

UNIVERSITY OF GHANA

**DECENTRALISATION AND ENVIRONMENTAL SUSTAINABILITY
IN GHANA: THE CASE OF OBUASI MUNICIPAL ASSEMBLY IN THE
ASHANTI REGION**

BY

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**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA,
LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR
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DECLARATION

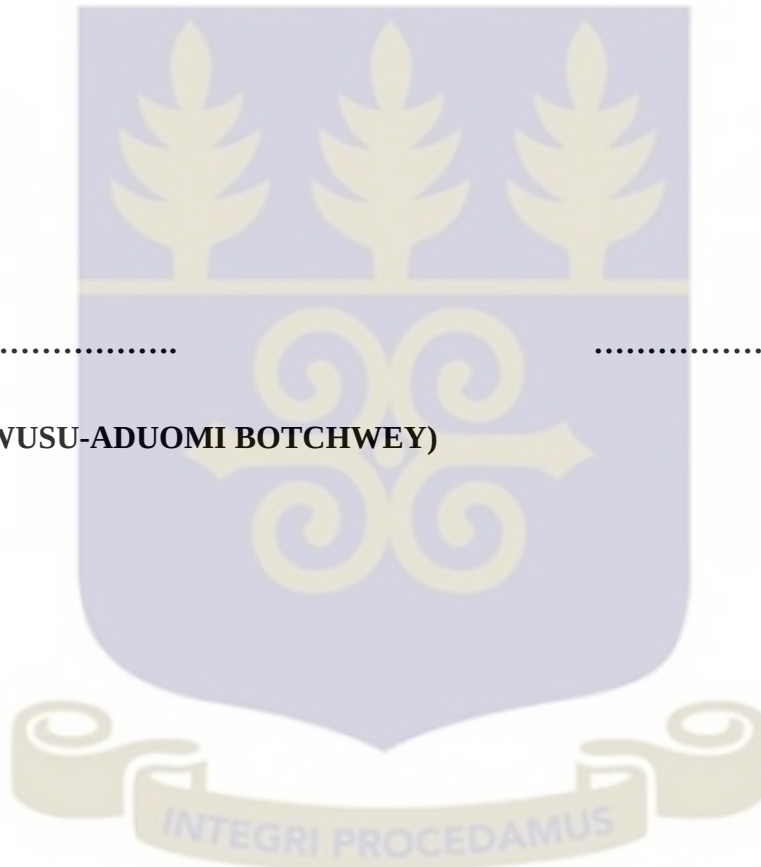
I do hereby declare that this study is the result of my own research and that no part of this work has been presented for another degree in the University of Ghana or elsewhere. All references have been duly acknowledged.

I bear sole responsibility for any shortcomings.

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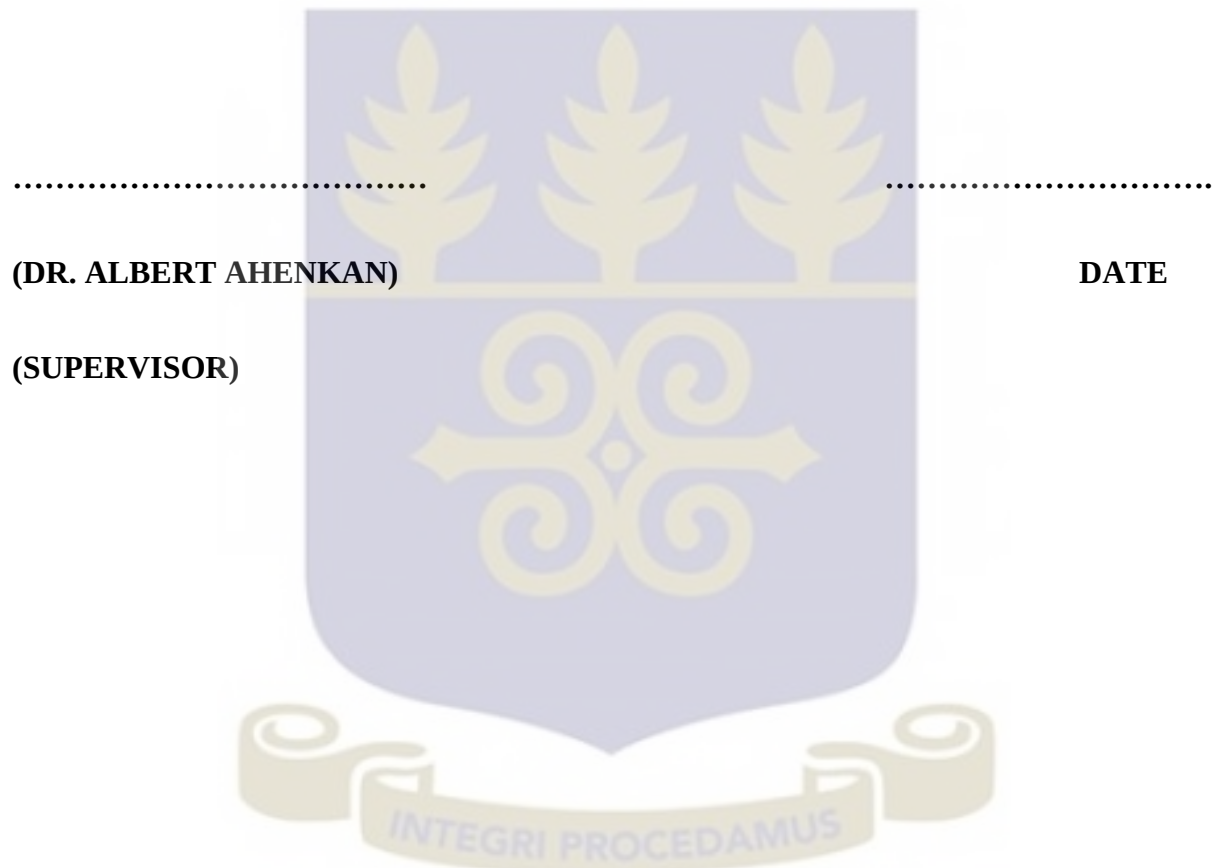
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CERTIFICATION

I hereby certify that this Thesis was supervised in accordance with the procedures laid down by the university.



DEDICATION

This work is dedicated to my caring and loving mother, Christiana Ama Afrane for sacrificing to drive me to school amid several pickles. Similarly, to my heart-felt daughter Nana Akosua Boahemaa Botchwey.



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LIST OF ACRONYMS/ABBREVIATIONS

ACs	-	Area Councils
AIDS	-	Acquired Immune Deficiency Syndrome
APAF	-	Assembly's Poverty Alleviation Fund
BECE	-	Basic Education Certificate Examination
BMC	-	Budget Management Centres
BOT	-	Build, Operate and Transfer
CBO	-	Community-Based Organisations
CDM	-	Clean Development Mechanism
CHPS	-	Community-Based Health Planning and Service
CLSWP	-	the Common Law Solution to Water Pollution
CO	-	Carbon Dioxide
COA	-	Commission on Audit
CONIWAS	-	Coalition of Non-Governmental Organisations in Water and Sanitation
CSOs	-	Civil Society Organisations
CWA	-	Clean Water Act
DA	-	District Assembly
DACF	-	District Assembly Common Fund
DCD	-	Department of Community Development

DEPA	-	District office of Environmental Protection Agency
DFID	-	Danish Fund for International Development
DMOH	-	Directorate of Ministry of Health
DPSC	-	Development Planning Sub-Committee
EAP	-	Environmental Action Plan
EC	-	Executive Committee
ECOWAS	-	Economic Community of West African States
EEA	-	European Environmental Agency
EI	-	Executive Instrument
EJ	-	Environmental Justice
EPA	-	Environmental Protection Agency
EPC	-	Environmental Protection Council
ESRC	-	Economic and Social Research Council
EU	-	European Union
EUSC	-	Environmental Utilisation Space Concept
FAO	-	Food and Agriculture Organisation
FASC	-	Finance and Administration Sub-Committee
FIA	-	Freedom of Information Act
FIB	-	Freedom of Information Bill

FM	-	Frequency Modulation
GAF	-	Ghana Armed Forces
GFC	-	Ghana Forestry Commission
GFS	-	Ghana Forest Service
GHS	-	Ghana Health Service
GOG	-	Government of Ghana
GPS	-	Ghana Police Service
GSOP	-	Ghana Social Opportunities Projects
GSS	-	Ghana Statistical Service
HEPA	-	Head of Environmental Protection Agency
HIPC	-	Heavily Indebted Poor Country
HIV	-	Human Immunodeficiency Virus
HMEH	-	Head of Municipal Environmental Health
HR	-	Human Resources
HRD	-	Human Resource Department
HTTP	-	Hyper Text Transfer Protocol
IEC	-	Information, Education and Communication
IGF	-	Internally Generated Fund
IMCP	-	Integrated Malaria Control Programme

IRS	-	Indoor Residual Spraying
JSSC	-	Justice and Security Sub-Committee
KGs	-	Kindergartens
LA	-	Local Agenda
LI	-	Legislative Instrument
LGCSB	-	Local Government Civil Service Bill
LGS	-	Local Government Service
LGUs	-	Local Government Units
MA	-	Municipal Assembly
MACF	-	Municipal Assembly Common Fund
MCLS	-	Malaria Control Liaison Section
MCE	-	Municipal Chief Executive
MCD	-	Municipal Coordinating Director
MDG	-	Millennium Development Goal
MEHO	-	Municipal Environmental Health Officer
MLGRD	-	Ministry of Local Government and Rural Development
MHD	-	Municipal Health Director
MHRD	-	Municipal Human Resource Director
MHWS	-	Municipal Head of Water and Sanitation

MHZG	-	Municipal Head of Zoomlion Ghana
MIS	-	Management Information System
MM	-	Millimeters
MOFA	-	Ministry of Food and Agriculture
MP	-	Member of Parliament
MPCU	-	Municipal Planning and Coordinating Unit
MPO	-	Municipal Planning Officer
MWST	-	Municipal Water and Sanitation Team
MYC	-	Municipal Youth Coordinator
$^{\circ}\text{N}$	-	Degree North
NADMO	-	National Disaster Management Organisation
NGOs	-	Non-Governmental Organisations
NHIS	-	National Health Insurance Scheme
NO^2	-	Nitrogen Dioxide
NRC	-	National Redemption Council
NSD	-	National Sanitation Day
NYP	-	National Youth Programme
O^3	-	Ground-Level Ozone
OCT	-	Optimal Control Theory

ODI	-	Oversea Development Institute
OGH	-	Obuasi Government Hospital
OGP	-	Open Government Partnership
OIMCP	-	Obuasi Integrated Malaria Control Programme
OMA	-	Obuasi Municipal Assembly
OMEHD	-	Obuasi Municipal Environmental Health Directorate
OMHD	-	Obuasi Municipal Health Directorate
OMYC	-	Obuasi Municipal Youth Coordinator
OPD	-	Out-Patient Department
PA	-	Procurement Act
PAU	-	Public Affairs Unit
Pb	-	Lead
PHC	-	Population and Housing Census
P&G	-	Parks and Gardens
PM	-	Particulate Matter
PM	-	Presiding Member
PSI	-	President's Special Initiative
PRCC	-	Public Relations and Complaints Committee
PWD	-	Public Works Department

SAOB	-	Statement of Allotments, Obligations and Balances
SCT	-	Social Cognitive Theory
SHS	-	Senior High School
SMI	-	Strategic Management Initiative
SO ²	-	Sulphur Dioxide
SOPs	-	Standard Operating Procedures
STEP	-	Skills Training and Entrepreneurial Programme
SSSC	-	Social Services Sub-Committee
T & CP	-	Town and Country Planning
TS	-	Transparency Seal
UCs	-	Unit Committees
UDG	-	Urban Development Grant
UK	-	United Kingdom
UN	-	United Nations
UNCD	-	United Nations Conference on Development
UNCED	-	United Nations Commission on Economic Development
UNDP	-	United Nations Development Programmes
UNEP	-	United Nations Environmental Programme
UNFCCC	-	United Nations Framework Convention on Climate Change

UNICEF	-	United Nations International Children Emergency Fund
UNREDD	-	United Nations Reducing Emissions from Deforestation and forest Degradation
USA	-	United States of America
USD	-	United States Dollar
WATSAN	-	Water and Sanitation
W/C	-	Water Closet
WLD	-	Wildlife Department
WPA	-	Whistleblower's Protection Act
WSC	-	Work's Sub-Committee
WSD	-	Water and Sanitation Department
WSU	-	Water and Sanitation Unit
WWW	-	World Wide Web
ZC	-	Zonal Council



ABSTRACT

Decentralisation is extensively adopted as a mechanism to perk up democratic procedure of governance and the integrity and competence of scarce resource allotment. While the objectives and the key principles of decentralisation such as subsidiarity are illustrious, attempts to execute them have not always been flourishing. This study aimed at empirically evaluating the link between decentralisation and environmental sustainability in the Obuasi Municipality of Ghana. The study adopted a qualitative approach through in-depth interviews of a total of twenty (20) respondents including seven key informants purposely selected due to their role in the implementation of decentralisation in the Municipality and some key community members. The study reveals that the link between decentralisation and environmental sustainability had been speckled in the Obuasi Municipality. It reveals that measures including effective monitoring mechanisms, provision of adequate financial and economic resources, and the involvement of all stakeholders in environmental sustainability put in place by the Municipal Assembly are yielding good results. The study recommends tightening environmental sustainability policies to prevent environmental degradation. It also recommends complete involvement of the members of the Municipality in decision making relating to environmental sustainability at all levels of the municipality. These are a way forward for a maximum attainment of environmental sustainability leading to an improved human health of the people in the Obuasi Municipality. It is imperative to mention that effective decentralisation which is geared towards quality environmental sustainability for improved human health would flourish when equity, effectiveness, efficiency and responsiveness of resource utilisation are considered as the building blocks.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

This study scrutinizes the link between “decentralisation and environmental sustainability in the Obuasi Municipality in the Ashanti Region of Ghana”. Specifically, the study catalogues the instruments for ensuring environmental sustainability in the Obuasi Municipality and recognizes factors militating against decentralisation of environmental sustainability in the Municipality. The preliminary chapter covers the background to the study; statement of the problem; research objectives; research questions; significance of the study; research theory; definitions of terms; and chapter outline.

