. *Co-evolution and adaptation* denotes a jointly developing pattern that can adjust to changing circumstances. This means that both structure and function of the system change concurrently whiles adapting to emerging situations (de Roo, 2010a). *Self-organisation* offers an in-built mechanism capable of changing on its own to meet the requirements of the CAS (Rauws et al., 2014). It basically involves how inferences are drawn from information coming from the environment (Portugali, 2006). Therefore, feedback and feed forward loops are significant within such processes. Also, it offers unlimited potential of enhancing predictability through creativity (Rauws et al, 2014).

It can be seen that the idea of adaptive governance – adaptive management, adaptive co-management and anticipatory governance - (Hulbert and Gupta, 2015) is inclined towards the acknowledgement of non-linear developments. This is because the increasing unpredictable nature of social actions and the environment requires a way of governing where adjustments can be made. Adaptive management focuses on the technocratic approach whiles adaptive co-management is a communicative approach. Anticipatory governance fit in between the two extremes of the spectrum (see figure 6) since it is based on scenario planning (see de Roo 2010a). Besides due to the societies direct involvement in the management of solid waste (Owusu, 2010), solid waste management can be seen as a CAS. This is because the society is an open, interrelated and composite structure full of uncertainties (Byrne, 2003; Portugali, 2006; Rauws et al., 2014). Also, processes in developing institutions for solid waste management involve multiple actors at multi-levels that create an unpredictable environment for the formulation of institutional structures and processes. Thus, institutions in themselves are ‘complex’.

3.8 Conceptual framework

The conceptual model presented (see figure 8) is based on the literature and theories described in this chapter. It defines the approach of analysis and the main hypothetical concerns. It makes the grouping and visualization of variables that will lead to the realization of research objectives possible.

The theoretical underpinning of this research is based on the understanding of what goes into an institutional design and transformation process. The interrelatedness of institutional processes for solid waste management involves multiple actors at various levels; hence, interaction and communicative mechanisms are significant points of interest. The increasing interactions in the solid waste management process denote a possible ‘uncertain’ turn of events due to the unpredictable nature of human and societal behaviour. Therefore, specific contexts require particular ways of thinking, which will help in the determination of an approach or a blend of approaches to adopt. Also, recognizing issues with regards to governance and management is essential; to facilitate understanding of the institutional structure because they define social actions.

The analysis is predominantly done at the ‘meso’ level of institutional design, but always in constant sync with that of the higher and lower levels. This is due to the interconnectedness of institutional processes for solid waste management. The path to realization of the research objectives begins by understanding prevailing structures and arrangements – institutional framework (see figure 8). Next, is the institutional analysis phase for municipal solid waste management; involving multiple levels subject to particular settings. Governance and management process (including planning rationale) will be explored in this level since they are embedded in, and thus defined by institutions. The ensuing phase involves inferences made on the basis of empirical enquiry to give reason to redefined ‘institutions’.

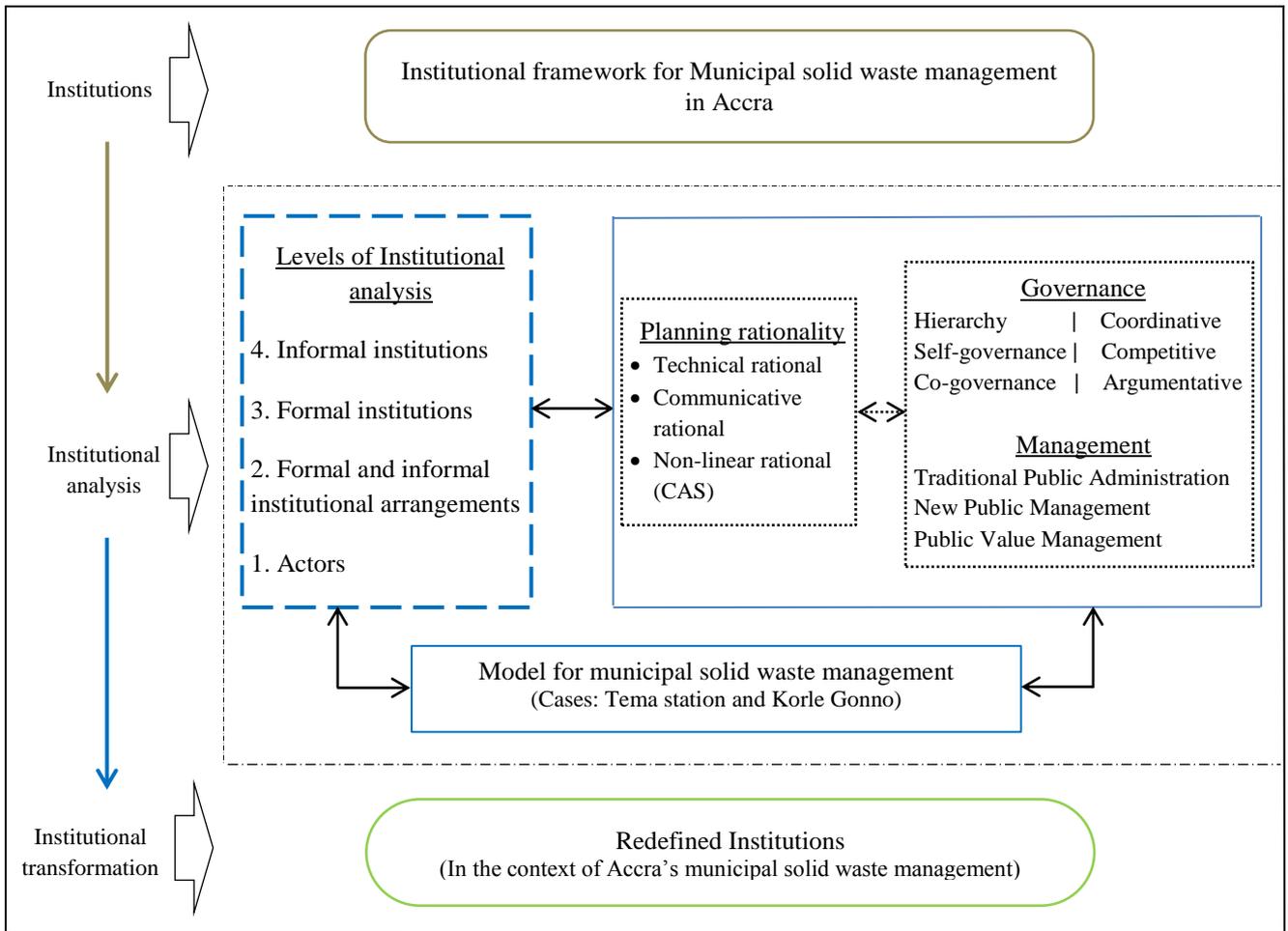


Figure 8: Conceptual framework
(Source: Author's construct, 2016)

3.9 Summary

A theoretical impression of the main themes of the study has been illustrated in this chapter. It has well been established that approaches to governance and management have evolved over the years in search of best practices to address the growing 'new' challenges faced. Institutions define and guide social actions; therefore their importance in the management of social and environmental processes cannot be unnoticed. All planning and decision-making processes take place within specific institutional settings. Yet, institutional processes are interrelated across multiple levels and actors with diverse interest. A possible unpredictable atmosphere emanates from various interrelationships among actors at various levels of authority. Therefore, understanding the various facets of analysis with regards to institutional design for solid waste management is a significant element in the attainment of the research objectives. The theoretical framework generated in this chapter serves a significant basis for the institutional analysis of Accra's municipal solid waste management system.

CHAPTER FOUR

EMPIRICAL ANALYSIS OF INSTITUTIONAL ENVIRONMENT AND ARRANGEMENTS

4.1 Introduction

The idea of institutions denotes a multidimensional phenomenon that cuts across diverse spheres in the processes of human and settlement developments. In the management of Accra's municipal solid waste, institutions firmly define and govern administrative processes and arrangements in the bid to maximize resource-use efficiency. The multifaceted nature of institutions is made visible in a multi-layered perspective that involves numerous actors with varying interests. The solid waste management process goes through various phases; with each stage and actor playing a unique role. The issue of solid waste is an environmental concern that is looked at from an all-inclusive view, thus typically integrated into a diverse range of activities. This chapter builds on the descriptions and assertions arising from the previous chapters through empirical analysis.

4.2 Governance and management of Accra's solid waste

Ghana follows the widespread trend of a decentralized public administration system (Inkoom, 2011). It is assumed that its democratic style of governance allows for an added inclusive and participatory approach to public administration - where local governments become more responsive to local needs, and accountable to the citizens. This approach is manifested in various management processes and activities in the country. Solid waste is inseparably interrelated to general economic growth and development, therefore does not rest on one body for an effective control regime. The interrelationships in the management process extend because inputs from other administrative sectors are factored in the entire decision-making chain. It is indeed a multi-sectoral and multi-disciplinary endeavour. However, a mixture of governance and management varieties are employed in the solid waste management stream.

4.2.1 Composition of the institutional network

Guiding principles and values for solid waste management involves interrelated set of actors with specific motivations in the management chain. Management undoubtedly involves all and sundry, but with the subject of concern of this study specifying the institutional context – that is, the 'rules of the game' – emphasis is put on the network structure and their influences. Components such as the community, civil societies and private entities involved are of minimum interest in this study since they basically follow what has been set. Nonetheless, their impact is duly acknowledged.

Arrangement of the institutional network is highly dependent on the day-to-day management and implementation of strategies, and in sync with policies and regulations from 'above'. Fundamental

actors involved in the institutional game for Accra's municipal solid waste management are described below.

The Waste Management Department (WMD) of Accra Metropolitan Assembly (AMA)

The WMD oversees to the day-to-day management of solid waste in the metropolitan area. This is as a result of the power conferred on the local government (AMA) by the Local Government Act 462, 1993; which further decrees all Metropolitan, Municipal and District Assemblies (MMDAs) to establish waste management departments. According to the Manual for the Preparation of District Waste Management Plans in Ghana (2002), the WMD is responsible for the 'hardware aspects of waste management'. These include the following: collection and transportation of wastes; intermediate storage and/or treatment of wastes; final disposal of waste, and care of disposal sites; public cleansing; zoning districts and packaging of contracts; minimizing environmental and global effects of waste and waste management; supervision of plant and equipment used in waste management; and management of sanitation contracts. The department is also responsible for the formulation and implementation of monitoring plans, organize review meetings for service providers and other stakeholders, and enforce sanctions on reported defaults and the management of complaints.

Other departments within the local government in one way or the other take part in the management process. These include the Development Planning Coordinating Units, Town and country Planning Department, Internal Audit Unit, Environmental Health and Management Department, Department of Parks and Gardens, Finance Department, etc. The Environmental Health and Management Department for instance is required to control and monitor the quality of service delivery and sanitary conditions, as well as sanctioning potential offenders. They play a supporting role to the WMD.