1.2 Background to the study

The call for decentralisation has internationally fashioned the contours of growth thinking, management and governance. The demand for decentralisation has been toughened all over the world due to its connection to the idea of secondary, which holds that results should be taken at the most fitting close to management and creates an assumption that this height will be the bottommost component. Researchers, global organizations, and joint donors have placed much prominence on decentralization universally moderately for the reason of its latent to lessen insufficiency, predominantly in emerging and poorer nations. In a growing environment or setting, decentralisation has been connected with such profits as fairness, adeptness, usefulness and approachability (Kersbergen & Kerbeek, 1999).

Decentralisation which is well-defined as the allocation of influence and right from the vital administration to sub-national components either by administrative, managerial, monetary and economic means has been understood much more as a reaction to discontentment with centralized arrangement and governmental configurations (Helmsing, 2001). The call for

decentralization is not problematic to comprehend at slightest in its extra considerable forms where actual authority and means are regionalized to independent indigenous establishments.

Decentralisation from a graded standpoint as visualized in Ghana encompasses the forceful of definite policy-making right down to subordinate levels of a governmental ladder and thus connecting the mainstream people in decision making and henceforth in authority (Politt C. , 1995).

Ghana has attracted attention as a constructive illustration in Africa because of her far-reaching shifting of tasks to the native district level, counting significant social and economic possessions. What might not have been achieved in realistic terms is the delegation of environmental and natural resource management. Several environmentalists deem the local society to be the largest suitable custodian of environmental management since they “are better able to understand and intervene in environmental problems because they are ‘closer’ to both the problem and the solution” (Lane & McDonald, 2005). These environmentalists describe societies according to rigid spatial restrictions of control and tasks and see them as having dissimilar and incorporated community structures and widespread well-being. For this reason, it is projected that the local possession of natural wealth as well as the governmental supremacy to defend that wealth will be much more effectual than conventional, national environmental guiding principle. This spotlight on mutual interest is articulated in the extensive commitment of societies in the execution of the Local Agenda-21 (Mehta, 1996).

Decentralisation continues to ignite repeated deliberation in Ghana’s political discussions. A speedy evaluation, on the other hand, shows that local governments have a restricted capability to administer natural wealth. Colman (1996) postulates that local governments’ performances in poorer countries have not been victorious in the administration of the environment, as they face flush evils in various operations. He identifies the local

institutions' structure and administration, predominantly in poorer nations, as the foundation of the problem. For instance, land occupancy is still indistinguishable in Ghana and this affects countryside areas where most of the local government authorities are situated. If laws do not unmistakably describe permanent status and right to use natural resources, local governments will not be able to administer these resources. Again, the central government in the times of yore had shown its ineffectiveness in dealing with environmental management; hence, a decentralized supervision of the environment to make it sustainable is very vital.

1.3 Statement of the problem

The administrative strategy for environmental management in the country is shimmering formulated, but the principles and strategies at the local level are not well executed (McCormick, 2001). McCormick stressed that there was derisory knowledge in the area of environmental culture and civic responsiveness to execute those planned policies at all levels. It should also be remembered that several of these laws dealing with environmental issues are based on imposing perceptions and are characteristically "command and control" in nature. This serves as a discouragement for conformity and results in conflicts among dissimilar government departments, agencies, institutions and local authorities thereby, resulting in unsuccessful laws for environmental administration. What is more, the agencies dealing with supervision and the organization of the natural environment, in some respects, have common characteristics in functions and are regularly reproducing the same results (Liviga, 2009).

In some districts in Ghana, preservation of natural resources is not precedence. It only becomes precedence if it is a starting place for income creation. Zilch is being invested back to widen or safeguard the wealth. In almost all the local assemblies, chief executives will not endorse distribution of financial support to the natural resources division because it is not seen as imperative. Over and over again, politicians think that in order to protect and keep the

environment, the only way is to proscribe local people from using such natural resources, hence causing infringement.

Practice has revealed that the present institutional structure cannot successfully mug the test of integrating environmental discussion into growth activities. Experience has also proven that the contemporary institutional outline is somewhat an obstruction to successful execution. This observable fact has therefore resulted in the friction between the central and local governments over their functions and authorities on environmental administration.

It is acknowledged fact that because of the numerous troubles and remedies being dealt with by Local Agenda-21 have their sources in local authorities, the contribution and teamwork of local authorities will be influential factors in satisfying its short-term aims. Local authorities build, control and uphold economic, public and ecological road and rail network, supervise scheduling procedures, set up local green policies and conventions and back in execution of nationwide and regional ecological laws. As the level of authority contiguous to the people, they play a very important role in enlightening, mobilizing and reacting to the public to encourage long-term growth (Cline, 2005).

The Local Plan has a meticulous role to take part in environmental sustainability through guiding the development and making use of land, and stalwartly exacting on policies formulated on development utilization. The Local Plan should recognize and take account of all green concerns and add to the short-term aims of guaranteeing that advancement and expansion are perpetual all the way through for instance, encouraging the use of beforehand urbanized land, diverse uses, high densities and superior design. ‘Agenda-21’, fashioned following the Rio Meeting in the year 1992, formulated an all-inclusive universal action for the search of sustainable progress. Chapter 28 admonishes local government authorities to work with local societies to produce a sustainable strategy for green sustainability. The

committee that officially adopted LA-21 in 1994 is now dedicated to increasing LA-21 activities in all of its most important functions. In Ghana, local authorities have performed a number of tasks in the areas of water and sanitation, pre- and primary education, transport, social welfare, environmental protection, refuse collection, health clinics, and a host of them.

In spite of the above role played by Local Authorities in ensuring ecological perpetuity resulting in the endorsement of an improved human health, little has been achieved by the Local Authorities under LA-21 by the practice of decentralisation. For example, environmental sustainability and improved human health is confronted with a number of challenges, notable among them include: poor sanitation; loss of biodiversity; pollution; illegal logging; destruction of natural habitats; poaching; and forest governance.

It is against this background that this study seeks to examine the link between “decentralization and environmental sustainability in Ghana” using the Obuasi Municipality as a case to enable the researcher delve deeper into how local authorities can use the concept of decentralization to sustain the environment and promote an improved human health.

1.4 Objectives of the study

1.4.1 General objective

The main objective of this study is to examine the role of decentralisation in ensuring environmental sustainability with Obuasi Municipality in the Ashanti Region as a case study.

1.4.2 Specific objectives

Specifically, the study seeks to:

1. Identify the main causes of the poor environmental sustainability in the Obuasi Municipality;

2. Examine the effects of decentralization on environmental sustainability in the Obuasi Municipality; and
3. Examine the strategies put in place by the Obuasi Municipal Assembly in ensuring environmental sustainability in the Obuasi Municipality.

1.5 General question

Generally, the research seeks to ask the question: how can decentralisation sustain environmental sustainability in the Obuasi Municipality?

1.5.1 Specific questions

In line with the objectives, the following specific key questions were answered:

1. What are the main causes of poor environmental sustainability that have led to air pollution, water pollution, land pollution, soil erosion and forest degradation in the Obuasi Municipality?
2. What are the effects of decentralization on environmental sustainability in the Obuasi Municipality?
3. What are the strategies put in place by the Municipal Assembly in ensuring environmental sustainability in the Obuasi Municipality?

1.6 Significance of the study

Since resources are scarce it is very significant to ensure that sustainability is embarked upon so that resources are not exhausted but available to congregate the needs of present generations as well as those of potential generations. It is against this backdrop that the MDG 7, target 10 stresses on the significance of providing sustainable water and sanitation to

citizens by the year 2015 to guarantee that all manner of people will enjoy an improved human health.

The findings of this research study will be viewed from three perspectives: This study will first of all, contribute to the burgeoning interest of research on the link between decentralization and environmental sustainability leading to an improved human health, especially in the context of developing and middle-income countries such as Ghana. The study therefore serves as a guide for future research on the link between decentralisation and environmental sustainability leading to an improved quality health especially, in the less endowed countries which are fraught with environmental challenges emanating from poor environmental sustainability management leading to stumpy quality of health. Again, the findings will be used as a source of secondary data for other health researchers conducting similar research studies on the link between decentralisation and environmental sustainability leading to an improved human health using another area in the field of academia. For example, undergraduate and post graduate students, polytechnic students and other researchers may depend upon the findings as a credible source of their secondary data when conducting research into environmental sustainability leading to an improved human health. That is to say, it is expected that this study will pioneer further studies on this subject by contributing to academic learning and source of reference.

The study involves a comprehensive review of decentralisation in the area of water and sanitation since consultations were made with policy- makers, implementers and users of environmental resources. Consequently, the findings will help policy-makers and other stakeholders to improve the services of environmental sustainability and quality health to the people in the Obuasi Municipality in particular, and all Ghanaians in general. That is to say, the research findings may be used by governments, institutions and other agencies in dealing

with challenges confronting environmental sustainability leading to an improved human health, especially, in their quest to achieve the Millennium Development Goal (MDG) 7, particularly the target 10 which highlights on water and sanitation for an improved human health. In short, it would serve as a guide to governments, decentralisation experts, planners as well as beneficiary communities as to the best way forward for sustaining the environment for improving quality human health.

This study will be of relevance not only to researchers and policy-makers but also will enhance the practice and implementation of decentralized programs, especially, in the area of environmental sustainability leading to an improved human health. Furthermore, the study will provide a deepened understanding of the practice of decentralisation in the provision of sustainable environment leading to an improved human health in the country and also provide a basis for future research in other health related areas.

Finally, the research findings may be used by international organisations such as the UN, the ECOWAS, the EU and non-governmental organizations in their efforts to promote sustainable environment and quality human health in member-countries of such international organisations.

1.7 Definitions of terms

The following terms will mean as explained below:

- 1. Decentralisation**-It is the shift of administrative authority and obligation of answerability and dependability for results. It is followed by an allocation of corresponding right to persons or departments at every level of a society even those far inaccessible from head office or other centres of authority.

2. **Environmental Sustainability**-It is the capability to preserve the traits that are cherished in the bodily surroundings.
3. **Biodiversity**- Biodiversity, dumpy for biological diversity, is the phrase used to illustrate the multiplicity of life established on Earth in addition to all of the natural procedures. Biodiversity consists of ecological unit, hereditary and intellectual multiplicity, and the correlation among these and every single one of the genus.
4. **Deforestation**- This is the clearance of the Earth's green vegetation on a considerable range, time and again causing harm to the superiority of the land.
5. **Resources**- Are financial or creative factors necessary for achieving an action or as means to embark on a project and accomplish a desired effect.

1.8 Chapter outline

The study is organised in six chapters. The first chapter looks at the general introduction which provides a brief background of the study, the statement of the problem as well as the significance of the study. It also spells out the general and specific objectives of the study together with the research questions which the study seeks to address. Chapter one finally ends with the definitions of terms as well as the structure and organisation of the chapters.

The second chapter provides a review of the theories and existing literature about the topic of study. It will engage in the discussion and review of already existing studies and research works that have been undertaken on the research topic and their possible implications on the current research underway. The second chapter also examines the conceptual frame work and the theory of the research study.

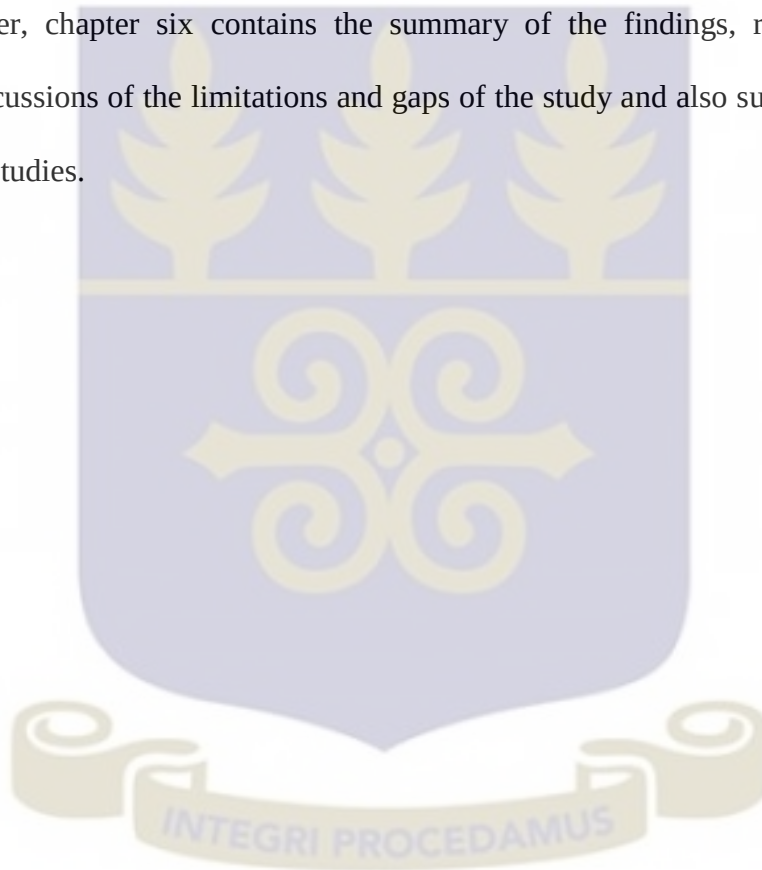
Chapter three presents a comprehensive review of the profile of the Obuasi Municipality. This chapter consists of the location, size, population, occupation and other relevant

demographic characteristics of the Municipality in order to put the study setting into perspective.

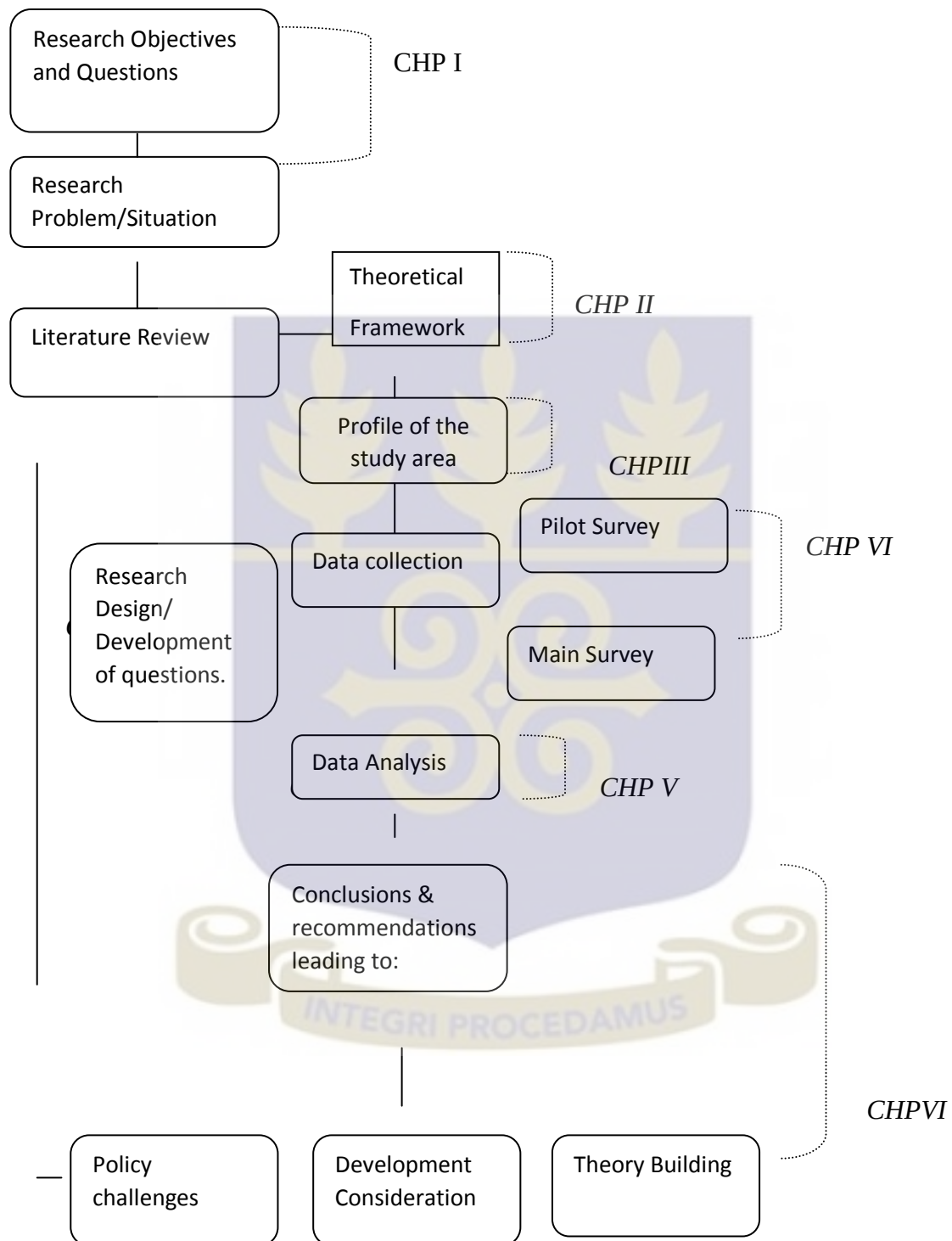
Chapter four presents the methodology of the study and describes the research paradigm, design, data collection tools and sampling techniques, limitations of the research study, among others.

The chapter five covers the analysis and interpretations of the findings.

The final chapter, chapter six contains the summary of the findings, recommendations, conclusions, discussions of the limitations and gaps of the study and also suggest prospective areas for future studies.



THE FIGURE 1. 1: BELOW DEPICTS THE CHAPTER OUTLINE AND THE RESEARCH PROCESS OF THIS STUDY



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section of the study provides a comprehensive review of the theoretical and empirical literature on the subject matter. The chapter begins with detailed definition of the concept of sustainability and environmental sustainability and then proceeds to outline the historical overview of local governments in Ghana. The empirical and theoretical literature explains the link between decentralisation and environmental sustainability. The chapter also explains the idea of decentralization and the environment and the District Assemblies and Environmental Management in Ghana. The chapter then outlines some relevant perspectives from Agenda-21, the UN Millennium Development Goal 7. The chapter examines by literature whether decentralisation can save the environment and scrutinizes the underpinning theory and then presents a relevant conceptual framework relevant to decentralization and environmental sustainability in Ghana. The chapter finally gives a summary of the concept of decentralization in line with environmental sustainability.

2.2 The concept of sustainability

There are more than a few definitions of the expression “sustainability”. Whereas some have described sustainability in line with the capability of human beings to conserve the obtainable God-given wealth and not excessively utilize the wealth in a way that it will be lacking in the days and years ahead of mankind (United Nations, 1992); the rest have described it in line with strategy formulation. However, the explanation given by the United Nations Commission on Economic Development (United Nations, 1992) in its 1987 Brundtland account deems to be commonly satisfactory. The report was titled “Our Common Future”, sustainability is described as that which “meets the needs of the present without

compromising the ability of the future generations to meet their own goals” (United Nations, 1987). Even though, some authors have established this definition to be problematical (Taylor, 2002; Jabareen, 2008), nevertheless, the majority consider that it meets nearly all areas of sustainability in its extensive utilizations (Dale, 2001; Adams, 2001).

Taylor (2002), in his censure of the UNO description; postulated that it is habitually complex to verify the potential needs of people in the subsequent creation which might be dissimilar to the needs of inhabitants in the present day. He additionally argues that the manner the industrialized nations examine the idea of wants, is entirely diverse from the ideas of those of the poorer nations. Conversely, even though the United Nations Organization’s description of sustainability may possibly have created a number of public debates, it still consists of the two elementary concerns; the critical dilemma of ecological deprivation that results from financially viable development, and the call for such growth to alleviate deficiency in the social order.

2.3 Definition of environmental sustainability

According to (Sutton, 2004) environmental sustainability is described as the capacity of human beings to preserve the traits that are cherished in the bodily surroundings. An additional description of environmental sustainability has been prearranged as a result of Daly (1973, 1974, 1992, &1999) and Daly & Cobb (1989).

1. Output rule: Waste emissions from a development project or accomplishment being measured should be reserved in the assimilative capability of the neighbouring environment, devoid of undesirable dreadful conditions of its potential waste absorptive capability or extra significant services.

2. Input rule:

Renewable resources: (e.g., forest, fish) yield charge of renewable raw materials must be kept within reproductive capabilities of the accepted classification that produces them.

Non-renewable: exhaustion charge of non-renewable raw inputs should be set underneath the chronological charge at which renewable alternatives were grown by individual innovation in addition to savings in line with the Serafian quasi-sustainability rule. An effortlessly quantifiable segment of the earnings from winding up of non-renewable resources should be billed for the achievement of sustainable alternatives.

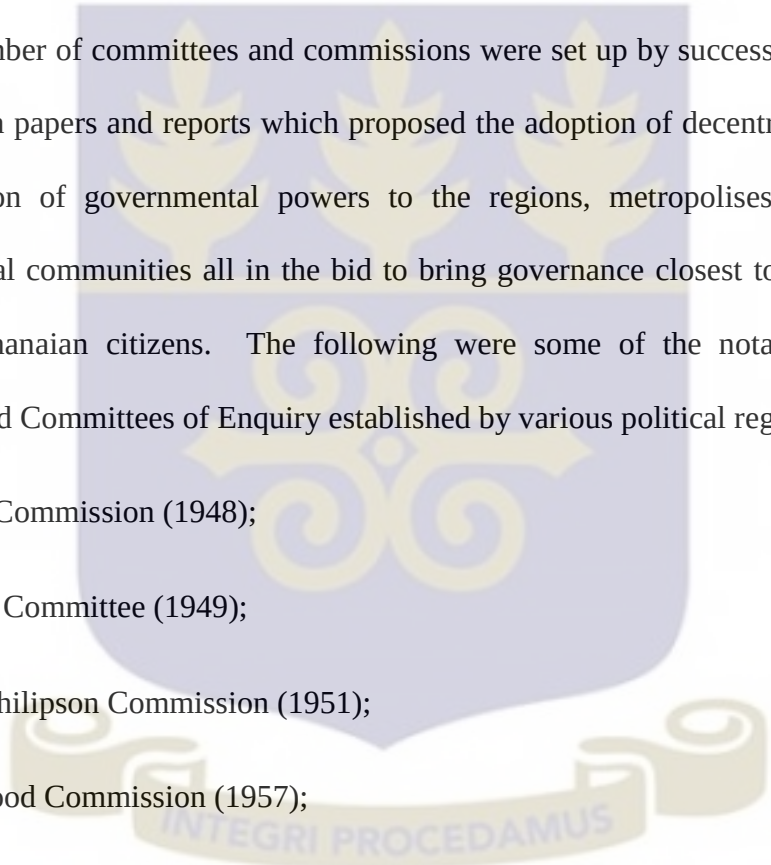
The UN Agenda-21, principle 1, of the 1999 Earth Summit, postulates that “Human beings are at the centre of concerns for sustainable environment. They are entitled to a healthy and productive life in harmony with nature”. Therefore, it is central to make sure that natural world is unrelenting to congregate the requirements of the public. Sustainability is essential to warrant fairness between present generations and potential populations. Sustainability is vital in view of the fact that developmental projects have to be prolonged to create the required positive effects subsequent to their conclusion. Sustainable environment again enhances the welfare of individual recipients by means of the provision of amenities which can be prolonged. This facilitates the elimination of the challenges of reversing to injurious obtainable sources, particularly in the area of providing quality water and an improved sustainable sanitation (UNDP, 2003).

The study by the UNDP contends that sustainable environment can nevertheless not be completely achieved devoid of guaranteeing quality sustainability. The two ideas or concerns move concurrently. In view of the fact that quality environmental sustainability has its central focus on satisfying the desires of the existing populations devoid of the discouragement of the capacity of potential populations to satisfy their personal wishes, there is also the requirement

of ensuring improved quality sustainability of amenities to ensure that they make available their proposed profits to supply modern needs and even be set aside well to provide potential desires in addition.

2.4 Historical overview of local government in Ghana

The idea of delegating governmental apparatus in Ghana to local bodies has at all times been considered a very vital prerequisite. However, efforts to put it into operation have not repeatedly been successful. The political history of Ghana has shown that on several occasions, a number of committees and commissions were set up by successive governments to come out with papers and reports which proposed the adoption of decentralisation leading to the devolution of governmental powers to the regions, metropolises, municipalities, districts and local communities all in the bid to bring governance closest to the doorstep of the ordinary Ghanaian citizens. The following were some of the notable and famous Commissions and Committees of Enquiry established by various political regimes in Ghana:

- 
- (1) The Watson Commission (1948);
 - (2) The Coussey Committee (1949);
 - (3) Sir Sydney Philipson Commission (1951);
 - (4) The Greenwood Commission (1957);
 - (5) The Regional Constitutional Commission (1958);
 - (6) The Siriboe Commission (1967); and
 - (7) The Mills Odoi Commission (1969);

The Watson Commission was a notable Commission which was formed by the British colonial government in Ghana (Gold Coast) through the leadership of the then Secretary of

State for the British West African Colonies during the Governorship of Sir Gerald Creasy in 1948 due to the 1948 disturbances in Ghana (Gold Coast). There were several causes of the 1948 historic political disturbances and notable among the causes were the failure of the British colonial government to fulfill the numerous promises made to the ex-servicemen who fought on behalf of Britain in the Second World War and the incessant revolts against the payment of the poll tax which was first introduced in the Gold Coast in the year 1852 by the British Colonial Government to ensure that the local establishments put in place by the British colonial governments could mobilize some proceeds for the management and running of the Gold Coast Colony (Ayee, 1997).

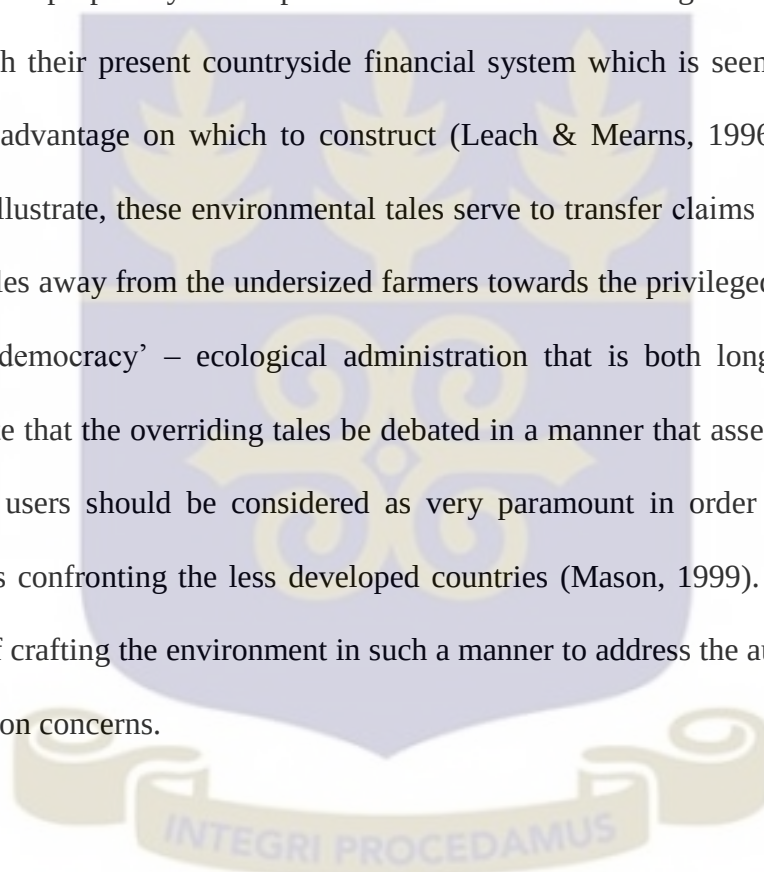
The study by Ayee argues that the Commission after cautiously examining the main reasons behind the disturbances suggested to the colonial government that the Native Authority should be disbanded and possibly be replaced by a democratically elected council. The rationale behind it was that the Native Authorities were deeply crippled monetarily as a result of the aversion of the local people to honour the financial obligations towards the poll tax and that the various native authorities were staffed with ineffectual clerical human resources. Again, in order to ascertain and confirm the suggestions of the Watson Commission, the Coussey Committee which was set up in 1949 by the British colonial government recommended that the geographical size, financial resources as well as the population should make the concept of decentralization in Ghana (Gold Coast) better.