The Ministry of Local Government and Rural Development (MLGRD)

MLGRD is the representative of the central government designated to oversee all waste management activities undertaken by the local government. MLGRD is responsible for the formulation of policies on environmental sanitation, legislation and guideline development on solid waste management, and the regulation, monitoring and evaluation of environmental sanitation activities in Ghana. They also oversee to the performance of activities by local governments.

Significant sector ministries, agencies and departments are involved in the formulation of policies and guidelines for the management of solid waste. They include the Ministry of Environment, Science, Technology and Innovation (MESTI), Ministry of Water Resources, Works and Housing (MWRWH), and Ministry of Health (MOH). MOH for instance are additionally responsible for training members of staff of the environmental unit of MLGRD. Significant agencies and associations include the Local Government Service Secretariat and Environmental Sanitation Providers Association.

Environmental Protection Agency (EPA)

Environmental Protection Agency Act 490, 1994, established the agency to regulate all activities that have an impact on the environment. They play a 'technical' role in the management of solid waste by directly regulating activities of the AMA. They are responsible for the formulation of guidelines and standards on waste management and other environmental related activities. The scope of the EPA ranges across diverse forums since most developmental endeavours directly or indirectly have spatial dimensions. Notable functions mandated by Act 490 (Section 2) for waste management, in addition to environmental impact assessments include:

...(c) to co-ordinate the activities of the relevant bodies for the purposes of controlling the generation, treatment, storage, transportation and disposal of industrial waste; ...(f) to issue environmental permits and pollution abatement notices for controlling the volume, types, constituents and effects of waste discharges, emissions, deposits or any other source of pollutants and of substances which are hazardous or potentially dangerous to the quality of the environment or a segment of the environment; ...(h) to prescribe standards and guidelines relating to the pollution of air, water, land and any other forms of environmental pollution including the discharge of waste and the control of toxic substances; ...(j) to act in liaison and co-operation with government agencies, District Assemblies and any other bodies and institutions to control pollution and generally protect the environment.

EPA is however under the auspices of the Ministry of Science, Environment, Technology and Innovation (MESTI).

The Ministry of Environment, Science, Technology and Innovation (MESTI)

Although fairly indirect, MESTI is considered to be a key actor since solid waste management is clearly an environmental issue. The ministry is responsible for ensuring a safe environment to create a favourable atmosphere for innovations in science and technology. The ministry collaborates with other sector ministries, agencies and departments in the formulation of policies and guidelines. However, the EPA does majority of its bidding in the field of prevention and control of the amount of hazardous substances emitted and absorbed into the environment.

The Town and Country Planning Department (TCPD)

TCPD, a spatial planning section is also under the umbrella of MESTI. Town and Country Planning Act, 1945, CAP 84, established this department. Its broad mandate is for the planning of physical or spatial developments. In the solid waste management phases in Accra, TCPD is responsible for zoning spaces for related infrastructure and facilities such as waste transfer stations, collection points and disposal sites. Also as part of the development permitting process, a waste management plan is required before certificate of habitation is issued - to ensure satisfactory means of managing waste;

especially in relatively industrial zones. The department also plays a significant role in policy formulation with regards to solid waste management.

The National Development Planning Commission (NDPC)

The National Development Planning Commission Act, 1994 (Act 479), and the National Development Planning (System) Act, 1994, (Act 480) established the commission; in addition to Articles 86 and 87 of the 1992 Constitution. The commission is responsible for the formulation of development policies. The issue of solid waste management being a ‘persistent’ environmental concern has continuously been in the policy frameworks of successive governments. The NDPC is responsible for the formulation of medium-term national development policy frameworks; of which waste management and sanitary issues are repeatedly addressed.

4.2.2 Network outcomes and interactions

As previously noted, solid waste management involves multiple actors who interact at different levels. Although Ghana follows a decentralized governance structure, the hand of the central government is still of utmost significance. This is in reference to the possible limitations to decentralized schemes. Economic and societal gains are usually prioritized at the expense of the environmental benefits. This is what Zuidema (2016) refers to as the environment having a ‘weak profile’. The central government therefore, represented by the MLGRD and MESTI in the case of Ghana plays the managerial role to promote and enforce sustainable environmental development paths.

Interrelationships involved in managing solid waste in Accra can be visualized as follows; the topmost level is represented by the ministries (MLGRD, MESTI, MOH, etc.), followed by sector agencies and departments, the WMD as implementing body (for both AMA and its sub-metros), Associations and the community. These social relations across multiple levels lead to the development of various mechanisms that direct the course of action in the management of solid waste and the environment. But the implementation of plans and programmes has however continued to be a concern. It is known that the city authority is under-resourced, therefore unable to properly perform its duties. The field survey further revealed that political and government interference greatly constitutes an array of difficulties faced during implementations. As said by one environmental officer;

Interaction among actors has, and continues to be a major issue to be addressed in the management of waste in and around Accra. Interference from political entities has come to stay because every government comes with its own policy or strategy that is in some way indirectly forced on you.

Although it was not fully disclosed in the survey, it is assumed that interference in the implementation of waste management strategies (as well as other developmental activities) is a result of the dependence on funds from the central government. This is because the local government is unable to

raise sufficient financial resources for the operation of its activities (Boadi and Kuitunen, 2003). This gives room for various forms of influences to be exerted in the management process. These interferences can be seen in various forms such as the typical long periods in the implementation of desired actions. It can further be deduced that communication channels which would have otherwise been taken will perhaps be broken due these interruptions. So although a decentralized approach prioritizes local context based measures that are inclusive (forms of governance that are based on communication – co-governance and the competitive model – rather than the hierarchical approach), the technical approach dominates in practice. Hypothetically, a hybrid approach that focuses on a dimension based on the context is apparently acclaimed. This occurrence has adverse consequences, and subsequently leads to the inefficiencies in the overall management of waste.

Centralized governance strategies are translated into and subsequently broken down for the day-to-day management domain. The identification of two sites by the MLGRD to construct engineered landfills for the Accra Metropolis in January 2015 (Graphic Communications Group Limited, 2015a) is an example of an intervening hand in the management process. This strategy arose due to the increasing public outcry in relation to the prevailing insanitary conditions in Accra. Although the plan might not have been realized yet, it is clearly a technical and reactive attempt that may not address the overarching concerns at hand; and perhaps lead to different challenges. Such a strategy follows the classical top-down structure to management – traditional public administration. Moreover, thinking in spatial terms questions the entire strategy since land is increasingly becoming scarce; coupled with the global agenda to promote environmental sustainability. Even if it can be argued that these two identified sites will serve beyond the borders of Accra, the question of efficiency and feasibility still stand. However, looking at it from the ‘economies of scale’ perspective means the central government should consider the neighbouring municipalities rather than solely focusing on the Accra metropolis.

Perhaps, it can also be argued that EPA’s technicality and professionalism may be hindered by its organizational set-up. EPA is not an entirely an independent unit. Since EPA is under the auspices of MESTI, there is no doubt of the possibility of political interferences. Likewise, the same can be said about the TCPD. It could be that a resultant effect is what we live in;

A lot of spatial plans are out-dated due to various political reasons. It does not seem to be a priority to update land use schemes which have designated waste management sites such as collection points and transfer stations. This, I think is mostly a result of funding therefore other activities are usually given preference. Yet, it is always in annual plans to update existing schemes by the department. (Deputy Town Planning Officer - AMA, May 2016)

Then again, the low preference in addressing out-dated planning schemes can be attributed to the ‘weak profile’ of the environment. This is a result of the scarcity of resources. These governance

processes are understood to be embedded in, and thus defined by institutions (North, 1990). The dependence on ‘rules of the game’ to guide actions in managing solid waste in Accra is what defines social behaviour of the multiple actors.

4.3 Institutional environment and arrangements

The institutional environment and arrangements for solid waste management involves diverse dimensions that have consequences on overall developmental processes. As acknowledged, the Local Government Act 1993 (Act 462) legally creates the room for waste to be managed in the local context. There are several legislative instruments and regulations for the functioning of the local government in the management of solid waste. Relevant ones include by-laws of the Assembly, Environmental Protection Agency Act, 1994 (Act 490), Environmental Assessment Regulations, 1999 (LI 1652), National Building Regulation, 1996 (LI 1630), and the Town and Country Planning Act, 1945 (CAP 84). The Public Procurement Act, 2003 (Act 663) is also of great significance because it lays down the institutional arrangements for procurement and tendering procedures; this is related to the involvement of ‘third parties’. These regulatory frameworks provide for environmental sanitation and solid waste management procedures to be integrated into plans of other sectors.

These regulatory frameworks are broad and ambiguous; thus its scope spans across environmental concerns. For the purposes of solid waste management, the Environmental Protection Agency Act, 1994 (Act 490) gives the function of formulation of regulations to be undertaken by the sector minister. The Environmental Assessment Regulations, 1999 (LI 1652) being the outcome of the formulated directive primarily focuses on waste collection and disposal (Schedule 1 relates to undertakings that require environmental permitting; and Schedule 2 relates to undertakings that require an impact assessment). These are reactive measures that are assumed to be unsustainable.

The Minister may, on the advice of the Board, by legislative instrument, make regulations for ... (e) the disposal of waste generally (Act 490, Section 62)

... (a) establishment of waste disposal sites; (b) establishment of facilities for the collection or disposal of hazardous waste materials (LI 1652, Schedule 1 (Section 25))

... (a) municipal solid waste; (i.) construction of incineration plant; (ii.) construction of composting plant; (iii.) construction of recovery recycling plant; (iv.) construction of municipal solid waste landfill facility; (v.) construction of waste depots (LI 1652, Schedule 2 (Section 15))

Emphasis on improving waste disposal, particularly landfilling has been the centre for most strategic interventions made in the management of solid waste. This is perhaps the reason why guidelines for managing waste coincidentally emphasizes on disposal options since guidelines are developed in accordance to the provisions of regulatory frameworks. An example is the Ghana Landfill Guidelines

(2002) which aims at improving the standard of waste disposal operations in Ghana by providing the regulatory framework for landfills. The rest of the solid waste management processes other than collection and disposal has over the years not been explicitly accounted for. These approaches defy the ‘more desirable’ (3Rs) attributes of the waste management hierarchy; which favours minimization and preventive measures – that is, proactive measures. Besides, additional standards and guidelines⁴ exist but they are limiting and inadequate. The Manual for the Preparation of District Waste Management Plans in Ghana (2002) provides a reasonably broad guideline for local authorities to develop plans by proposing technical and reactive options including segregation, re-use and recycling. Even though some known (informal) efforts are understood to be made to promote such relatively effective approaches, the ultimate desire is still to promote solid waste disposal mechanisms that are environmentally acceptable.

The emphasis on improving disposal approaches and mechanisms are likewise highlighted in the National Building Regulations, 1996 (LI 1630). LI 1630 demands that buildings for residential, commercial, industrial, civic or cultural purposes must require a facility for the disposal of waste. It further stipulates that each housing unit must have garbage cans or other containers that meets the required standard of the local authority. This provision offers a medium for waste generated to be stored temporarily.