2.5 Decentralisation and the environment

Local governance is a great deal in fashion in growth strategy sectors. There are several benefits the concept of decentralization brings to the local communities and the recognized ones include the reduction in countryside poverty as well as the improvement in the administration of the worldwide environment. The dispute is that if resolution building could

be brought closer to the doorstep of the prime users, then the resources would be much more proficiently, justifiably and sustainably administered, according to their long-standing well-being.

The efficacy of environmental administration in decentralisation will rely on either the environmental plans which are geared towards the promotion of the local levels or are ones which wealth and inputs consumers have the ability to influence. One of the difficulties of this situation is the propensity of the poorer nations to take advantage of the environmental tales to deal with their present countryside financial system which is seen as a crisis to be defeated, as an advantage on which to construct (Leach & Mearns, 1996). As Leach and Mearns (1996) illustrate, these environmental tales serve to transfer claims of 'ownership' of ecological troubles away from the undersized farmers towards the privileged. A shift towards 'environmental democracy' – ecological administration that is both long-lasting and fair would necessitate that the overriding tales be debated in a manner that asserts that the tenure of the resource users should be considered as very paramount in order to deal with the ecological issues confronting the less developed countries (Mason, 1999). This would have the possibility of crafting the environment in such a manner to address the authentic source of revenue generation concerns.



2.6 District assemblies and environmental management in Ghana

The organisation of local government system in Ghana is a three-way dimension with the District Assembly (DA) described as the principal law-making medium, on top of the midway Area Councils (ACs) and the village-level Unit Committees (UCs). The District Assemblies have the decisive task of mounting policies for the environmental sustainability of the local levels. Nonetheless, supplementary institutions have been mandated to possess

overlapping powers. Besides the chiefs, the most vital of these is the Ghana Forest Service (GFS). This is a semi-autonomous countrywide service without constitutional responsibilities towards the community of the districts; like the chiefs, it serves as an autonomous democratic local authority in both law-making and operational aspects. Consequently, the environmental committee cannot wholly mirror the desires, the intended aspirations and troubles of the people on ecological issues.

Experience has shown that the standard citizen has barely inadequate representation in district institutions through their local government members and Unit Committees members. The contest on the surroundings in the local government authorities is deeply lost in thought with narratives of exterior source, which have much more to do with disagreements between the Ghanaian privileged and the poor cultivator inhabitants and with the concern of the former in claiming privileges over resources all the way through processes of cultural modernisation, than with the identification of the well-being of the small-scale principal producers. The local government representatives have a propensity to identify themselves with the notions which restore the enlightening frameworks of farming people with a new-fangled information and practice of dissimilar nations and cultures (Amanor, Brown & Richards 2002). These are more likely to make them more accessible for the promotion of transformational structures emanating from the nation than representing the challenges of their countryside folks.

Such decisions are predominantly applicable to the pencil case of Ghana, where a strategy of the district assembly restructuring has been undertaken right from the year 1987 (Ayee, 1996). The method to decentralisation is still emerging. However, the replica is projected to bestow power over district services to democratically constituted local authorities with some revenue-generating powers. Conversely, a number of agencies and institutions have opposed the local government system (with the exception of the agriculture sector); the central

government has so far been reluctant to enforce the new form in view of the fact that the Local Government Civil Service Bill (LGCSB) is still to be ratified by the country (Ghana).

With financial support from DFID's Natural Resource Systems Programme, joint study between the University of Ghana and the Oversea Development Institute (ODI) has been ongoing since 2001 on the ecological impacts of autonomous local government system on the Brong Ahafo Region of the Republic of Ghana. A number of studies up to date have integrated past and modern reviews and field researches of farming methods at the woods and savanna boundary; research studies of the staffing and operation of chosen Local Assemblies; and an evaluation of the trends and amount of changes in the comparative cover of arable stretched of land and woodland, by means of distant sight methods (Amanor *et al*, 2002; Pabi & Morgan, 2002). The focal points of study are the ecological frictions involving issues such as fire management and the charcoal and firewood making – frictions which should be agreeable to indigenous decisions and consequently, principal areas of local government management.

2.7 Relevant perspectives from agenda-21

The significance of the participation of local government authorities is obvious when one scrutinizes the various core mandates of local government establishments which are environmentally and developmentally linked.

Joined with the authorities and powers of the district assembly to act for the promotion of the welfare of its society, the local government authorities are made to exact some influence on the local people to fully commit them into contributing their quota towards ensuring quality water provision and improved sustainable environment for the local people to augment their health conditions. It is important to note that local government authorities must be able to

provide the required tools for the achievement of the MDG7 and fully recognize the contribution of the local people towards the achievement of the target 10 of the MDG7 which specifies the functions of the local government authorities in providing quality water and enhanced environmental sustainability leading to an improved human health of the local people. This singular explanation re-echoes the need to compel the local government authorities to direct their efforts towards the full involvement of their constituents.

The benefit for the local authorities is from first to last the searching for the accurate equilibrium in the midst of monetary, shared, enlightening and ecological growth. This is most excellently attained via a progression linking community discussion and joint venture of momentous benefit consequential in the espousal of good practice in relation to sustainable growth in the local authority and supporting the nation as a whole to satisfy global environmental commitments and responsibilities. Furthermore, the incorporation of environmental considerations into all strategic areas will yield many more quality environmental sustainability strategies on the long-term basis.

The Chapter 28 of Local Agenda-21 of the UN MDG7 aims to employ local government authorities in the establishment of quality sustainable development models in their areas of operations. It is an attempt by the United Nations to describe an apparent responsibility of local government authorities in what is a multifaceted strategic field. This Chapter emphatically opines that:

“Because so many of the problems and solutions being addressed by Agenda-21 have their roots in local activities, the participation and co-operation of local authorities will be a determining factor in fulfilling its objectives” (Chapter 28.1).

It additionally postulates that: *“Each local authority should enter into dialogue with its citizens, local organizations and private enterprises and adopt ‘a local Agenda-21’. Through*

consultation and consensus building, local authorities would learn from citizens and from local, civic, community, business and industrial organizations and acquire the information needed for formulating the best strategies.”

The Chapter 28 of the UN Local Agenda-21 is believed to be among the shortest chapters in the Agenda-21 paper and is, consequently, reachable. Four (4) principal objectives are established by the document for local government authorities:

The local government authorities in the participating nations should embark on a joint partnership discussion process with their nationals and should aim at achieving a compromise on a local agenda-21 procedure for their areas;

The global society should start a consultative development intended at sustaining intercontinental collaboration among and between local authorities;

Associations of local government authorities should have in place strategies for collaboration and synchronization on the Local Agenda-21.

Moreover:

The local government authorities in every participating country should execute and keep an eye on projects and activities to ensure that women and youth in signatory countries are entirely represented in resolution building and the execution of projects and programmes designed for the achievement of the Local Agenda-21.

A Local Agenda-21 course of action should engage the object community. The Local Agenda-21's focal point should be on the premeditated needs of the community and should look to balance the challenging demands of advancement and environmental fortification whilst resolving the collective and artistic needs of the society. It should endeavour to accomplish a compromise on the planned needs of the public. The method should strive to

achieve a levelheaded equilibrium, as described by the society, in the midst of the economic, social, cultural and environmental proportions of improvement so as to perquisite the public life at present and in the potential.

It has been established that a Local Agenda-21 process is not an environmental proclamation. However, in its environmental facet, it is a process to launch a strategy which integrates ecological considerations into the heart of policy in every aspect of a community's progress. The 1995 guiding principles on LA-21 recommended that Local Agenda-21 should make available a structure for local government authorities to: "Consider the social and environmental impact of their activities as well as the interaction between these activities and the practical objectives of sustainable development."

The Local Agenda-21 thus admonishes the local government authorities to "find ways of conserving resources, minimizing adverse impacts of the activities of the people and industries on the environment and society and obtaining maximum benefits in financial, social and environmental terms from the discharge of their functions."

In order to make this a reality, there is a forceful debate that contests that, for the local authority, the foremost phase in the Local Agenda-21 procedure should be the interior stage of "greening" itself and teaching staff in this view before touching on externalizing the progression into the broader society.

Consequently, "it is important that the principles of sustainability are integrated into all areas of local authority policy and practice if local government is to have credibility and play a key role in Local Agenda-21." Every local authority ought to engage in a course of internal analysis and lead by example, creating a philosophy of sustainability inside its personnel. Considering this situation, it is viewed fitting that Local Agenda-21 be a major module of the

Strategic Management Initiative (SMI) route which is currently to be undertaken as a component of the unending modifications of local government authorities.

2.8 UN millennium development goal 7: environmental sustainability

In September 2000, governments of the United Nations member-states ratified a declaration on eight expansion goals, which they promised to carry out, in order to accomplish a much better planet by the year 2015. The rationale behind these goals is to ease people from severe poverty, food shortage, illiteracy and ailment; attaining sex egalitarianism and the empowerment of women, ecological sustainability and a worldwide partnership for growth (UN, 2000).

The statement by the UN postulates that the Millennium Development Goal 7: Environmental Sustainability, has four foremost targets, which are: to incorporate the ethics of sustainable development into nations' policies and programmes and quash the failure of environmental resources; to lessen biodiversity trouncing by 2010 and attaining a noteworthy cutback in the rate of malfunction; ensuring that by the year 2015, the world would have halve of the proportion of the population with sustainable right to use safe drinking water and basic sanitation ; and to have achieved a significant improvement in the lives of at least 100 million slum inhabitants.

The importance of environmental sustainability as a UN Millennium Development Goal 7 cannot be flashy, as the reduction in deforestation could play a principal function in the reduction in conservatory emissions, considering the enhancement in industrialization and the incessant findings of oil. Deforestation continues at a disquieting speed of about 13 million hectares per year in Africa. This is counterbalanced by wood planting, scenery restoration and the accepted growth of forests, which have appreciably reduced the disposable trouncing of forest area. Deforestation and forest degradation have goaded the world's atmospheric

modification in view of the fact that right to use sanitation is essential for conservatory administration. Trees and plants soak up and stock up carbon, as a result contributing to lesser levels of carbon dioxide in the atmosphere. Conversely, when tree plants are felled or burnt, carbon dioxide is released into the air. The forestry division of the economy accounted for 17.4 percent of overall anthropogenic orangery gas emission in 2004, principally due to towering levels of deforestation and woodland degradation in poorer nations (UNDP, 2009). The precise deforestation target for Ghana, as described under the Millennium Development Goals, is wood cover representing 35% of land area which accounts for at least 7,448,000 hectares of forest coat in the country by the year 2015.

2.9 Can decentralisation save the environment?

A number of studies on decentralized system contested that the configuration of ecological governance talks about the speed at which local governance upsets the local governments' managerial performance in terms of its degree of community involvement (Larson, 2002). The study also highlighted on the descending responsibility (Smoke, 2003), means consumer gratification with aboriginal regimes (Gordillo & Anderson, 2004), and economic proceeds and disbursements in public reserve supremacy (Andersson, Gibson, & Lehoucq, 2004). There is no misgiving that these readings have augmented our information around the circumstances below which local government can show the way to operative indigenous administrations. Up till now, it is silent an uncluttered interrogation whether local managements' executive efficacy unavoidably explains improved reserve administration. Are local governments which are effective in mobilizing financial resources, public participation, and creating mechanisms for descending responsibility also effective in safeguarding the surroundings? Or are there uniformly successful in sustaining actions which are injurious to

the surroundings? These are questions which are impractical to answer without detailing the procedure by which local governance players control the varying circumstances of natural resources.

In analyzing the environmentally-connected decentralization studies, this study identified two studies which examine the environmental impacts made by devolution. One of these studies, by which was conducted by Klepeis (2003), shows the power of governance structures on ecological dilapidation rates in Southern Yucatan in Mexico in two dissimilar governmental regimes: the centralized system under the political leadership of the President Diaz (1876-1910); and the decentralized administrative structure under the regime of President Cardenas (1934-40). The relative analysis finds that overall environmental degradation was extensively advanced in the centralized era of the leadership of the former.

The research conducted by Klepeis finalizes that the decentralized administrative system was much more successful in safeguarding the environment.

In an entirely new study conducted by Curran *et al.*, (2004) employed outpost descriptions to learn about environmental degradation models in a confined region in Indonesia. They established that between the periods 1985 and 2001, the study area in focus suffered 56 percentage loss of its forest swathe due mostly to wood logging and oil-palm plantations. Curran and contemporaries point the speedy deforestation levels to the forestry decentralization reform and explain how the transformation permitted local governments (districts) to give undersized logging packages which caused “uncontrolled harvest of remaining accessible lowlands” (ibid., p. 1,002).

The two studies clearly demonstrate one of the core challenges in employing biophysical determinants to assess decentralization to segregate the consequences of decentralized programmes and activities from other programmes and activities which might have been also

suffered certain deleterious effects, otherwise even besieged the effects of decentralization. For a case in point, Klepeis (2003) identifies that national programmes and activities were unsuccessful to keep the wooded area vegetation. On the other hand, adding up to being deeply nationalized, the Diaz's government piloted agricultural programmes and activities which were extremely unhelpful to the forest conservation and greening the economy. The aforementioned case was considered to be the brain-behind the agricultural programmes and activities which resulted in the vegetation loss rather than the nationalized policy formulation. It is exclusively probable that a decentralized method to execute the same agricultural programmes and activities might have been even more deleterious to the vegetation of the Yucatan.