With regards to spatial planning, the Town and Country Planning Act, 1945 (CAP 84) provides the legal basis for TCPD to demarcate land uses in designated planning areas. This regulatory framework is essentially supported by the Zoning Guidelines and Planning Standards (2011) – a manual of standards for planning processes. Supplementary guidelines include The New Spatial Planning Guidelines (2011) and the Manual for the Preparation of Spatial Plans (2011). These guidelines and standards support the zoning of land uses for waste management facilities and processes such as collection points, transfer stations and final disposal sites (landfills). This provides a complementary purpose of the National Building Regulations, 1996 (LI 1630); which requires facilities such as transfer stations to be located in proximity, and possibly safeguarded from rain and other obstructions alike that may be a threat to human health and environmental quality. But encroachment of such uses has become a persistent concern due to poor implementation, regulation and enforcement of desired actions. The lack of political will and organizational capacity is primarily understood to be the cause of encroachments and haphazard developments. This claim was further supported by findings from the survey. However, further probing revealed that even though the TCPD demarcates such uses,

⁴ These include the following: the National Environmental Quality Guidelines (1998), Manual for the Preparation of District Waste Management Plans in Ghana (2002), Guidelines for the Management of Healthcare and Veterinary Waste in Ghana (2002), and the Handbook for the Preparation of District level Environmental Sanitation Strategies and Action Plans (DESSAPs- 2007).

monitoring is done by officers of the Building Inspectorate Department⁵ - who in most cases have less knowledge on zoning. Also (as established in the previous section – 4.2.2), several schemes have not been updated due to various political and institutional reasons. This contributes to general inefficiencies. Implications of these developments are the re-occurring gaps that are experienced in the formulation and implementation of schemes. Hence, it is frequently difficult to meet set targets.

The ‘historical school’ on institutionalization (Hall and Taylor, 1996) is seen to be the driver of the institutional framework on solid waste management in Accra. This is because institutions are associated to formal organizations, and are path dependent. The acknowledgement of the political landscape as an important element that defines mutual actions based on the past and partisan lines is another attribute in support of the historical method to institutionalization. This can be seen in the way history continuous to influence current and emerging institutions; with the focus on enhancing solid waste disposal. It is a wonder to know whether feedback processes of any kind exist. For instance, the Environmental Sanitation Policy (ESP - 2010) guides solid waste management activities. It seeks to “develop a clear and nationally accepted vision of environmental sanitation, as an essential social service and a major determinant for improving health and life in Ghana” (p. 8). The policy has the following as its focus areas: capacity development; information, education and communication; legislation and regulation; sustainable financing and cost recovery; levels of service; research and development; and monitoring and evaluation. The policy further specifies that local authorities develop by-laws to regulate environmental sanitation and prevent pollution within their jurisdictions; as well as environmental monitoring services. A primary element of the policy is the provision and maintenance of sanitary facilities and services; with emphasis on the collection and disposal of waste. Here again, a limited focus on the improving disposal mechanisms is well accentuated.

Yet again in the policy context, the Ghana Shared Growth and Development Agenda (GSGDA) II, 2014-2017⁶, has components related to environmental sanitation. Under the sustainable natural resource management section of GSGDA II (2014-2017), promoting effective waste management will be achieved through “strengthening [the] regulatory environment to provide sufficient deterrent for sanitation and pollution offences” (p. 70); as well as educating the public on the (negative) effects on improper waste disposal. The environmental sanitation section of the Infrastructure and Development theme however aims at developing and implementing strategic sector development plans including the National Environmental Sanitation Strategy and Action Plan (NESSAP)⁷ and the Strategic Environmental Sanitation Investment Plan (SESIP)⁸. The regulatory frameworks guiding the process

⁵ The Building Inspectorate Department is a section under the local government at the Sub-metro level; responsible for checking and warranting structures are according to standards.

⁶ GSGDA II (2014-2017) is the medium-term policy framework governing Ghana until 2017.

⁷ NESSAP translates objectives of the Environmental Sanitation Policy (2010) into strategies and planned activities.

⁸ SESIP provides the financing plan for implementing the NESSAP.

of solid waste management is what has been established to have a limited focus on promoting proper solid waste disposal practices. It can therefore be deduced that broad goal of strengthening these frameworks to deter sanitation and pollution offences continuous to follow the hierarchical approach to governance and management.

Primary responsibility for solid waste management rests with the Assembly. However, in general, the private sector shall be invited to provide the actual services under contract or franchise, as appropriate. In the case of franchise, the franchisee may propose services above the minimum specified standard, as long as the users' willingness and ability to pay can be relied upon. The franchisee may also propose tariffs and subsidy levels, subject to final approval by the Assembly. (ESP, 2010, p. 35)

There has been an increase in the extent of private sector involvement in solid waste management over the years (ref). This is line with the aim of reducing the burden on the local authority with regards to its limited resource base. This can be likened to the advantages governance through competition and self-governance brings to the management of solid waste. This is seen in the way the market (involving competing actors with varying interests) are involved in the provision of services (under contract or license). The market operates on the basis of demand and supply (Thompson et al., 1991); hence, there is constant interaction between consumers (the people) and waste management service providers - to determine market needs. This promotes competition through regulatory control regarding the capacities of companies, the market for management activities, service standards and user charges. It can be deduced that the rational choice and sociological approaches to institutionalization (Hall and Taylor, 1996) are in play here. This is because emphasis is on the maximization of efficiency that is based on instrumentality; and the continuous interaction with the 'way of life' of the society through the market.

Formal involvement of private entities is mostly in the field of solid waste collection and transportation services. This has proven to be a concern in low-income neighbourhoods since residents or households are required to cooperate with contracted companies to facilitate the management process. The market determines user chargers based on specified standards of the local authority – and the consumers bear the cost. The uneven level of willingness and ability to pay for such services due to difference in economic situations (Ghana Statistical Service, 2014b) makes companies shy away from operating some areas, especially the low income and slum-like areas. Nonetheless, the extent of private sector involvement is also seen in the informal economy. There has been an increase in small-scale industries and firms undertaking management activities in one way or another - commonly seen in the recycling sector. The impacts of these happenings are hard to measure because they have not been formalized; but they seem to be acknowledged.

For the most part, it can be deduced that institutions for solid waste management are fragmented. There is nothing specific on solid waste management, but the broader context of sanitation. Besides, there seem to be a lot of regulations and guidelines (more than what has been captured so far in this study) because the issue of solid waste is an environmental sanitation concern that cuts across all aspects of human development. For example, the Mortuaries and Funeral Facilities Act, 1998 (Act 563), Food and Drugs law 305b (1992), Vaccination Ordinance (Cap 76) and the Criminal Code of Ghana, 1960 (Act 29) are all regulatory frameworks that seek to control specific aspects of social actions; but have components on environmental sanitation issues that needs to be implemented by the required public sector agency and departments. This is understandable because the issue of solid waste cannot be treated in isolation. It needs to be addressed holistically (and in an integrative manner) since most interventions to some degree have spatial dimensions and consequences. However, the adequacy of existing procedures which are also ambiguous and reactive shows the level of fragmentation of solid waste management institutions. The ambiguity is reflected in way institutions seek to promote ‘proper’ disposal of waste – that is environmentally sustainable. They are implicitly defined, therefore giving room for diverse interpretations for the multiple actors in the decentralized system. Also, the limited focus on improving disposal mechanisms, especially landfilling is not an efficient and sustainable option. This is a reactive measure that stands to correct environmental and social effect without explicitly enhancing preventive strategies (or at most, minimization measures). A shift towards proactive measures that promote preventive strategies rather than the reactive will be a more economically efficient approach (Berry and Rondinelli, 1998). Besides, landfill construction is cost-intensive, therefore should be considered as a last resort. This is because it takes up vast land areas, and subsequently limits the ease of use of the already scarce land resources. There is also an increased potential of threats to human health and well-being as well as environmental pollution and degradation. More importantly, increasing concerns on climate change and global warming are heightened since more emphasis is put on improving solid waste disposal options. Perhaps, all these are reflected in the well-known inability of efficiently implementing planned interventions for solid waste.

4.4 Management of solid waste: the case of Tema station and Korle Gonno

4.4.1 Tema station

Tema station is a lorry terminal located in the CBD of Accra (see figure 9). It is located in the Ministerial Community of the Osu Klottey Sub-metro. It provides the central point of access for public transport commuters; to and from most areas within and beyond the Greater Accra Region. Thus, it accommodates a lot of people who commute to the CBD for various businesses and other purposes alike. Lorry terminals are characteristically known for the existence of numerous commercial activities. These activities usually include the buying and selling of ‘everyday goods and services’. They are usually made of hawkers, those who trade on trucks, and those who occupy

structures that can easily be dismantled. The increasing extent of commercial undertakings (especially vending activities) has arguably come to stay although it is an unplanned outcome. The proximity of the central market to Tema station may be an added reason why the terminal's overall commercial base continuous to expand – an extension of the central market. And of course, it is a significant lorry terminal in the CBD. From field observations, Tema station is more than just a lorry terminal or a mini-market. Some traders and transport service operators casually use the area as their place of abode at night; while various transportation and economic activities are on-going. Economic activities in the terminal are therefore undertaken on a full-day's basis. This implies that a substantial volume of solid waste is generated daily in such a socially and economically vibrant environment.



Figure 9: Tema station (lorry terminal) - overlay on satellite imagery
(Source: Author's construct, 2016)



Figure 10: Indiscriminate dumping at Tema Station
(Source: Field survey, 2016)

As identified by (Boadi and Kuitunen, 2003), the inadequacy in logistical capacity hinders solid waste management. Also, the attitudinal challenge of citizens and the inability to enforce by-laws are well

acknowledged to be major concerns (Oteng-Ababio (2011)). The issue of indiscriminate dumping has also been ever present at the terminal (see figure 10). From the organizational point of view, there is a belief that institutions are known to the people since by-laws, plans and strategies are made public via publications (including electronic and print media engagements) and public fora. It is however generally perceived that physical access to these publications is limited to a few who may be interested, or have attained some level of knowledge. I believe various campaigns including events of the National Sanitation Day have in one way or another increased awareness. The general inability of enforcing rules and regulations by the local authority is therefore called to question. Definitely, the substandard practices and attitudes of the people in handling waste (for example, indiscriminate disposal of waste) contribute to the prevailing insanitary conditions at the terminal.

Contracted private service providers (Zoomlion Ghana Limited) carry out gathering and collection activities on a daily basis. They in turn transport collected solid waste to designated disposal sites outside the metropolis. The field survey revealed that there is no particular guideline that determines the definite number (and possibly, the size) of containers made available at lorry terminals. Commonly, the number and size of skip containers available depends on what the city authority perceives to be adequate to serve the area; as well as the private companies' logistical capacity. This gap with regards to non-exhaustive guidelines may be a major added reason for lack of adequate logistics and infrastructure. Moreover, the guidelines and standards for provision of related infrastructure mostly base on population (for example, Zoning Guidelines and Planning Standards, 2011). So even if that is factored, it may prove to be a concern since the people accommodated at the terminal vary from time to time.

It can be seen that an area based approach resulting from the decentralized governance structure is in play in the management of solid waste at the terminal. This is illustrated in the way the local authority uses its prerogative; for instance, in the determination of the quantity and size of skip containers. However, this context specific approach is largely defined by a hierarchical arrangement based technical rationality. The local authority uses its power to determine what to do in such situations. It can also be argued in a contradicting perspective that the involvement of the market (through private participation) adds the element of communication and competition – hence inclined towards a communicative and participatory approach. In practice, the market does what the authority wants them to do so it is still more of a command and control activity.

Implementing rules, regulations and guidelines has consistently been a concern due to various social and political reasons. Although it can be also argued that some specific by-laws may not be fully known to the people, most of the issues pertaining to solid waste can be seen as a matter of education, common sense and decency. This idea is subjective because it depends on one's way of thinking.

For instance, go to Tema station; go to where the skip container is put, and you will see how market activities have taken up the little space around the container. Just a few metres away from the container, yet they seem to be comfortable. (An informal conversation with a member of the Environmental Unit of MLGRD, 2016)

This event shows how dominant invasion of public space has been - even within few metres. Health and environmental effects are therefore seen to be put aside for economic gains. This has manifested in the increasing environmental problems faced not just at Tema station, but the entire metropolis.

On the other hand, the vibrancy of the terminal characteristically attracts a lot of people who engage in waste picking. This is done on an informal basis with no definite structure to the activities of the 'pickers'; therefore usually funded by the individual. It is a self-organized activity that is independent from structured control; and is determined by the market. The waste pickers in this area mainly collect disposed waste sachets and plastic bags which are very common in market places (as shown in figure 10). In some cases, traders (especially, those who directly deal with water sachets) also take part in its collection. Waste picking is not only limited to plastic bags, but all materials that are of interest to the 'picker'. This interest is typically heightened by the availability and value of materials collected for recycling. This is therefore an untapped opportunity that can be capitalized upon.

4.4.2 Korle Gonno

Korle Gonno is a coastal community located in the Western part of the Greater Accra Region. It is in the Ablekuma South Sub-metro of Accra Metropolitan Accra. It is bordered to the east by the Korle lagoon, an inlet that connects the Odaw River to the sea (see figure 11); to the south by the sea (Gulf of Guinea) - the South Atlantic Ocean; to the west by Chorkor Community; and the north by Korle Bu Community. The central location of the community with reference to the main CBD and other key economic clusters (such as Agbogbloshie Market, Abbosey Okai and Kwame Nkrumah Circle) is a benefit appreciated by residents and businesses. Korle Gonno is also famous for the 'Tuesday Market' which attracts people including those from neighbouring communities to trade.

Korle Gonno used to be a classic example of a 'spatially well-planned' settlement in Accra. A combination of a well-thought-out development pattern, unique architecture, and its closeness to the shoreline and lagoon made it an attractive community to live (AMA, 2013). However, events unfolding in recent years portray an appalling downward trend in liveability and sustainability. Among factors including rapid urbanization, the poor management of natural resources and infrastructure has accounted for its predicaments (AMA, 2013). Overcrowding and insanitary conditions dominate concerns in the community, and are understood to be a major cause of numerous outbreaks of diseases over the years (Modern Ghana Media Communication Limited., 2014) (see figure 12). The Korle Lagoon is seen to be one of the most polluted water bodies in the world due to its high level of pollution (Boadi and Kuitunen, 2002). The shores of the Lagoon used to be an open

dump site (Boadi and Kuitunen, 2003). Moreover, recent perennial flooding in the region has stimulated numerous deliberations on solid waste. This is because poor disposal practices such as dumping in drains and water bodies have contributed to the recurring flood events. These events cause various damages to resources and infrastructure; as well as the loss of human life. In June 2015, Accra was hit by massive floods that swept through the city. The aftermath revealed huge volumes of solid waste (mainly comprised of plastic garbage) rejected by the sea (Graphic Communications Group Limited, 2015b). The Korle Gonno beach was one of the most noticeable beaches reduced to a dumpsite (see figure 13). These happenings have been a major cause for public outcry with regards to insanitary environmental conditions; thus, an insistent question to the management of solid waste.



Figure 11: Korle Gonno - overlay on satellite imagery
(Source: Author's construct, 2016)



Figure 12: Insanitary condition at Korle Gonno
(Source: Modern Ghana Media Communication Limited, 2014).



Figure 13: Aftermath of flooding at the Korle Gonno beach
(Source: Graphic Communications Group Limited, 2015b).

Just as in most communities of Accra, there are two approaches to solid waste collection at Korle Gonno; house-to-house collection and communal collection points. A contracted private company (Liberty Waste Company Limited) is responsible for both methods in this area. The role of the informal sector in the management of solid waste has been an important facet, especially in the case of Korle Gonno. The community is perceived to be ‘receptacle of waste’ due to the insanitary conditions. Indiscriminate dumping is also understood to be of a high rate; therefore this substandard practice as a matter of people’s way of life is indeed a worry. The issue whether institutions are known to the people follows the same pattern as that of Tema station and Accra at large - likewise the role and setting of waste pickers (autonomous processes independent from external control).

A closer look at solid waste management at Korle Gonno highlights possible dilemmas within institutional environment and arrangements. The WMD at the Ablekuma South Sub-metro is responsible for solid waste management in the area. They represent the enforcement arm of by-laws, guidelines and strategies of the AMA, as well as government policies on waste. The Environmental Health and Sanitation Inspectorate Unit of the Sub-metro is also essentially responsible for the monitoring and evaluation of rules and regulation on sanitation. Likewise, the Building Inspectorate Unit is responsible for ensuring buildings are up to standard, and have the requisite waste management set-up. An emerging concern relates to how effectiveness can be promoted in such a highly interactive domain with multiple interests.

It can be seen that an area specific approach is adopted for the management of solid waste in Korle Gonno. This is because of the increased efficiencies that come from addressing issues in its context since measures will be tailor-made to fit the situation. Also, it is assumed that understanding in the local context is clearer and detailed to those closest to the situation. The WMD of the Sub-metro – also largely depend on its expert power – makes additional decisions on the management of solid

waste on a daily basis. However, traits of a command and control approach can be seen. From the onset, the current institutional set-up that largely focuses on improving disposal of waste has clearly not been effective. Perhaps, a major challenge to sustainable solid waste management is the implicit focus on improving disposal mechanisms – where waste is collected and transported to landfill sites for disposal.

The approach to solid waste management through landfilling is a burden to people and the environment. It changes a whole lot of things. Its construction and management consumes a lot of resources, and this is something to worry about considering the increasing volumes of solid waste generated per day. (Senior Environmental Officer (Built Environment), EPA, 2016)

Indeed, the issue of disposal of waste is a critical issue at Korle Gonno. The increasing volumes of waste generated as a result of population growth, urbanization and increasing economic activities and concentrations means that efforts to increase volumes collected and disposed will continue to be a difficult endeavour (also, considering that there is generally a low logistical capacity). Additionally, the issue of ‘external effect’ (see Zuidema, 2016) is also faced in the community. Even without considering that the shores of the lagoon previously used to be a waste dumping ground (and there are still traits of illegal dumping), the floods that swept through Accra in June 2015 for instance pushed discarded materials from other communities to the shores of the sea (see figure 13). This can be seen to be a problem likely to be faced by other coastal communities, but the existence of the lagoon connected by the Odaw River perhaps intensifies the possibility. Such a situation can be an argument against an area-based approach but this of course is not an everyday occurrence.

4.5 Institutional encounter with social processes and dynamics

Environmental management is gradually acknowledged to be a complex and dynamic endeavour. This is a result of the inevitable component of continuous social and environment interactions. Increasing social interactions between multiple actors of Accra’s municipal solid waste management are seen in its inter-connected institutional environment and arrangements. Actors involved in the formulation and operation of institutional structures are conscious of the fact that social processes (including market processes) do not follow a steady and definite pattern. They are unpredictable, and change to fit specific self-motivated interests. These developments manifest themselves in the various outcomes of planned interventions - both positive and negative - in the management of solid waste in Accra. Approaches to managing municipal solid waste have continuously yielded limited and unsustainable outcomes. Insanitary concerns have been ‘persistent’ even though settlement and social processes keep evolving over time.

Accra, just like many other cities has undergone massive transformations in all dimensions over the past decades. Rapid population growth, urbanization and globalization have primarily acted as

catalysts of change. These social processes affect, and are affected by the institutional framework, and therefore define various change processes. Changing consumption patterns that bring about varieties in the generation of waste is an added consequence of these social processes. With the society being a dynamic entity, non-linear processes occur over time. Therefore, it is important for institutions to be able to stand the test of unknown developments.

In the first place, institutions guiding solid waste management are evidently not robust. Although there is nothing specific on solid waste management - but the broader context of sanitation – existing procedures are fragmented. Also, they are inadequate. This is reflected in the limited overall focus on improving waste disposal mechanisms; with landfilling being the preferred option. Notwithstanding, the inability to implement strategies and action plans is also reflected in the various concerns, for instance with the issue of encroachments on public spaces; likewise the inability to enforce compliance of policies. Since the focus of institutions in most cases continues to address issues of solid waste collection and disposal, the other processes involved more or less remain ambiguous.

Moreover, the limited focus that promotes ‘proper’ waste disposal mechanisms especially through landfilling headlines a reactive measure. Likewise, some known measures such as promoting segregation through educative channels. Reactive approaches are ‘damage control’ oriented. In the light of resource scarcity, social processes (and can also be considered to be natural to an extent) including the rapidly growing population, urbanization and globalization are a threat to the damage control nature of strategies. This is because waste generation will continue to increase due to such continuous social processes. The existing burden on the local authority which is reflected in its resource and related waste management infrastructure base will be subject to further pressures. In essence, the inhabitants will pay the price be it an environmental, economic or social impact.

With regards to the formulation of institutions, societal processes and dynamics are definitely incorporated. Rules and regulations are all about people and the society since they are developed to guide human behaviour. Demographic and socio-economic processes for instance influence the quantity of waste generated, as well as waste characterization. In this regard, a growing concern relates to how flexible and adaptive institutions can be since the society is a dynamic and unstable entity. Korle Gono’s decline is a classic example of the failure of institutions over a long period of time; where rapid population growth and urbanization led to its bewildering decline in environmental sanitation and development fortunes. Institutions have not been able to change to meet present needs of the society. In practice, regulatory frameworks are hard to change because they involve several legal and political processes that can take years before modifications are realized. Hence, regulations are more or less the same over a long period. But guidelines and standards usually change when parameters change. Unsurprisingly, fees and charges are the parameters that are highly susceptible to change due to economic reasons. Also, modifications occur when the scope changes but the focus

usually remains the same since it is a response to existing regulation. Updating institutional environments and arrangements to guide the ever changing dynamics of society and the management of waste is generally lacking. Characteristically, institutions are not flexible to meet the changing demands of society because they are represented by standards – a defined benchmark.