In the pencil case of Indonesia, Curran *et al.*, (2004) identify that the pragmatic hastening of degradation in West Kalimantan was power-driven by a blend of decentralization and macroeconomic programmes and activities which encourage industries which depended on raw materials from the agricultural sector of the region. Because of the tax breaks and reduced rates of loans initiated by the national government programmes, and the outcomes these had had on indigenous land users, it is promising that local government, in and of itself, had slight result on the experiential degradation patterns. It may be that in the nonexistence of the macroeconomic programmes, indigenous agriculturists would find woodland conversions unsuccessful, and as a result, they would not ask local government institutions to issue the logging permits first and foremost. For this reason, the experiential outcomes are not unavoidably explained by decentralization per se, but much more possible by a blend of factors. Although the two studies predict opposing effects of decentralization reform, both studies are hampered by research designs which do not allow for separating the effect of the decentralization from other potential influences. To tease out the effects of decentralization, research designs would need to somehow filter out the influences of other policies, an activity

that can be tricky to accomplish as these exogenous procedures often function concurrently, and even cooperate with, decentralization reforms. The separation of the special effects of decentralization on any collective good, together with forests and other natural wealth, requires a research design that situates the decentralization policy within a broader public policy framework and that explicitly describes the process by which decentralization affects resource conditions.

2.10 Theory

A number of theories explain service rendering in multi-faceted government. The agency theory has been applied in several fields by pundits such as economists, political scientists and sociologists. The theory proposes two entities specifically, the principal and the agent. The principal presents specific objectives and goals and delegates right and accountability to an agent who is anticipated to carry out the activities to accomplish the objectives and the goals of the principal (Bossert, 1998; Andoh-Adjei, 2011). The principal-agent theory is regarded as a mutual contractual connection between the principal and the agent in which the former offers a responsibility to the latter that could be one or more persons (or institutions) engaged in the execution of some service on their behalf and often accompanied by some delegated right (Leruth & Paul, 2006; Buchanan, 2007). The “Decision-space” theory has a variety of successful choices which are acceptable by the central power (the principal) to be used by the local authorities (the agents). This freedom can be formally and clearly defined by policies, programmes and regulations. This freedom describes the precise “rules of the game” for decentralized agents (Bossert, 1998). This theory is also apposite when dealing with decentralisation and environmental sustainability leading to an improved human health in Ghana. The actual (or “informal”) decision-space might also be explained by the lack of

enforcement of these formal explanations which permit subordinate level executives to “bend the rules”.

Conversely, many more issues crop up from this contractual agreement. Agents hold much more information than the principal and look for avenues to accomplish their individual objectives to the disregard for the objectives of the central authority- the principal (Bossert, 1998; Ekpo, 2007; Langenbrunner, Cashin & O’Dougherty, 2009; Andoh-Adjei, 2011). Consequently, there is information lop-sidedness which the principal finds it thorny to prevail over (Katorobo, 2004; Leruth & Paul, 2006). Accordingly, to realize the objectives of the principal, the principal makes some efforts to outline objectives which work in line with those of the agent or uses “selective monitoring” and “punishments” to prod agents to execute the principal’s defined objectives (Bossert, 1998).

The principal-agent theory is considered to be “applicable to the decentralisation process in environmental sustainability” (Buchanan, 2007). With regards to decentralization system, the theory is functional where the Ministry of Local Government and Rural Development is viewed as the principal and which hopes to accomplish the objectives of equity, efficiency, effectiveness and responsiveness through the local government authorities (the agents) in order to realize these objectives. Hence, in this agreement, the local government authorities are offered prearranged right and funds to perform on behalf of the Ministry of Local Government Rural Development to accomplish these all-important objectives (Bossert, *et al.*, 2000). Nevertheless, the question one would quickly ask is that: how does the principal monitor the agents’ performances and what incentives are provided to give support to the agents in the realization of their embattled objectives?

2.11 Conceptual framework

Based on the literature review and objectives of the research, a conceptual framework of analysis is developed. The framework as illustrated in figure 2.1 includes basic concepts of how decentralisation depends on the solidness of local agenda-21 of local authorities, the structure, information and resources as well as the importance of human attitude for active participation of the community which could lead to environmental sustainability and improved human health.

Decentralisation: Decentralisation is viewed as central for the organization of the environment through the endorsement of nationals' contribution in the progression. It is universally established that decentralized local governance contributes to expansion in terms of promoting participatory growth policies, and the making of policies and crafting programmes which are tailored towards local desires (Sharma, 2000).

Local Agenda-21 of Local Authorities: To practice decentralisation which will guarantee environmental sustainability leading to an improved human health, the local government authorities need to sponsor behavioural change for the promotion of open defecation-free communities and intensification of health promotion, prevention and therapy and to ensure cost improvement and sustainability of water projects (UNICEF, 2010).

Information: One of the prime ingredients of development is information and how that information is disseminated between and among people. A community can be given information for various reasons like information about safe means of relating to the environment.

Resources: The decentralized structures should be equipped with both human and financial resources so that they can function properly. These can contribute in the determination of who is to be involved, how and when. Again, resources can facilitate the capacity building of the community by training, education, learning by doing.

Structures: To practice decentralisation, there is a need for creating structures to lower levels, having structures to the lower levels means becoming closer to the community and governing with them.

Human attitudes: This is also an important issue when discussing participation. Human attitudes are skewed to individuals. Participation may work best when each of the principal participants is pleased with the level of participation at which they are involved. This can lead to participation or not participating in planning, designing, implementation and evaluation of the decentralized programmes.

Participation: This will come about if all the above mentioned aspects will be taken into consideration. The involvement of citizens in environmental planning, designing, and implementation and evaluation enables the formulation of realistic plans which are in line with local circumstances and conditions. These will build a sense of ownership in the participants and ensure the sustainability of the environment.

Environmental sustainability and improved human health: The UNICEF contends that to ensure that decentralisation is able to accomplish environmental sustainability leading to an improved human health, there is the need to sustain the use and strengthening of tools which progress harmonization among health and related sectors at all levels of government and in communities and relevant organizations and develop strategies, including reliable indicators to observe the progress and appraise the success of health programmes.

Structure, information and resources are considered to be the very integral parts of decentralization and environmental sustainability leading to an improved human health and they have strong interdependency among them as indicated by a double arrow. The single arrow indicates the flow of dependence for realization of an active community participation in decentralized system for environmental sustainability

FIGURE 2. 1: SHOWS THE CONCEPTUAL RELATIONSHIP BETWEEN THE TWO.

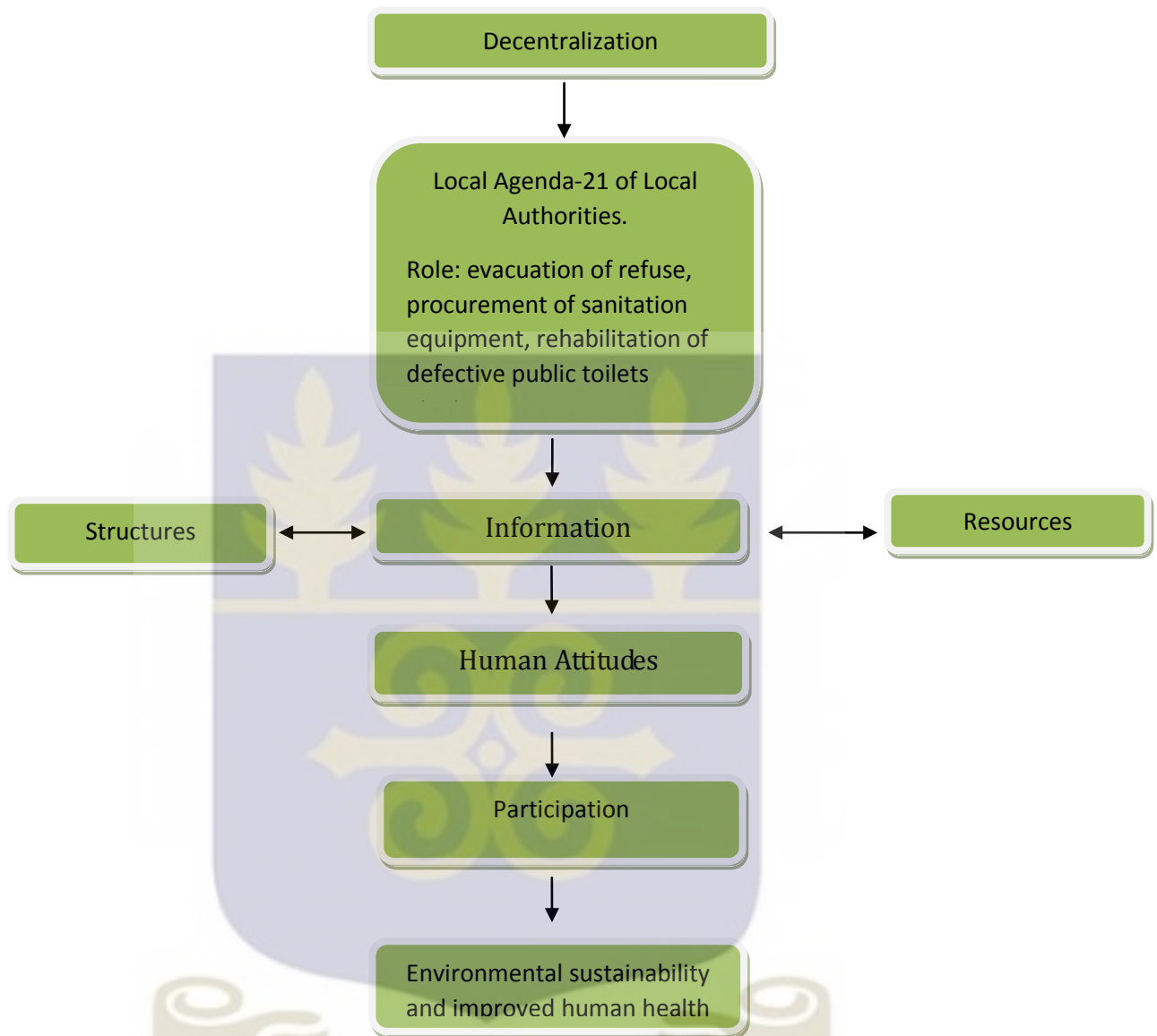


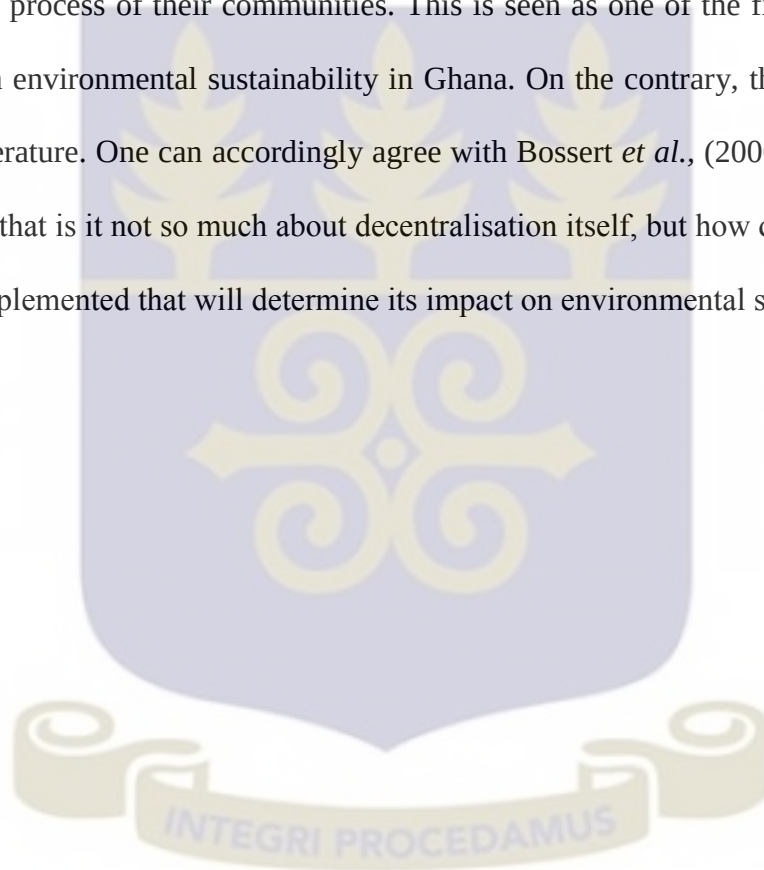
Figure 2.1: Conceptual Framework of Decentralisation and Environmental Sustainability in Ghana.

LEGEND:

- $\longleftrightarrow$ Inter dependence
- $\longrightarrow$ Flow of dependence

2.12 Conclusion

Decentralisation has been seen by many experts as the cure-all to involve all manner of people at the grassroots in the governance process and to assist them participate in the decision making process of their communities. This is seen as one of the finest mechanisms to improve upon environmental sustainability in Ghana. On the contrary, there is a deficient accord in the literature. One can accordingly agree with Bossert *et al.*, (2000) who opine that “evidence show that is it not so much about decentralisation itself, but how decentralisation is designed and implemented that will determine its impact on environmental sustainability”.



CHAPTER THREE

PROFILE OF THE STUDY AREA

3.1 Introduction

This section presents the profile of the study area and it describes the study area, the population, educational facilities, the political sector, the occupation, the health sector, the health facilities, human resources for health and human resources for the assembly, health status and justification of the study area.