Perhaps, a bright side of the dilemmas in managing environmental sanitation - resulting from inefficiencies in institutional arrangements - is seen in the persistent self-organizing patterns. The most glaring in Accra's context is the emergence of waste pickers and informal waste processing and recycling small-scale industries. These developments arise as a result of the increasing social interactions that lead to autonomous processes in the absence of external coordination and control. This shows how social systems and processes adapt to various contextual and internal situations in a bid to maximize untapped opportunities and potentials. Interventions by waste pickers are acknowledged for their effort in the reduction of recyclable materials that end up at final disposal sites. Commendably, they sometimes liaise with households and commercial entities to gather waste materials such as aluminium products, plastic bags and sachets – a sign of positive developments. But waste pickers only gather and collect what they see to be necessary; thus, they collect materials that will be of benefit to them. This means the market for recycling determines the interest of waste pickers. Therefore, items that are deemed invaluable will remain discarded until the irregular and unreliable intervention of contracted authorities. Looking at this occurrence in its context (area specific) and integrating it into the management stream would enhance Accra's solid waste management process.

On the whole, institutional environments and arrangements are unable to adapt to social processes and dynamics. These are manifested in the feedback and feed forward loops that have not (yet) been incorporated in the institutional design for managing municipal solid waste in Accra. For instance, the inability to regulate activities of the informal sector is a potential to be harnessed.

4.6 Summary

The management of solid waste is an endeavour that is undertaken in an all-inclusive manner due to the interconnected nature of human and environmental processes. It is therefore not the responsibility of a single actor. It involves multiple actors with diverse interest who interact across different levels of authority. Issues of solid waste and sanitation have been persistent environmental concerns that are integrated into the planning processes of other sectors since human and environmental processes generate waste in one way or the other; and have spatial dimensions. A decentralized approach to governance is employed, and made legitimate by the Local Government Act 1993, Act 462. However, it is not so in practice, but directed more towards a centralized system where coordinative models characterized by hierarchical and technical procedures dominate. This is reflected in the way the central government is able to indirectly interfere due to the local government's dependence for funds.

The traditional public administration approach to management is also illustrated in the hierarchical management style. An example is seen in the case of Tema station; where the local authority uses its prerogative to determine the quantity and size of skip containers to be made available at the lorry terminal. However, the involvement of the private sector brings in the governance dimension that focuses on competitiveness and co-management. Involvement of third parties adds the element of increased efficiency due to the scarcity of resources.

Institutional environments and arrangements for managing solid waste in Accra are fragmented and inadequate. There is no specific institution guiding solid waste management, but the broader context of environmental sanitation. Although there seem to be many rules and regulations available, they primarily have a limited focus on improving solid waste disposal mechanisms – with preference to landfilling. Also, emphasis is put on facilitating the gathering and collection of solid waste; with the other processes of the management chain implicitly accounted for. This makes institutions weak, and contributes to its inefficiencies. These are reactive approaches that are inefficient and unsustainable. In addition, institutions have not been able to adapt the changing processes and dynamics of the society. They are more or less static, and represent standards and guidelines to be followed. A positive note is the emerging self-organizing patterns of waste pickers that can be of great benefit to the management process.

CHAPTER FIVE

CONCLUSION: INSTITUTIONAL TRANSFORMATION

5.1 Introduction

This thesis looked at the institutional environments and arrangements for managing municipal solid waste in Accra. Key actors and processes of the institutional set-up were identified and served as a basis to examine the current limited focus and inefficiencies of institutions. Studying writings on the concept of governance and institutions – and a connection to planning theory and practice - provided the needed understanding to make informed inferences and conclusions. An area-based approach that embodies principle of what I call a '*pro-adaptive*' approach to institutional (re)design is proposed. The root of this proposal is in two folds: the fact that traits of area specific patterns have already been established, but are (to a large extent) restrictive in practice; and the overall limited and reactive focus of institutional environments. Also in this chapter, answers are given to the research questions.

5.2 Reflection

Accra has gone through various transformational phases; likewise its institutions guiding solid waste management. A gradual reform sent out the centralized and hierarchical approach to governance and management, and ushered in a supposedly more inclusive and context-specific approach. The decentralized local governance system is purposed to allow for added efficiencies by allowing competition, supporting greater involvement and responsibility, and the benefit of a place specific knowledge of a defined context. Perhaps, this paradigm shift increased system efficiency because issues are dealt with in a more complete manner at the local level. Yet, sanitary issues with regards to solid waste have been persistent. Current 'rules of the game' have not been able to bring out the desired outcomes. Although decentralized, events have been largely inspired by central command and control procedures dominated by standards and guidelines. They have been reactive and limited.

5.3 Redefinition: Towards '*pro-adaptive*' institutional (re)design

The *pro-adaptive* approach to (re)designing institutions is basically a consolidation of being proactive and able to adjust to changing social and environmental circumstances. It can be seen as a complement to area-based procedures because it is purposed at enhancing interactions and inclusiveness. The world today is a highly dynamic one, with most happenings exhibiting context-specific effects. Social and environmental events are interlinked due to various interactive processes and mechanisms. Therefore, actions taken on a particular situation may have an effect on another interrelated but different phenomenon. Institutions that guide the process of solid waste management should reflect principles that promote efficiency and sustainability. They must represent and promote a highly resourceful social and physical environment that has the capacity to adapt to internal and external changes over time.

Guiding Principles

Proactive

Current institutions have been identified to promote a ‘protect and clean-up’ approach that is characterized by standards and guidelines. They include the creation of buffers, prohibition of specific activities, ensuring quality standards and cleaning up exercises. The environment is therefore a check on development. These have provided a limited focus which is manifested in the inadequate provision of rules and regulations for managing Accra’s municipal solid waste.

Expenditures for environmental protection are made when damage to the natural environment has occurred. They are belated; they are repairs to the process of economic growth, signs of a post-fact policy that reacts to damages (and must react to them) but does not, or cannot, prevent them. (Simonis, 1988, p. 193)

A proactive approach promotes preventive strategies rather than the mere correction of social, economic and environmental damages (Berry and Rondinelli, 1998). A focus on greener approaches in addition to the current growing focus on waste minimization will stimulate the global debate of promoting environmental sustainability. Moreover, environmental issues are interrelated, so it is usually not fully certain what the real causes of environmental issues are. It is increasingly expensive to be financing curative measures rather than avoiding them. An example is the high cost that constantly goes into the collection and transportation of waste in Accra (Annepu and Themelis, 2013). The adoption of proactive approaches improves ‘financial performances’ (Aragón-Correa and Sharma, 2003, p. 71). This will reduce the burden on the limited financial resources of the local government. Also, it has the potential of limiting interferences from the central government as a result of their monetary provisions. The reliance on central government to undertake solid waste management activities can be reduced. This will in turn contribute to the enhancement of local and context specific decision making endeavours.

Flexible and adaptive

The concept of adaptability of institutions stems from Simonis’ (1988) environmental management approach of anticipating the unknown. From the research, institutional environments and arrangements have not been able to adapt to the increasing dynamism of social processes. They lack flexibility in meeting the changing demands of the society. This is because they are more or less fixed on specific targets without anticipation that an unexpected circumstance may surface. They are represented by standards and guidelines. The use of quality standards does not promote equity because some neighbourhoods may have a greater capacity of meeting them than others. Institutions should be made more area-specific so as to improve effectiveness. For example, focusing on waste segregation at source may be favourable for a neighbourhood depending on how it is understood. How a group interprets it depends on the understanding which is usually connected to their way of

life. Hence, mechanisms for enforcing institutions may be different, perhaps stricter and more specific in high density residential neighbourhoods compared to low density neighbourhoods.

Creating adaptive institutional environment and arrangements will also encourage internal adaptations. This will allow the incorporation of feedback and feed forward loops as a social learning process. The emerging self-organizing patterns of waste pickers and informal small-scale industries can be advantageous, therefore a potential to be exploited. This can be made formalized, and can possibly be an avenue to raise funds and provide jobs. Although institutions are hard to change, their modification should be a priority.

Robust

Additional values of the *pro-adaptive* approach hinges on the ability of institutions to be forceful and all-encompassing. Robustness here means institutions should be ambitious and holistic. Current institutional environment and arrangements are broad and ambiguous, and can be interpreted differently by the multiple actors. They lack specificity on solid waste, but the broader sense of sanitation. For the solid waste component to stand out, specific regulations and guidelines will have to be added to the existing ones that narrow down from that of the sanitation component. This requires comprehensive institutions to be developed at the local level – neighbourhood level – in an area-specific manner. Institutions should not be limited to sections of perceived interest in the solid waste management chain as depicted. This therefore requires that procedures are developed to guide the other components of the management process; with preference given to preventive and minimization measures. More importantly instead of coming out with generic standards, the local governments can develop its own guideline so that it will directly be a response to its local circumstances.

Internal interactions between departments in the local government structure also need to be heightened so as to promote organizational efficiency. For instance, Metropolitan Assembly should encourage effective communicative mechanisms between the WMD, TCPD, Building Inspectorate Department, the Environmental Health and Sanitation Inspectorate since their roles are highly intertwined. A possibility here is having at least each member (or representative) of a department on the management team of the other so that concerns can be directly addressed and incorporated. This may substantially lead to the improvement of monitoring and assessment standards. However, the dilemma of effective implementation may be a concern due to political and other reasons. Enforcement by sanctions and prosecution has been the talk of the day, but lacked practicality.

Inclusivity

The last but not the least principle aims to enhance further local involvement through interaction and cooperation. This is to allow increased participation in a context-specific way. Increasing interactions and the uncertain behaviour of society more or less demands a participatory and interdependent approach to decision making. This was however identified to be somewhat restrictive. Solid waste

management is indeed a cross-cutting endeavour; therefore collaborations between neighbouring local governments may be sought. For example, the instance where MLGRD located two sites for the construction of landfills for the Accra metropolis can be seen as a joint venture perhaps for the entire region. It does not necessarily have to be located within the Accra metropolis due to the limited supply of land, and a greater interest in land. This means it will be a collaborative effort between local governments to determine the most suitable site if indeed that will address the management concern; rather than from the central government.

5.4 Answering the research questions

What are the explicit causes of the perceived failure of institutions in managing solid waste?

The failure of institutions is usually attributed to the inability of enforcing rules and regulations guiding solid waste management. It is associated to the unwilling attitude of administrators due to various political reasons. Also, gaps in the formulation and implementation of rules and regulations are manifested in the current state of environmental sanitation. This is perhaps a result of frequent intrusion by the central government as a result of their impositions on preferred procedures to meet political desires. However, an added factor has to do with institutional incapacities. The limited scope of institutions that emphasizes on improving solid waste disposal mechanisms through landfilling is unsustainable. These have not explicitly taken into account the other processes, and are therefore subject to multiple interpretations in a broad and ambiguous manner. They are fragmented. They promote reactive measures that are empirically understood to dampen the agenda of promoting sustainability. Institutions have also not been able to adjust to the continuously evolving socio-economic, political and environmental processes.

How are institutions established within societal and political dynamics; and what are the roles of institutions in the management of municipal solid waste?