3.2 Study area

The Obuasi Municipal Assembly which formed part of the erstwhile Adansi West District Assembly came into being by virtue of the Executive Instrument (E.I.) 15 of 15th December, 2003 and Legislative Instrument (L.I.) 1795 of 17th March, 2004. The Municipality is located between Latitude 5.35°N and 5.65°N and Longitude 6.35°N and 6.90°N. It covers a total land area of 162.4sqkm. There are sixty-three (63) communities in the Municipality, forty-eight of which have populations above 5,000 thus making them urban settlements with 38 electoral areas. The Municipality shares boundaries with Adansi North District to the North, Adansi South to the East and South, Amansie Central to the West (Source: Obuasi Municipal Assembly, 2014). The capital of the Municipality is located at Obuasi, which is well-known for its natural resource (Gold). Some of the important towns in the Municipality include: Dunkwa Junction; Pomposo; Odumasi; Dompooase; Boete; and Nyameso. The Municipality is located in the Southern part of Ashanti Region and has a rather undulating topography. The climate is of the semi-equatorial type with a double rainfall regime. Mean annual rainfall ranges between 125mm and 175mm. Mean average temperature is 25.5°C and relative humidity is 75%-80% in the wet season. The vegetation is predominantly a degraded and semi-deciduous forest. The forest consists of limited species of hard wood which are

harvested as lumber. The Municipality has nice scenery due to the hilly nature of the environment (Source: Obuasi Municipal Assembly, updated 26/08/2014).

Obuasi decided to obtain a sister-city to enable its natives benefit from the advantages of sister-city relationships. In furtherance of this goal, a team led by the then Municipal Chief Executive attended the last conference of Sister-City International in Florida-U.S.A. in 2007. The result of the visit was a move to enter into a sister-city relationship with the city of Riverside in California. The Municipal Assembly has identified education, culture and citrus development as areas of co-operation between the two cities.

In a bid to promote relationship with other African cities, the Obuasi Municipal Assembly endorsed a sister-city relationship with Bulsa city in the Republic of Burkina Faso. This Africa-Africa Sister-City relationship between the Obuasi Municipality and the Bulsa city was to promote cattle trade, agriculture, education and culture

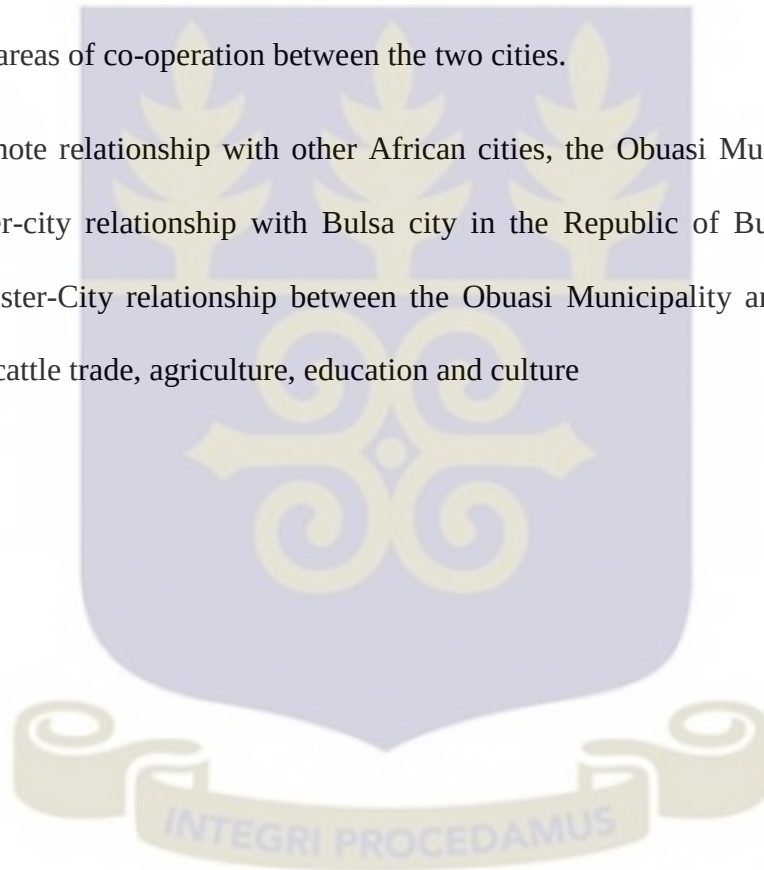
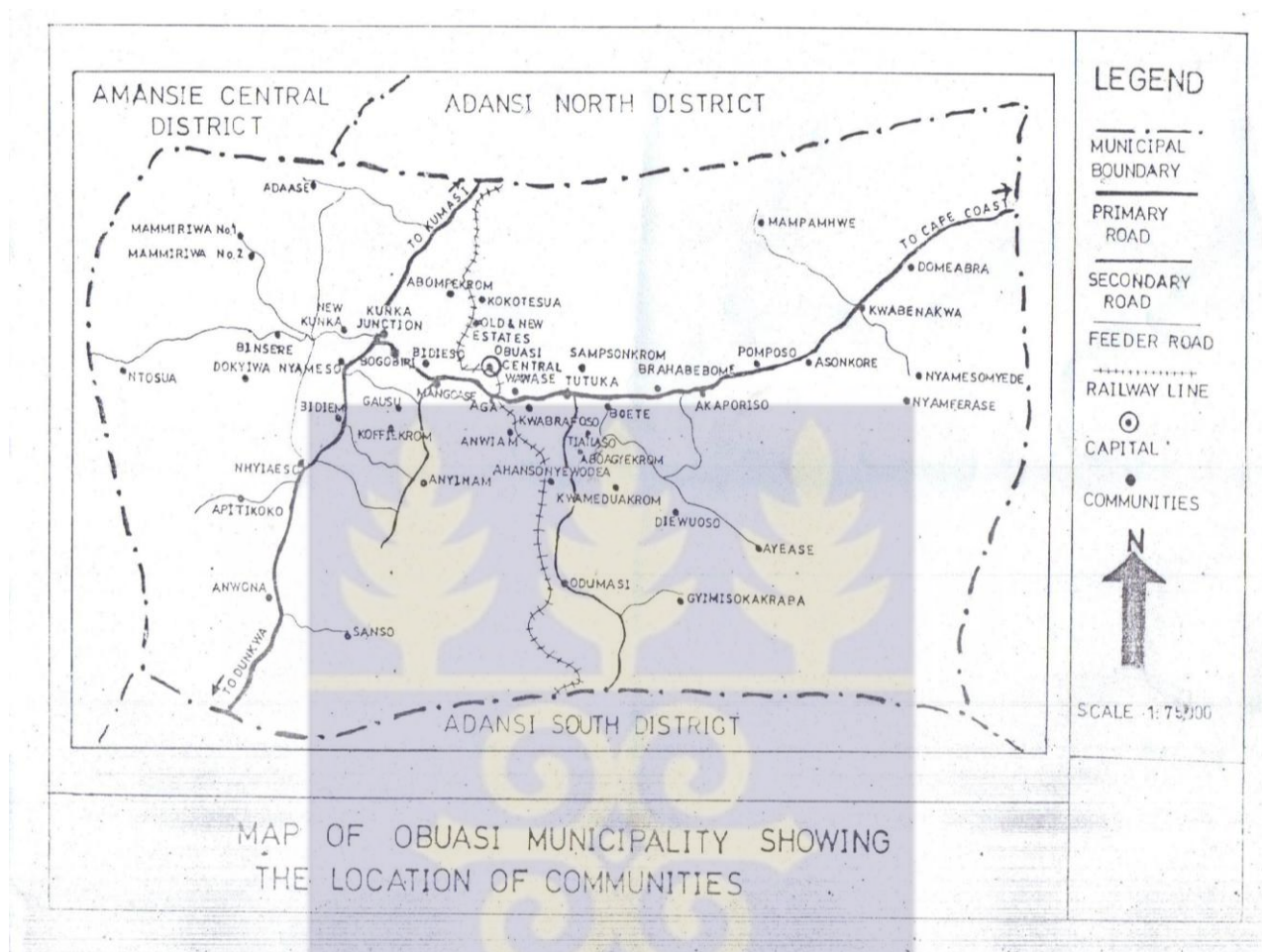


Figure 3.1 shows the political map of the Obuasi Municipality



(Source: Survey Department of the Obuasi Municipal Assembly, 2015).

3.2.1 Population

The population of the Obuasi Municipality has been put at 168,641 by the 2010 Population and Housing Census (PHC) (Source: GSS-2010). The 2010 PHC put the male population at 81,015 and the female population at 87,626. It was projected to be 188,888 in 2013. It has a sex distribution of 52% female and 48% male. The annual growth rate in the Municipality of 4.0% which is relatively high is the result of large influx of migrants and immigrants who have come in search of jobs in the mining and other related industries.

It was anticipated that the above figure might rise due to increase in migration, immigration and attraction by the thriving small-scale mining (especially, ‘galamsey’) and the mining services industry (Source: The Composite Budget of the Obuasi Municipal Assembly for the 2014 Fiscal Year).

According to the 2010 Population and Housing Census, the population distribution of the Obuasi Municipality had 48% of the population in the dependent age groups, that is, between 0-14 years and 60 years and above while the remaining 52% constituted the potential labour force in the Municipality. This gave an average dependency ratio of about 1:1, which implies that every person in the working age group took care of himself/herself and an additional person (Source: Obuasi Municipal Assembly, 2014).

The high working population is a matter of concern as a result of the attendant problems of unemployment and underemployment. The relative large population of the children population of 43% is an indication to service providers such as the Municipal Assembly, NGOs and CBOs to focus their development agenda on provision of basic social infrastructure, especially, those that affect the development of children (Source: Obuasi Municipal Assembly, 2014). Obuasi is the home of one of the richest gold mines in the world. Mining and its related activities employ about 35% of the working population.

3.2.2 Educational facilities and performance

There are one hundred and twenty-one (121) public educational institutions and two hundred and twenty (220) private institutions ranging from KGs to SHS level. There are 32 Kindergartens, 56 Primary Schools, 31 Junior High Schools and 2 Senior High Public Schools. There are also 81 Private Kindergarten, 86 Primary Schools, 48 Junior High Schools, 2 Private Senior High Schools and 3 Technical/Vocational Private Institutions. The school feeding programme has been expanded from 5 schools to 11 schools. 6 kitchens were

constructed for this programme in 2012. The Assembly has devoted all of its 2011 Urban Development Grant (UDG) for laying infrastructure for a university campus in Obuasi in 2014 (Source: Government of Ghana; updated 26/08/2014).

The performance in Basic Education Certificate Examination (B.E.C.E.) results for the past five years have been excellent above 94 percent. There is high performance of both public and private schools in B.E.C.E. in the Municipality. Obuasi has been first in B.E.C.E. results in Ghana since 2007. Last year's B.E.C.E. performance was 96.5% (Source: Obuasi Municipal Assembly, 2014).

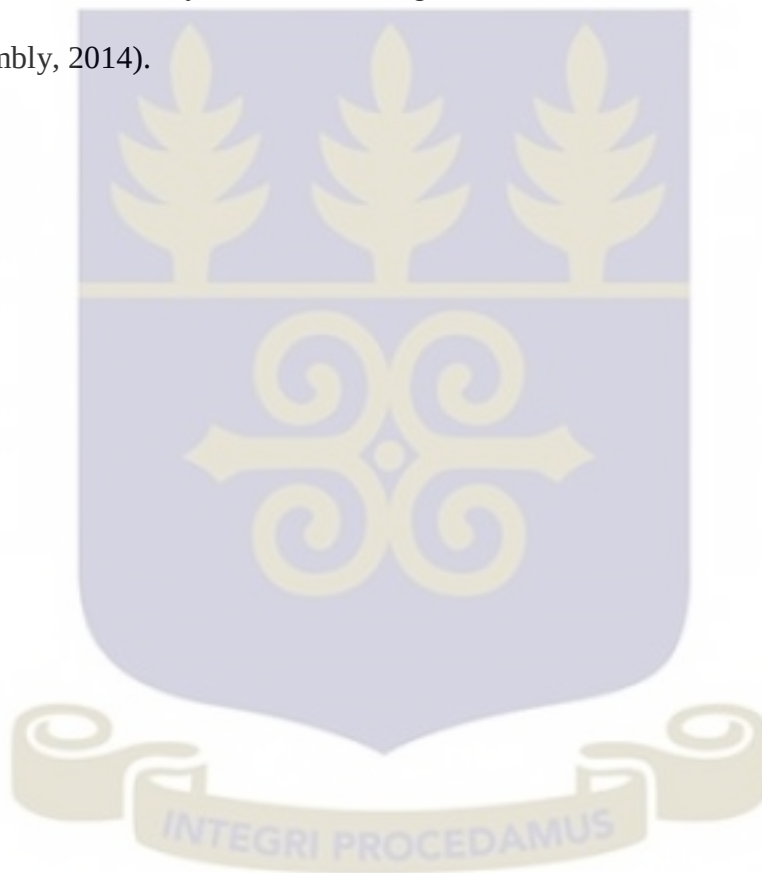


TABLE 3. 1: BELOW SHOWS THE EDUCATIONAL FACILITIES AVAILABLE TO THE OBUASI MUNICIPALITY:

<u>Categories of Schools and Their Forms</u>	<u>Total Number</u>
<u>Public Schools</u>	<u>121</u>
KGs	32
Primary Schools	56
Junior High Schools	31
Senior High Schools	2
<u>Private Schools</u>	<u>220</u>
KGs	81
Primary Schools	86
Junior High Schools	48
Senior High Schools	2
Technical/Vocational Schools	3
Total number of schools in the Obuasi Municipality	<u>341</u>

(Source: Obuasi Municipal Assembly, 2014).