Institutions are understood to provide a platform for orderliness. They guide and give meaning to social interactions in the solid waste management process. They represent the foundation for political, economic, and social interactions that promote change and direction. The formulation of institutions covers a broad scope of rules and regulations purposed to guide individual and group actions. They include interactions between actors, formal and informal arrangements and institutional environments consisting by-laws, legislative and regulatory frameworks, and policies. Commonly, institutions surface as a matter of the opinion and preference of the administration in place. The legislative and regulatory frameworks are established when the need arises; usually within specific circumstances and happenings. Institution of legislations leads to the establishment of actors and organizations to see to the implementation of the specific agenda. Due to the cross-cutting nature of solid waste management and the environment, multiple actors interact at different levels of power. Regulations

are formulated to address the agenda in legislations, which is legally binding. Guidelines are developed to implement the regulatory frameworks. Also, by-laws which are locally made regulations that guide actions are formulated in sync to national and regional regulations. Policies on the other hand are politically motivated strategies formulated and implemented on a short-term. They are characteristically easy to change or update, compared to legislative and regulatory frameworks. The findings of the research suggest that societal dynamics influence the formulation of these institutions. However, there is a limit to the variables that are considered especially during implementation. The population is usually used as a check on making provisions. Also, economic gains in the form clean-up strategies are seen to surpass that of environmental protection - and pollution prevention. Guidelines change when parameters change. However, the idea of adaptability of institutions has not been given much priority in the decision making arena.

How can a redesigned institutional framework be made to enhance effectiveness of municipal solid waste management in our intricate environmental setting?

Findings of the research revealed that the current institutional landscape for managing solid waste in Accra is characterized by a ‘react and cure’ approach. A redesign of institutions to shift its focus to an ‘anticipate and prevent’ approach - *pro-adaptive* - is proposed; in an area-based manner. This is because reactive measures drain substantial amount of resources, thus limiting the use of the local government’s finances (as well as that of the central government). Also, they have led to the limited focus of institutions which are ambiguous, unsustainable, and inadequate. They have also been unable to adapt to evolving dynamics of socio-economic, political, and environmental processes.

Principles of the proposed *pro-adaptive* approach to (re)designing institutions will enhance overall effectiveness in the management of municipal solid waste. A proactive measure hinders the idea of damage control, and promotes avoidance. This will enhance debates to go for ‘greener’ approaches. The principle of flexibility and adaptability brings in the component where feedback and feed forward loops can be exploited; in response to the changing dynamics of various processes. The current trend of waste picking is a clear example of a potential. Robustness is about reducing ambiguities in institutions by adding up (developed locally) to the existing ones that have been identified to be limited. Institutions should be ambitious and holistic. Inclusivity is about enhancing further local involvement by way of interactions and cooperation. This is a result of increasing interdependencies.

5.5 Conclusion

For Accra and most cities in the developing world, the concern of managing the city’s waste has become a persistent problem. The effect of society’s solid waste is evident in Accra, especially in the high-density low income neighbourhoods and public spaces (such as markets and lorry terminals). It is often attributed to the increasing population concentrations in the city which continuously lead to

the generation of enormous volumes of solid waste per day. With reference to Mensah-Bonsu and Owusu-Ansah (2011), the volume of waste generated is dependent on the size of the population and standard of living. Also, population growth is identified to be a major contributor to environmental degradation (Hughes, 2005). Successive administrations have all had issues of solid waste and environmental sanitation as one of the top focus areas in planned interventions. However, the management dilemmas of controlling waste still exist. The management process involves multiple actors who interact at different levels of authority. Formulated regulatory frameworks suffer from implementation barriers that suppress the operationalization of rules and regulations. It is made clear from literature that the system is characterised with feeble institutional capacities and resource deficiencies (Anomanyo, 2004; Boadi and Kuitunen, 2003; Owusu, 2010). The institutional structure being an integral component in promoting efficiency and sustainability was the motivation for this research. The overall goal of the research was to assess current arrangements to help come out with an approach for (re)designing institutions to improve efficiency; that accounts for the unknown to guide the complex management process of solid waste in Accra.

The findings show that institutional environments and arrangements for managing solid waste in Accra are fragmented and inadequate. There is no explicit institution guiding solid waste management, but the extensive setting of environmental sanitation. Although there seem to be many rules and regulations available, they primarily have a limited focus on improving solid waste disposal mechanisms – with preference to landfilling. The emphasis on collection mechanisms has also been well established, with the other processes in the management chain implicitly accounted for. Although it operates in a decentralized environment on paper, it is drifted towards a centralized system where coordinative models characterized by hierarchical and technical procedures dominate in practice. Government intrusion has been identified to contribute to the gaps in formulation and implementation of institutions since interactions or channels that would have been taken are broken. These reactive measures have been identified as major contributors to the current system inefficiencies. Also, they have not been able to adapt to evolving dynamics of the society.

An area-based approach that embodies principle of what I call a '*pro-adaptive*' approach to institutional (re)design is proposed. This is based on the fact that traits of area specific patterns have already been established, but are (to a large extent) restrictive in practice. Also, current institutional environments are limited and reactive in focus. This proposition is merger of being proactive and able to adjust to changing social and environmental circumstances. Institutions that guide actions in the management of solid waste should reflect principles that promote efficiency and sustainability. They must represent and promote a highly resourceful social and physical environment that has the capacity to adapt to internal and external changes over time. Four interrelated principles were identified to facilitate the agenda of enhancing efficiency. Proactive measures are against the idea of controlling damage, and will likely lead to the thought of more 'greener' and sustainable approaches. Feedback

and feed forward loops can be exploited in an adaptive institutional environment. Robust institutions will promote an ambitious and holistic institutional environment and arrangement. Being inclusive will allow for more local involvement.

Institutions come about as planned interventions to control and regulate social actions; to promote efficiency and sustainability. This research therefore contributes to developments in the decision making arena where preventive measures should be prioritized over remedial measures in an area-specific context. This will enhance avoiding needless damages. However, further research is needed to determine the practicality of how adaptive and flexible institutions can be made while maintaining a robust structure. Also, what scale will be most appropriate for an area-based approach? Indeed, ensuring efficient use of the scarce resources will thrive in a well-structured framework of rules, regulations and actions.

REFERENCES

- Abraham, E. M., Drechsel, P. and Cofie, O. (2006). The challenge of urban flood control: The case of Accra's Korle Lagoon. International Water Management Institute, PMB CT 112 Cantonments - Accra, Ghana
- Accra Metropolitan Assembly (2013). AMA community upgrading profile: Korle Gonno. Millennium Cities Initiative, Earth Institute Columbia University. Available online, retrieved on 18th June, 2016 from mci.ei.columbia.edu/files/2013/03/Korle-Gonno-Report_130120.pdf
- Ahmad, E. and Brosio, G. (2006). *Handbook of fiscal federalism*. Edward Elgar Publishing, Northampton, MA, USA.
- Alexander E. R. (2001). The planner-prince: interdependence, rationalities and post-communicative practice, *Planning Theory & Practice*, 2, 311-324
- Alexander, E. R. (2005). Institutional transformation and planning: from institutionalization theory to institutional design, *Planning Theory*, 4(3), 209-223.
- Alexander, E. R., (2006). Institutional design for sustainable development, *Town Planning Review*, 77(1), pp. 1–27.
- Alexander, E. R., (2012). Institutional design for value capture and a case : the Tel-Aviv Metropolitan Park in *International Planning Studies*, Vol. 17, No. 2, pp. 163-177.
- Allmedinger, P. (2009). *Planning theory*, Palgrave Macmillan, Houndsmill (UK).
- Annepu, R. and Themelis, N. J. (2013). Analysis of waste management in Accra, Ghana and recommendations for further improvements. Waste-to-Energy Research and Technology Council. Earth Engineering Centre, Columbia University.
- Anomanyo, E. D. (2004). Integration of municipal solid waste management in Accra (Ghana): Bioreactor treatment technology as an integral part of the management process. An Unpublished Master of Science thesis submitted to the Department of Environmental Strategy at Lund University, Sweden
- Aragón-Correa, J. A. and Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy, *The Academy of Management Review*, Vol. 28, No. 1 (Jan., 2003), pp. 71-88
- Asase, M., Yanful, K. E., Mensah, M., Stanford, J., & Amponsah, S. (2009). Comparison of municipal solid waste management systems in Canada and Ghana: A case study of the cities of London, Ontario, and Kumasi, Ghana. *Waste Management* 29 (2009) 2779–2786
- Asomani-Boateng,R. (2007). Closing the Loop, Community-Based Organic Solid Waste Recycling, Urban Gardening, and Land Use Planning in Ghana, West Africa, *Journal of Planning Education and Research* 27:132-145
- Aziale, L. K. and Asafo-Adjei, E. (2013). Logistics challenges in urban waste management in Ghana (A Case of Tema Metropolitan Assembly). *European Journal of Business and Management*, Vol. 5, No. 32.
- Batty, M. (2008). Cities as complex systems: Scaling, interactions, networks, dynamics and urban morphologies. *Centre for Advance Spatial Analysis*. University College of London (U.K), Working Papers Series Paper 131 – February 2008.
- Beetham, D. (1987). *Bureaucracy*. Stony Stratford, UK: Open University Press.
- Berry, M. A. and Rondinelli, D. A. (1998). Proactive corporate environmental management: A new industrial revolution, *Academy of Management Executive*, vol. 12, No. 2
- Boadi, K. O. and Kuitunen, M. (2002). Urban waste pollution in the Korle Lagoon, Accra, Ghana. *The Environmentalist*, 22, 301–309.
- Boadi, K. O. and Kuitunen, M. (2003). Municipal solid waste management in Accra Metropolitan Area, Ghana. *The Environmentalist*, 23, 211–218.

- Buitelaar, E., Galle, M., & Sorel, N. (2011). Plan-led planning systems in development-led practices: an empirical analysis into the (lack of) institutionalisation of planning law. *Environment and Planning A*, 43(4), 928.
- Byrne, D. (2003). Complexity theory and planning theory: A Necessary Encounter, *Planning Theory*, 2: 171-178.
- Cheema, G. S. and Rondinelli, D. A (2007). *Decentralizing governance; emerging concepts and practices*. Brookings Institution Press, Washington, D.C., USA.
- Conyers, D., and Hills, P. (1984). *An Introduction to Development Planning in the Third World*. John Wiley and Sons. Chichester, United Kingdom.
- De Roo, G. (2006a). Shifts in planning practice and theory: From a functional towards a communicative rationale, In: De Roo, G. and Porter, G. (eds.) *Fuzzy Planning - Introducing Actor-Consulting as a Means to Address Fuzziness in Planning and Decision-Making*. Ashgate, Aldershot, UK.
- De Roo, G. (2006b). Understanding fuzziness in planning, In: De Roo, G. and Porter, G. (eds.) *Fuzzy Planning - Introducing Actor-Consulting as a Means to Address Fuzziness in Planning and Decision-Making*. Ashgate, Aldershot, UK.
- De Roo, G. (2010a). Being or becoming? That is the question! Confronting complexity with contemporary planning theory, In: G. De Roo & Silva E.A. (eds.), *A Planner's Encounter with Complexity*, Ashgate Publications, Farnham, UK. (pp. 19 - 32).
- De Roo, G. (2010b). Planning and complexity: An introduction, In: G. De Roo & Silva, E. A. (eds.), *A Planner's Encounter with Complexity*, Ashgate Publications, Farnham, UK. (pp. 1-18).
- Dickson, K. B. Benneh, G. (2001). *A new geography of Ghana*, Revised edition. Longman Group Ltd, England.
- Droege, S. and Johnson, N. B. (2007). Broken rules and constrained confusion: Toward a theory of meso-institutions. *Management and Organization Review* 3:1 81–104.
- Duit, A., & Galaz, V. (2008). Governance and complexity—Emerging issues for governance theory. *Governance*, 21(3), 311-335.
- Environmental Protection Agency (1999). Environmental Assessment Regulations, 1999 (LI 1652). Ministry of Environment, Science, Technology and Innovation, Accra.
- Environmental Protection Agency (2002a). Ghana Landfill Guidelines. Ministry of Environment, Science, Technology and Innovation, Accra.
- Environmental Protection Agency (2002b), Manual for the Preparation of District Waste Management Plans in Ghana, Ministry of Environment, Science, Technology and Innovation, Accra.
- European Union (2008). Waste hierarchy. Available online, retrieved on 18th April, 2016 from https://epthinktank.eu/2016/01/25/circular-economy-package-four-legislative-proposals-on-waste-eu-legislation-in-progress/waste_hierarchy/
- Fay, M. and Opal, C. (2000). Urbanization without growth, a not-so-uncommon phenomenon. *Policy Research Working Paper*, WPS 2412.
- Forester, J. (1982). Planning in the face of power, *Journal of the American Planning Association*, 48:1, 67-80
- Flyvbjerg, B. (2003). 'Rationality and power'. In Campbell, S. and S. Fainstein (eds.) *Readings in Planning Theory*, second edition, Oxford (UK): Blackwell, pp. 318-29.
- Gertsakis J. and Lewis, H. (2003). Sustainability and the waste management hierarchy, A discussion paper on the waste management hierarchy and its relationship to sustainability.
- Ghana Statistical Service (2014a). 2010 Population and Housing Census. District Analytical Report of Accra Metropolitan, Ghana Statistical Service, Accra.
- Ghana Statistical Service (2014b). Ghana Living Standards Survey Round 6 (GLSS 6). Ghana Statistical Service, Accra
- Graphic Communications Group Limited (2013). AMA suspends dumping at Achimota Site. Available online, retrieved on 19th April, 2016 from

- <http://www.graphic.com.gh/news/general-news/9322-ama-suspends-dumping-at-achimota-site.html>
- Graphic Communications Group Limited (2015a). 2 Landfill sites identified for Accra Metropolis. Available online, retrieved on 1st October, 2015 from <http://www.graphic.com.gh/news/general-news/36727-2-landfill-sites-identified-for-accra-metropolis.html>
- Graphic Communications Group Limited (2015b). Floods turn beaches into dumpsites. Available online, retrieved on 18th June, 2016 from <http://www.graphic.com.gh/news/general-news/floods-turn-beaches-into-dumpsites.html>
- Hajer, M. and Wagenaar, H. (2003). *Deliberative policy analysis; Understanding governance in the network society*. Cambridge University Press. United Kingdom.
- Hall, P. A. and Taylor, R. C. R. (1996). Political science and the three new institutionalisms, A paper submitted as a public lecture during the Board meeting of MPIFG Scientific Advisory Board on May 9, 1996. MPIFG Discussion Paper 96/6, ISSN 0944–2073, June 1996.
- Healey, P. (1997). *Collaborative planning: Shaping places in fragmented societies*. Macmillan Press: London.
- Helmke, G. and Levitsky, S. (2004) Informal institutions and comparative politics: A Research Agenda. *Perspectives on Politics*, Vol. 2, No. 4 (Dec., 2004), pp. 725-740
- Hill, L. B. (1991). Who governs the American Administrative State? A bureaucratic-centered image of governance. *Journal of Public Administration Research and Theory*, 1 (1991): 3:261-294.
- Hodgson, G. M. (2006). What are institutions? *Journal of Economic Issues*, Vol. XL. No. 1
- Hughes, J. D. (2005). Global environmental history: The long view, *Globalizations*, Vol. 2, No. 3, pp 293-308
- Hurlbert, M. & Gupta, J. (2015). Adaptive governance, uncertainty, and risk: policy framing and responses to climate change, drought, and flood. *Risk Analysis*. Online First, DOI: 10.1111/risa.12510
- Inkoom D. K. B. (2011). Urban governance in Kumasi, In Adarkwa, K.K. (editor), *Future of the tree: Towards growth and development of Kumasi*, University Printing Press, pp 249-269.
- James P., Ghobadian A., Viney H., Liu J. (1999). ‘Addressing the divergence between environmental strategy formulation and implementation’, *Management Decision Journal*. Vol. 37/4, pp338-347
- Jänicke, M., Jörgens, H. (2006) New approaches to environmental governance. In: Jacob, K. and M. Jänicke (eds.) *Environmental Governance in Global Perspective: New Approaches to Ecological and Political Modernisation*, Freie Universität Berlin, Berlin.
- Jordan, A. (2008). The governance of sustainable development: taking stock and looking forwards. *Environment and Planning C*, 26(1), 17-33.
- Kelly, G., & Muers, S. (2002). *Creating public value: An analytical framework for public service reform*. London: Cabinet Office Strategy Unit.
- Kim, A.M. (2011). Unimaginable Change, *Journal of the American Planning Association*, 77:4, 328-237.
- Klijn, E-H. and Koppenjan, J. (2006). Institutional design: Changing institutional features of networks. *Public Management Review*, Vol. 8 Issue 1 2006, 141-160.
- Kooiman, J. (1993). *Modern governance: New government- society interactions*. Sage Publications: London.
- Kooiman, J. (2008). Exploring the concept of governability. *Journal of Comparative Policy Analysis: Research and Practice*, 10:2, 171-190.
- Kooiman, J., Bavinck, M., Chuenpagdee, R., Mahon, R. and Pullin, R. (2008). Interactive governance and governability: An introduction. *The Journal of Transdisciplinary Environmental Studies* Vol. 7, No. 1, 2008.

- Kooiman, J. and Bavinck, M. (2005). The governance perspective. In: Kooiman, J., Bavinck, M., Jentoft, S., and Pullin, R. (eds), *Fish for Life: Interactive Governance for Fisheries*. MARE Publication Series No.3, Amsterdam University Press, Amsterdam.
- Kooiman, J. and van Vliet, M. (2000). Self-governance as a mode of societal governance. *Public Management: An International Journal of Research and Theory*, Vol. 2 Issue 3 2000 359–377
- Koppenjan, J. and Groenewegen, J. (2005). ‘Institutional design for complex technological systems’, *Int. J. Technology, Policy and Management*, Vol. 5, No. 3, pp.240–257.
- Leao, S., Bishop, I. and Evans, D. (2001). Assessing the demand of solid waste disposal in urban region by urban dynamics modelling in a GIS environment. *Resource, Conservation and Recycling* 33 (2001) 289-313.
- Lemos, M. C., A. Agrawal (2006) Environmental governance. *Annual Review of Environment and Natural Resources*, 31 (3), pp. 297-325.
- Mackay, F., Monro, S., and Waylen, G. (2009). The Feminist Potential of Sociological Institutionalism. University of Huddersfield Repository, *Politics & Gender*, 5 (2). pp. 253-262. ISSN 1743-923X
- Maheshwari, R. (2012). Solid waste management. *Advances in BioResearch*, Volume 3(4) 01-12.
- Mariwah, S. (2012). Institutional arrangement for managing solid waste in the Shama-Ahanta-East Metropolis, Ghana, *Journal of Sustainable Development in Africa*, Volume 14. No. 6
- Martens, K. (2007). Actors in a fuzzy governance environment. In: G. de Roo and G. Porter (eds.) *Fuzzy Planning: The role of actors in a Fuzzy Governance Environment*, Ashgate, Aldershot.
- Mensah-Bonsu, I. F. and Owusu-Ansah, J. K. (2011). State of the environment in Kumasi, In Adarkwa, K.K. (editor), *Future of the tree: Towards growth and development of Kumasi*, University Printing Press, pp 174-194.
- Ministry of Local Government and Rural Development (2010a). Environmental Sanitation Policy. Accra: Government of Ghana.
- Ministry of Local Government and Rural Development (2010b). National Environmental Sanitation Strategy and Action Plan (NESSAP). Accra: Government of Ghana.
- Ministry of Local Government and Rural Development (2011). Strategic Environmental Sanitation Investment Plan (SESIP). Accra: Government of Ghana.
- Modern Ghana Media Communication Limited (2014). On the execrable Korle Gonno sanitation. Available online, retrieved on 18th June, 2016 from <https://www.modernghana.com/news/531473/on-the-execrable-korle-gonno-sanitation.html>
- Monney, I. (2015). National Sanitation Day: Is it another knee-jerk reaction to Ghana's sanitation issues? Available online, retrieved on 11th October, 2015 from <http://myjoyonline.com/articles/opinion/national-sanitation-day-is-it-another-kneejerkreaction-to-ghanas-sanitation-issues>
- National Development Planning Commission (2014). Ghana Shared Growth and Development Agenda (GSGDA) II, 2014-2017, Accra: Government of Ghana.
- North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press. United Kingdom.
- North, D. C. (1991). Institutions. *Journal of Economic Perspective*, 5, 97-112.
- Obeng-Odoom, F. (2013). Do African cities have markets for plastics or plastics for markets? *Review of African Political Economy*, 40:137, 466-474
- Oduro-Kwarteng, S. (2011). Private sector involvement in urban solid waste collection: performance, capacity, and regulation in five cities in Ghana. A Doctor of Philosophy (PhD) thesis submitted to Erasmus University, Rotterdam.
- Obirih-Opareh, N. (2003). Solid waste collection in Accra: The impact of decentralisation and privatisation on the practice and performance of service delivery. A Doctor of Philosophy (PhD) thesis submitted to FMG: Amsterdam Institute for Social Science Research (AISSR), University of Amsterdam.