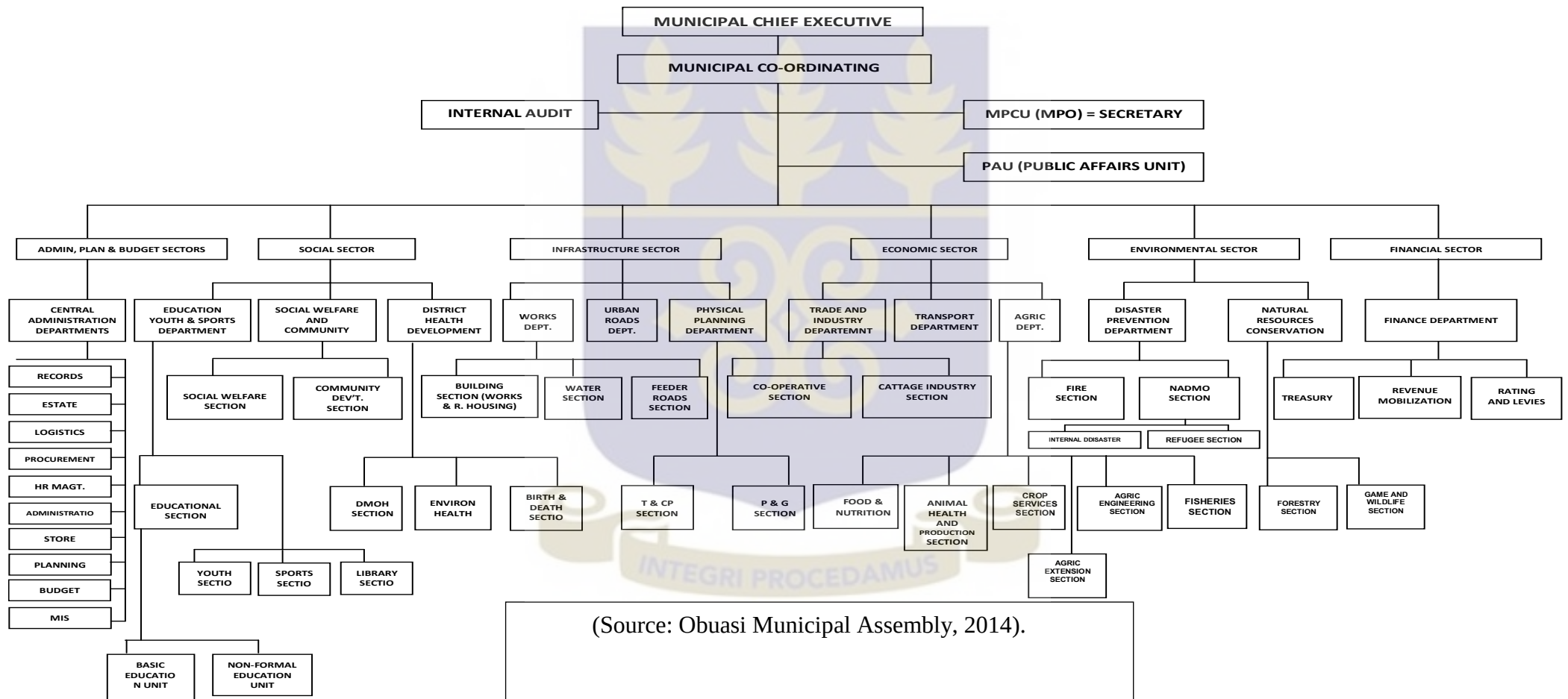
3.2.3 Political sector

The Obuasi Municipal Assembly was established by Legislative Instrument (L.I.) 1795 of 17th March, 2004. In accordance with Section 10 of the Local Government Act, 1993 (Act 462), the Municipal Assembly is the highest administrative and political authority in the Municipality and is vested with legislative and executive powers. The Municipal Assembly is responsible for the overall development through the formulation, preparation, implementation, monitoring of development plans, programmes and projects. It was carved out of the former Adansi West District Assembly. The municipality is divided into five (5) Zonal Councils and further sub-divided into thirty-eight (38) electoral areas. The Assembly has fifty-five (55) members, made up of thirty-eight (38) elected and seventeen appointed members. The Municipal Assembly has two constituencies, namely, Obuasi East and Obuasi West and therefore has two Members of Parliament, who are members of the Assembly without the right to vote. A full house of the Obuasi Municipal Assembly is made up of fifty-five (55) Assembly Members, two members of Parliament and the Municipal Chief Executive, making total membership of the Assembly to fifty-eight (58).

Traditional leaders in the Obuasi Municipality are regarded as the leaders in authority within their areas of jurisdiction. Chiefs in the Obuasi Municipality are the custodians of land and hold in trust for their subjects.

Figure 3.2 below shows the political structure of the Obuasi Municipal Assembly

ORGANOGRAM OF THE OBUASI MUNICIPAL ASSEMBLY



3.2.4 Occupation

The people in the Obuasi Municipality engage in various economic activities, ranging from service and commerce through mining to agriculture. Agriculture and its related activities rank third in the order of economic activities in the municipality employing about 10% of the working population. Agriculture is predominantly on small scale basis in the municipality. About 90% of farm holdings are less than 2 hectares in size, although there are some large farms and plantations. Livestock production, especially pig farming is fast gaining acceptance in the Municipality. There are 50 ponds managed by 35 farmers. The major challenge facing the livestock sector is inadequate veterinary officers in the Municipality. Access to veterinary services is therefore inadequate (Obuasi Municipal Assembly, 2013). Commercially, the Municipality has one major market located in the Obuasi Central and seven (7) satellite markets serving the local people and other districts. These markets are all daily markets. About 55% of the populations engage in commerce or trading activities (Obuasi Municipal Assembly, 2013). The study identifies that the Obuasi Municipal Assembly argues that industry, mining and its related activities which are the mainstay of the economy of the municipality employ 35% of the population. Obuasi is rich in gold and the mining industry is operated by AngloGold Ashanti. This sector used to have workforce of 22,000 in the early 1990s but has now reduced to 4,500 due to restructuring and retrenchment exercises. The Municipality is currently being confronted with influx of small- scale miners and “Galamseyers” with some of them mining into the concessions of AngloGold Ashanti Limited. This has led to land degradation, water pollution and security problems.

Another important component of the economy of the municipality is the service sector. This sector which falls into the informal sector employs about 20% of the working population in the municipality. A number of hotels, restaurants, drinking bars can be found in Obuasi,

offering both foreign and local drinks to tourists and officials who visit the Municipality (Source: Obuasi Municipal Assembly, 2013).

There are about 78 private communication centres and two (2) FM stations, namely, Shaft and Time FM. There are six commercial financial institutions and three rural banking agencies. There are eleven savings and credit institutions and 8 insurance companies operating in the municipality (Source: Obuasi Municipal Assembly, 2013).

3.2.5 Health sector

The Ghana Health Service was established by Act 525, 1996 and it is committed to the provision of all quality health care to all people living in the municipality irrespective of ethnicity, political affiliations, religion and or social standing. It is a human-centred organization that values the contributions of “all” in achieving its mandate.

It is evident that malaria was the most significant public health threat to the Municipality and also threatened the operations of AGA Limited. To deal with this, AngloGold Ashanti and Obuasi Municipal Assembly implemented an Integrated Malaria Control Programme (IMCP), focusing on Indoor Residual Spraying (IRS) in the Obuasi area.

This programme covered the entire Municipality. The total number of dwellings in the intervention area was 35,000. Malaria is the major health concern in the Obuasi Municipality. In 2005, an average of 12,000 cases of malaria was recorded monthly within the Obuasi Municipal area. Forty-eight (48) percent of all Out-Patient Attendants were due to malaria and the disease headed the top ten killers, being responsible for 22% of all deaths (GHS-District Annual Report, 2005 cited by Obuasi Municipal Assembly Composite Budget, 2014) Historically, prior to 2006, the Obuasi Mine Hospital saw an average of 6,800 malaria patients per month of a workforce of 8,000 plus dependents of these 2000 are mine

employees. With an average of three days off per patient, it equates to 7,500 man shifts lost per month.

This coupled with the slow work rate during recuperation, results in a major loss in production. Medication for the treatment was in excess of USD\$55,500.00 per month.

The Indoor Residual Spraying (IRS) component of the Obuasi Integrated Malaria Control Programme (OIMCP) commenced in February, 2006 with 116 men spray men split into 7 groups. The Information, Education and Communication (IEC) programme conducted by the Malaria Control Liaison Section (MCLS) had been active in the community for the previous six (6) months, informing the community of the means of malaria transmission, what they could do to prevent the spread of malaria and to explain and sensitize them on the impending IRS programme (Source: Government of Ghana, 2014).

3.2.6 Health facilities

Health facilities in the Municipality consist of seven (7) hospitals, two (2) health centres, eight (8) clinics, four (4) maternity homes and one (1) CHPS centre. All these are privately owned except one hospital, two health centres and one CHPS Compound. The doctor/population ratio is 1:10,250 as against a standard ratio of 1:20,000. The main challenge confronting the health sector is the lack of residential accommodation for staff. The Assembly expects to complete two (2) additional health facilities in the municipality by 2014.

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TABLE 3. 2: SHOWS THE DISTRIBUTION OF HEALTH FACILITIES IN THE OBUASI MUNICIPALITY:

<u>Health Facilities</u>	<u>Number in the Municipality</u>
Hospitals	7
Health Centres	2
Clinics	8
Maternity Homes	4
CHPS Centre	1
Total number of health facilities in the Obuasi Municipality=	<u>22</u>

(Source: OMA, 2014).

3.2.7 Human resources for health

The Municipal Health Directorate had certified and qualified health professional strength of four hundred and thirty-two (432) personnel making the doctor/population ratio very good for the local people and making the health status of the local people better than some other people in the other municipalities in the Ashanti Region. Considering its doctor/population ratio of 1:10,250 as against the standard ratio of 1:20,000, the human resources for health in the Obuasi Municipality are of very high-quality.

TABLE 3. 3: BELOW DEPICTS THE DISTRIBUTION OF HEALTH PROFESSIONALS IN THE OBUASI MUNICIPALITY.

<u>Categories of Health Professionals</u>	<u>Number of Personnel</u>
1. Doctors	23
2. Nurses	285
3. Health Assistants	28
4. Medical Assistants	19
5. Paramedics	68
6. Health Administrators	5
7. Pharmacists	4
Total number of health professionals in the Municipality	<u>432</u>

(Source: Obuasi Municipal Health Directorate, 2014).

3.2.8 Human resources for the assembly

The Obuasi Municipal Assembly is a public agency mandated to ensure that local governance is brought to the doorstep of the local people in the municipality. The Assembly has nine (9) units and staff strength of two hundred and ninety-five (295) personnel. The following are the units and their corresponding number of personnel: (1) Central Administration (153); (2) Social Welfare and Community Development (21); (3) Urban Roads (6); (4) PWD (1); (5) Physical Planning(7); (6) Cooperatives (2); (7) Ministry of Food and Agriculture(MOFA)(25); (8) National Disaster Management Organisation (NADMO)(22) and (9) IGF (58).

BLE 3. 4: SHOWS THE DISTRIBUTION OF HUMAN RESOURCES FOR THE OBUASI MUNICIPAL ASSEMBLY:

<u>Names of Departments</u>	<u>Number of Personnel</u>
1. Central Administration	153
2. Social Welfare and Community Development	
3. Urban Roads	21
4. PWD	6
5. Physical Planning	1
6. Co-operatives	7
7. MOFA	2
8. NADMO	25
9. IGF	22
	58
Total number of personnel in the Municipal Assembly	<u>295</u>

(Source: Obuasi Municipal Assembly; Human Resource Directorate, 2014).

3.2.9 Health status

The Obuasi Municipality of the end of 2014 had recorded 79 deaths as a result of a number of diseases causing loss of lives with a total of 312,150 OPD attendances. Cardiovascular attacks and malaria led in the Table of the ten-top killer diseases in the Obuasi Municipality with 16 and 12 deaths recorded respectively.

TABLE 3. 5: DEPICTS THE TOP-TEN KILLER DISEASES, NUMBER OF DEATHS AND THEIR PERCENTAGES BY THE OBUASI MUNICIPAL HEALTH DIRECTORATE.

<u>Diseases and Causes of Deaths</u>	<u>Number of Deaths</u>	<u>Percentages (%)</u>
1. Cardiovascular Attacks	16	20.3
2. Malaria	12	15.2
3. Occupational Accidents	9	11.4
4. Maternal Deaths	8	10.1
5. Typhoid	8	10.1
6. Diarrhea	7	8.9
7. Diabetes Mellitus	6	7.6
8. Hypertension	6	7.6
9. Sickle Cell	4	5.0
10. Asthma	3	3.8
Total number of deaths in the Obuasi Municipality	79	100

(Source: Obuasi Municipal Health Directorate, 2014).

3.3 Justification of the study area

The Obuasi Municipality is considered as one of the fastest growing municipalities in the Ashanti Region of Ghana. The enlargement in population as a result of the numerous mining activities has activated settlements along the immediate environs of the Municipal Capital with areas such as Odumasi, Kwabenakwa, Dunkwa and Tutuka, becoming thickly populated (Source: Obuasi Municipal Assembly, 2015). Subsequently, even though the land area of the Municipality is mostly peri-urban with about sixty-three (63) communities, about 24% is also rural and thus presents the people with different opportunities and challenges regarding environmental sustainability under the decentralised system of Ghana. Since different environmental sustainability strategies are used to ensure sustainable environment, to such diverse population, the impact of decentralisation can better be analysed in an environment with different environmental needs. Also, since decentralisation is being analysed with equity, efficiency, effectiveness and responsiveness as the central theme, a cross population that reflects environmental differences across population divide was deemed appropriate for the study. Furthermore, the choice of the Obuasi Municipality has been informed by the many environmental challenges which plagued the municipality under decentralized environmental sustainability practice. The idea is to find out how decentralization of environmental sustainability is helping to alleviate the many environmental concerns of the municipality such as water, sanitation, pollution and forest degradation.

3.4 Summary

The chapter three emphasized on the discussion of the profile of the study area. It started with a description of the study area, the population of the study area, the political sector, health sector, health status and justification of the study area.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter presents the methodology that was employed in achieving the objectives of the study and how those methods were used to collect the data. Again, the relevant protocols and guidelines which were observed throughout the study process (beforehand, throughout, and afterwards) of the field activities have been explained as well as the justification for the adoption of the qualitative approach for the data collection and analysis for the study.