- Olsen, J. P. (2009). Change and continuity: an institutional approach to institutions of democratic government. *European Political Science Review*, 1, pp 3-32.
- Onibokun, A. and Kumuyi, J. (1999). Governance and waste management in Africa. In, Adepoju G. Onibokun (ed) "*Managing the monster*": Urban waste management and governance in Africa. International Development Research Centre, Canada.
- Oteng-Ababio, M. (2009). Private sector involvement in solid waste management in the Greater Accra Metropolitan Area in Ghana. *Waste Management & Research*. Sage publications, 2010: 28: 322–329
- Oteng-Ababio M. (2011). Governance crisis or attitudinal challenges? Generation, collection, storage and transportation of solid waste in Ghana, *Integrated Waste Management - Volume I*, Mr. Sunil Kumar (Ed.), ISBN: 978-953-307-469-6, InTech, Available from: <http://www.intechopen.com/books/integrated-wastemanagement-volume-i/governance-crisis-or-attitudinal-challenges-generation-collection-storage-andtransportation-of-soli>
- Owusu, G. (2010), Social effects of poor sanitation and waste management on poor urban communities: a neighborhood-specific study of Sabon Zongo, Accra. *Journal of Urbanism*, Vol. 3, No. 2, July 2010, 145-160
- Parvathamma, G. I. (2014). An analytical study on problems and policies of solid waste management in India –special reference to Bangalore City, *Journal of Environmental Science, Toxicology and Food Technology*, Volume 8, Issue 10 Ver. I
- Pierre, J. (1999) 'Models of urban governance: The institutional dimension of urban politics', *Urban Affairs Review* 34(3): 372–96.
- Porter, G. and Young, E. (1998). Decentralized environmental management and popular participation in coastal Ghana. *Journal of International Development*, 10, 515-526.
- Portugali, J. (2006). Complexity theory as a link between space and place, *Environment & Planning A*, 38: 647-64.
- Rauws, W. S., Cook, M. and van Dijk, T. (2014). How to make development plans suitable for volatile contexts, *Planning, Practice & Research*, 29, 2: 133-151.
- Republic of Ghana (1945). Town and Country Planning Act (1945), CAP 84
- Republic of Ghana (1992). The Constitution of the Republic of Ghana, 1992
- Republic of Ghana (1993). Local Government Act 1993, Act462. Accra: GPC Printing Division.
- Republic of Ghana (1994a). Environmental Protection Agency Act (1994), Act 490
- Republic of Ghana (1994b). National Development Planning Commission Act (1994), Act 479)
- Republic of Ghana (1996). National Building Regulations (1996), LI 1630
- Republic of Ghana (2003). Public Procurement Act, 2003 (Act 663)
- Rhodes, R.A.W. (1996). The New Governance: Governing without Government. *Political Studies*, 44:4, 652–667
- Rondinelli, D. A. (1981). Government decentralization in comparative perspective: Theory and practice in developing countries. *International Review of Administrative Sciences*, 47 (1981): 133–45.
- Schubeler P., Wehrle, K., and Christen, J. (1996). Conceptual framework for municipal solid waste in low- income countries, urban management and infrastructure. SKAT (Swiss Centre for Development Cooperation in Technology and Management), Working Paper No. 9
- Scott, W. R. (1987). The adolescences of institutional theory, *Administrative Science Quarterly*, Vol. 32, No. 4. (Dec., 1987), pp. 493-511.
- Simonis, U. E. (1988). Ecological modernization of industrial society - three strategic elements, In: Archibugi, F. and Nijkamp, P. (eds.) *Economy and Ecology: Towards Sustainable Development*, Kluwer Academic Publishers
- Stoker, G. (1998). Governance as theory: five propositions. *International social science journal*, 50:155, 17-28

- Stoker, G. (2006). Public value management: a new narrative for networked governance? *The American Review of Public Administration*, 36:1, 41–57.
- Tchobanoglous, G., Theisen, H. & Vigil, S. (1993). *Integrated solid waste management: engineering principles and management issues*. (First Edition), Irwin/McGraw- Hill, USA
- The International Bank for Reconstruction and Development/World Bank, (2010). City of Accra, Ghana: Consultative Citizens' Report Card. Washington, DC, USA.
- Thompson, I. A. (2012). Domestic waste management strategies in Accra, Ghana and other urban cities in topical developing nations. Available online, retrieved on 8th November, 2015 from http://www.case.edu/med/epidbio/mphp439/Waste_Mgmt_Accra.pdf
- Thompson, G., Frances, J.,Levačić, R. and Mitchell, J. (1991). *Markets, hierarchies and networks: the coordination of social life*. Sage Publications, Thousand Oaks, California.
- Tolbert, P. S. and Zucker, L. G. (1996). The institutionalization of institutional theory, [Electronic version]. In S. Clegg, C. Hardy and W. Nord (Eds.), *Handbook of organization studies* (pp. 175-190). London: SAGE.
- Town and Country Planning Department (2011). Zoning Guidelines and Planning Standards. Ministry of Environment, Science, Technology and Innovation, Accra.
- Tsiboe, I. A. and Marbell, E. (2004). A look at urban waste disposal problems in Accra, Ghana. A Master thesis submitted to the Roskilde University, Denmark.
- United Nations Environmental Programme (2005). Solid waste management, *Cal Recovery Incorporated*, Volume 1 ISBN: 92-807-2676-5
- UNICEF, (2014). Cholera outbreak in the West and Central Africa: Regional Update, 2014 – Week 52. Retrieved on 11th October, 2015 from www.unicef.org/cholera/files/Cholera_regional_update_W52_2014_West_and_Central_Africa.pdf
- United Nation Population Fund (UNFPA) (2009). State of world population 2009. Available online, retrieved on 11th April, 2016, from <http://www.unfpa.org/swp/2009/en>
- Vanclay, F. (2002). Conceptualising social impacts, *Environmental Impact Assessment Review* 22(3): 183-211
- Van Assche, K., Duineveld, M. & Buenen, R. (2014). Power and contingency in planning. *Environment and Planning A*, (46), 2385-2400.
- World Bank (1993). Housing: enabling markets to work. Washington D.C.: The World Bank.
- World Bank (1999). (International Bank for Reconstruction and Development). What a waste, solid: waste management in Asia.
- World Bank, (2007). IEG Guidelines for Global and Regional Program Reviews (GRPRs). Independent Evaluation Group, <http://www.worldbank.org/ieg/grpp>
- Yeboah, I. A. E. (2000). Structural adjustment and emerging urban form in Accra, Ghana, *Africa Today*, Vol. 47, No. 2 (Spring 2000) pp. 61-89
- Yin, R. (1994). *Case Study Research: Design and Methods*. London: Sage Publications.
- Yin, R. (2009). *Case Study Research: Design and Method* (4th eds.), Los Angeles, CA: Sage Publishing
- Zuidema, C. (2016). Making sense of decentralization in environmental governance, Stimulating Local Environmental Policy, *Routledge* (chapter 4)
- Zurbrugg, C. (2003). Urban solid waste management in low-income countries of Asia: How to cope with the garbage crisis. Presented for: Scientific Committee on Problems of the Environment (SCOPE), Urban Solid Waste Management Review Session, Durban, South Africa, November 2002.

APPENDICES

Appendix I – Questionnaire for the Waste Management Department

Name of Respondent:

Position of Respondent:

Date of Interview:

A. Background Information

1. What are the specific roles and responsibilities (duties) of the department in the various phases of solid waste management:
 - i. Collection and Transportation
 - ii. Recycling and processing
 - iii. Disposal
2. What are the challenges faced in undertaking your duties with regards to the solid waste management process?
 - i. Collection and Transportation
 - ii. Recycling and processing
 - iii. Disposal

(A document with resource capacities will be greatly appreciated)

B. Institutions and institutional design

3. What formal institutions (legislations, policy frameworks, etc.) are used to guide solid waste management in Accra, and at what level are they formulated?
 - i. National
 - ii. Regional
 - iii. Metropolitan
 - iv. Sub-metropolitan
 - v. Community
 - vi. Neighbourhood
 - vii. Others (please specify)
4. What are the main institutions (e.g. by-laws) used for solid waste management in Accra?
.....
(A document with the list of bye-laws will be greatly appreciated)
5. What are the processes involved in the formulation of these rules and regulations?
6. Who are the key actors/stakeholders involved in the formulation process, and at what level or stage are they involved?
7. In what ways are residents involved in the formulation of rules and regulations?
8. Is the informal sector (waste pickers, small-scale industries, etc.) involved?
 - a. Yes
 - b. No

If yes, in what ways are they involved?
9. Are variables and circumstances of relatively low predictable patterns such as population and societal dynamics incorporated in the formulation of institutions?
 - a. Yes
 - b. No
 - c. Sometimes
 - d. Don't know

Reason
10. I. How often are institutions updated, or redesigned?
- II. What usually triggers their update or redesign?

11. In your view, do think these rules and regulation are known to the people?
 a. Yes b. No c. Don't know
 Reason
12. How is the effectiveness of institutions measured?

C. Governance and Implementation

13. How would you assess the level of cooperation amongst actors in solid waste management?
14. What are the approaches used to enforce institutions?
15. What is the extent of private sector participation in solid waste management?
16. On what basis are private companies given contracts for waste management? (How is the contract awarded?)
17. What is currently being done about 'heaps of solid waste' especially in market centres and some low income neighbourhoods?
18. What is being done about the attitudinal challenge of some citizens with respect to indiscriminate dumping?
19. What is being done about the emerging self-organising patterns with regards to waste pickers and informal recycling and processing industries?
20. How would you rate the robustness of institutions on a scale of 1-10?
- Reason
21. How would you rate the flexibility (ability to adapt to changing circumstances) of institutions on a scale of 1-10?
- Reason
22. How would you rate the effectiveness of institutions on a scale of 1-10?
- Reason

D. Supplementary comments

23. Generally, it is perceived that institutions for solid waste management are ineffective. What do you think are the causes of this perception?
24. What are you *currently* doing to ensure sustainability in the management of solid waste in Accra?
25. What can *potentially* be done to enhance the sustainability of solid waste management in Accra?
26. Is anything *hindering* the realization of that potential to enhance sustainability?
 a. Yes b. No
 Reason
27. Any other comments

Appendix II – Questionnaire for Departments, Agencies and Ministries

Name of Organization:

Name of Respondent:

Position of Respondent:

Date of Interview:

1. What are the roles and responsibilities of the organization in Accra's solid waste management?
.....
2. Which important institutions (policies, strategic plans, etc.) have been developed by your organization to guide the management of solid waste in Accra?
(Kindly attach documents if possible)
3. What are the processes involved in the formulation of the institutions?
4. Who are the key actors/stakeholders involved in the formulation process, and at what level or stage are they involved?
5. Are variables and circumstances of relatively low predictable patterns such as population and societal dynamics incorporated in the formulation of institutions?
a. Yes b. No c. Sometimes d. Don't know
Reason
6. I. How often are institutions updated, or redesigned?
- III. What usually triggers their update or redesign?
7. In your view, do think these rules and regulation are known to the people?
b. Yes b. No c. Don't know
Reason
8. How would you rate the robustness of institutions on a scale of 1-10?
Reason
9. How would you rate the flexibility (ability to adapt to changing circumstances) of institutions on a scale of 1-10?
Reason
10. How is the effectiveness of institutions measured?
11. How would you rate the effectiveness of institutions on a scale of 1-10?
Reason
12. Generally, it is perceived that institutions for solid waste management are ineffective. What do you think are the causes of this perception?
13. What are you *currently* doing to ensure sustainability in the management of solid waste in Accra?
.....
14. What can *potentially* be done to enhance the sustainability of solid waste management in Accra?
.....
15. Is anything *hindering* the realization of that potential to enhance sustainability?
a. Yes b. No
Reason
16. Any other comments