4.2 The research process

The research process presented the systematic process of the research from the start to the end. As indicated in Figure 1.1, the study was organized in six chapters. The first chapter which began the process put in perspective the research problem or situation leading to a proper formation of the objectives of the study. The first chapter then led to the appropriate content of the literature review. The second chapter provided a review of the theories and existing literature about the topic of study. It engaged in the discussion and reviewed of already existing studies and research works which had been undertaken on the research topic and their possible implications on the current research underway.

The third chapter discussed in detailed the profile of the study area of this research study. That is, the general information about the Obuasi Municipal Assembly and the entire Obuasi Municipality. The profile essentially looked at the Obuasi Municipality, its population, the educational facilities, the health status, the political sector, the occupation and justification of the study area.

Guided by the theories in the literature and the research objectives, appropriate research designs were adopted for the chapter four. The designs also helped in the development of the interview tools for the field data collection. The fourth chapter dealt with a comprehensive explanation of the research methodology used to undertake the study. It expounded extensively on the research design, sampling methods, the sources and methods of data collection and the data analysis process.

Based on a decided research design, the fifth chapter provides a detailed analysis, and discussion of the findings of the study. Then the findings in the fifth chapter will be captured in the final chapter six which may lead to policy challenges, development considerations or Theory Building.

4.2.1 Research paradigm

To be able to appropriately analyze the effects that decentralisation had had on environmental sustainability leading to an improved human health, there was the need for an understanding of the experiences and role of important actors in environmental sustainability leading to an improved human health. The qualitative research paradigm was employed in this study owing to its suitability with regard to studying people's experiences, priorities and current understandings about a particular phenomenon. Different stakeholders were involved in environmental sustainability that could promote an improved human health under a decentralized system including policy-makers, decentralized institutions, non-governmental organizations, civil society organizations, and several environmental sustainability outlets, among others. The qualitative model provides a practical stage in such circumstances where descriptions of events, explanations of concepts and interpretations of feelings of players with dissimilar functions in a specific content are required (Patton, 2002). In view of the fact that qualitative methods place importance on descriptions and detailed interpretations, it offered a

chance for people in the midst of multifaceted views on matters of concern in addition to the fact that they helped in conducting comprehensive investigations regarding a phenomenon and observable facts. More to the point, the qualitative approach extensively examined phenomena with regards to precise contexts, and guaranteed a detailed comprehension of essential ideas concerning an exact phenomenon such as decentralisation.

Furthermore, there was a rising predominance of the use of the qualitative techniques in current times in the research area of promoting quality environmental sustainability leading to an improved human health (Scammell, 2010). This is as a result of the plasticity that the qualitative techniques offered to the research investigator. In effect, qualitative techniques of research study afforded researchers the opportunity to much better discover the multi-dimensional and polygonal issues which characterized the provision of quality environmental sustainability aimed at improving the human health. The spirit of decentralisation was to improve environmental sustainability by ensuring that sanitation issues were completely dealt with and access to quality water was made possible through the small-community water projects. The qualitative paradigm was adopted for this study in view of the fact that it is much more apposite to identifying the influential factors which shape environmental sustainability optimistically or pessimistically in addition to making available information that is supportive throughout the enhancement of environmental sustainability (Al- Busaidi, 2008).

4.2.2 Case study design

The study employed the case study design. The rationale behind the case study design is that it endows the researcher with a deep comprehension and thoughtful understanding of the changes occurring in a particular genuine existing situation, (Yin, 1994). Yin explains the case study method the same as ‘an empirical inquiry that investigates a contemporary

phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident'. For this study, the case study was the Obuasi Municipality of the Ashanti Region of Ghana.

The case study design was espoused for this study as the researcher's focus was on decentralisation and environmental sustainability leading to an improved human health in the Obuasi Municipality only.

The case study design was viewed as fitting because the researcher was fascinated by a meticulous setting and how environmental sustainability in the Obuasi Municipality had been influenced by the concept of decentralisation. This afforded the researcher the stage to carry out an exhaustive review and analysis of the issue under investigation with a view to not generalizing the results of the study in view of the fact that the case study design was adopted to study a meticulous situation at the same time as in the case of "decentralisation and environmental sustainability in the Obuasi Municipality".

Once more, the case study design provides a podium to study with reference to multifaceted situations broadly based on a widespread assessment of economic, political and social subjects and matters which are got throughout extensive descriptions of events happening and careful analyses of their effects on the people and the community (Stake, 1995).

In view of the fact that the study concerned with an in-depth analysis of a solution and the situation in which it happened; a case study design worked in progression towards the objectives of the study. According to Imas (2009), a case study design is suitable for the illumination in connecting relations in remedies such as connecting policies execution with the special effects of the policies. Because this study was to evaluate the connection sandwiched between decentralisation and environmental sustainability leading to an

improved human health in the Obuasi Municipality, the case study design was avowed apposite.

4.2.3 Sources of data

Fundamentally, the research made use of both primary and secondary data.

- ***Primary sources of data***

As shown by Johannessen & Tufte (2007) and Saunders, Lewis & Thornhill (2000), in using the qualitative techniques of facts compilation, the largest widespread means of gathering facts is from first to last, the employment of a comprehensive interview guide by means of well-designed open-ended questions which would need subjective responses. This is because they provide much better chance to interviewees to make available skewed information through a logical size of respondents who have knowledge in the study area and represent a fair illustration of the object inhabitants.

In-depth interviews were conducted with key members of the Municipal Assembly, the Zonal Council, the Unit Committee and Community in order to determine how environmental sustainability had been heightened or otherwise under decentralisation. The in-depth interviews facilitated the researcher to use a flexible topic guide with a loose frame of open-ended questions to explore capabilities regarding the environmental sustainability. This tool was used due to the flexibility it offered in data collection since not all questions were framed ahead of time and allowed the majority of questions to be created during the interview process; an occurrence which enabled the researcher to review for more details from interviewees. The in-depth interviews were used since they afforded the researcher the opening to track the views and experiences of key selected members of the Municipal Assembly (MA), Zonal Council (ZC) and selected members of the community who were

knowledgeable in decentralisation and environmental sustainability as well as other important stakeholders in the Obuasi Municipality.

Moreover, since this was a comprehensive investigation, complexity of information was required, hence, in-depth interviews were deemed appropriate. In-depth interviews offered a worthy platform for an in-depth data collection since interview times were longer and extensive probes were involved.

A thorough assessment of decentralisation and environmental sustainability and improved human health could not be done without the inclusion of the views of the various stakeholders on the topic under consideration. Accordingly, data from in-depth interviews were supported with semi-structured interviews of some key stakeholders from across the different sub-municipalities of the Obuasi Municipality. Semi-structured interviews with key stakeholders enabled the researcher to get first-hand information from the interior areas of the Municipality.

The researcher used this method to sample the opinions of stakeholders on the main causes of poor environmental sustainability and improved human health in the Obuasi Municipality, the effects of decentralisation on environmental sustainability and improved human health in the Obuasi Municipality and the strategies put in place by the Obuasi Municipal Assembly in ensuring environmental sustainability leading to an improved human health. This facilitated the researcher to ask both close-ended and open-ended questions as and when applicable.

- ***Secondary sources of data***

Secondary facts comprised of processed data which previously subsist someplace, which had been composed or designed for a further purpose such as complementing the primary sources of data obtained through field study (Kotler and Armstrong, 2006). Secondary sources of data for this study included textbooks, magazines, research reports, journals, annual reports of the Obuasi Municipality on the effects of decentralisation on environmental sustainability leading to an improved human health, annual reports of the Obuasi government hospital, annual reports of the Ministry of Health, documentations of the municipality on decentralisation practices, annual reports of the EPA, annual reports of the UNEP, performance reports of the Ministry of Local Government and Rural Development, composite budgets of the Obuasi Municipal Assembly, the website of the Obuasi Municipal Assembly, the website of the Government of Ghana, photographs, articles, et cetera.

4.2.4 Data collection process

Data collection started as soon as an introductory letter was received from the Department of Public Administration and Health Services Management. This was a very important letter without which the researcher could not make entry into the Obuasi Municipality since protocol demanded that such a letter be received by the Municipal Assembly before any data on decentralisation and environmental sustainability and improved human health in the Municipality could be collected.

Data collection started with in-depth interviews of key members of the Municipal Assembly, Zonal Council, Unit Committee and other key stakeholders in environmental sustainability in the Municipality. In-depth interviews constituted the main data collection tool. In-depth interviews were conducted with key stakeholders at their respective places of work with a few being conducted at the residence of key personalities. These included the Municipal

Chief Executive, the Municipal Co-ordinating Director, the Presiding Member, the Municipal Environmental Officer, the Municipal Head of Water and Sanitation, the Municipal Head of Zoomlion-Ghana, the Municipal Head of Environmental Protection Agency and the categories of people who were interviewed included selected opinion leaders and selected youth activists on sustainable environment leading to an improved human health.

In general, in-depth interviews lasted from forty-five minutes to an hour. Interviews were centred on: causes of environmental problems such as land pollution, air pollution, water pollution, soil erosion and forest degradation; the effects of decentralisation on environmental sustainability leading to an improved human health; and strategies put in place by the Obuasi Municipal Assembly to ensure sustainable environment leading to an improved human health.

After this, data collection was shifted from key informants to members of the Municipal Assembly, members of the community and other stakeholders. Semi-structured interviews were also conducted using open-ended questions to solicit data on issues of land pollution, air pollution, water pollution, soil erosion, forest degradation, effects of decentralisation on environmental sustainability as well as strategies put in place by the Obuasi Municipal Assembly in sustaining the environment for improved health quality to ensure reliability and validity of the responses provided by the respondents. In all, total of (20) respondents participated in the study.

The second phase of data collection started after the analysis had begun since data were needed to fill certain gaps in the study. Subsequently, the researcher went back to some stakeholders who were earlier interviewed and probed further with a different set of questions. This was a bit easier since the researcher had established links with these

respondents and earlier notified those respondents of his preparedness to come for further assistance should it become a requisite.

The researcher called all key respondents to thank them after the interviews and that aided in the second part of the process. The MCE, the MCD, the PM, the MEHO, the MHRD, the MHWS, MHD, MHZG, the HEPA, the members of the MA, the ZC, the UC and other respondents were re-visited.

4.2.5 Instruments of data collection

Data were collected using an interview guide that was designed flexibly to solicit data from respondents. Questions in the guide collected data relating to environmental challenges such as air pollution, poor sanitation, land pollution, water pollution, soil erosion, forest degradation, effects of decentralization on sustaining the environment, as well as strategies put in place by the Municipal Assembly to ensure environmental sustainability. The researcher used a tape recorder to record interviews with respondents and where respondents declined to be recorded, field notes were taken.

4.2.6 Sampling technique and sample

According to Easterby-Smith, Thorpe & Lowe (2002), the sampling methods in the research study seek to create a split of the target audience, which is entirely representative in the core areas of concern. By and large, there are two major types of sampling techniques and they are probability and non-probability.

In sampling for this study, thoughtfulness was given to the principal characteristics of the target population and the prospect of data analyses. The sample selected for this study included individuals from the Obuasi Municipal Assembly, Zonal Councils and Unit

Committees. This form of representation was made possible by probability sampling technique (Stratified Sampling), complemented by purposive sampling.

In stratified sampling, the target population was put into sub-groups known as the strata and respondents by chance selected from each stratum. Stratified sampling was the largest fitting for this study as a result of the projected differences in the thoughts of the (two) target populations.

The stratification method consequently assisted in the reduction in the sample errors and potential prejudices which might have been introduced in the study due to these perceived variations in the target populations and made certain that the sample got was an accurate illustration of the population. This form of depiction of sample units was much more toughened through the probability sampling technique (simple random) implanted in the stratification method (Easterby-Smith, Thorpe & Lowe, 2002). The simple random procedure was made possible by the continuation of a sampling frame which was the list of staff and clients of the Obuasi Municipal Assembly. Even though, complex, difficult and costly, the availability of a dependable sampling frame warranted the use of the simple random sampling together with the stratification.

The technique of purposive sampling closely complemented stratification in determining the size sample from each stratum. Purposive sampling is a type of non-probability sampling that is based on the judgment of the researcher (Easterby-Smith, Thorpe & Lowe, 2002). The strata in consideration were the Obuasi Municipal Assembly, Zonal Councils and Unit Committees. Given a desired random sample size of 20, the target populations; Obuasi Municipal Assembly, Zonal Councils and Unit Committee produced the size quotas of 8, 6 and 6 respectively. The random procedures were then used to pick these samples from each of the strata. Purposive technique was useful since the issue concerned the respondents and

they were knowledgeable in the subject matter. This technique was suitable because of the specialty data which were needed for the study in view of the fact that data on decentralization and environmental sustainability leading to an improved human health could be better provided by key informants in the local government sector in the municipality.

4.2.7 Target population

(Best, 1993) described a target population as a collection of persons that encompass single or additional distinctiveness in general to facilitate the significance to the research investigator. Cardwell (1999) as well showed that the target audience is a cluster of persons who are considered as the spotlight of an exploratory learning and to which the outcome would be relevant. Accurately, it is the population of target or focus, the group to which the researcher would like to make inferences. For this study, the target population consisted of the Obuasi Municipal Assembly, Zonal Councils and Unit Committees and key community members. This was due to the fact that environmental sustainability was an all-inclusive initiative to which all these categories contributed to make complete. Consequently, the target population included staff of the Municipal Assembly, members of the Zonal Council and the Unit Committee members and key community informants.

In all, (20) respondents were interviewed. Respondents included the Municipal Chief Executive, the Municipal Coordinating Director, the Presiding Member, the Municipal Environmental Officer, the Municipal Head of Water and Sanitation and the Municipal Head of Zoomlion Ghana and Head of Environmental Protection Agency. Also, four (4) members were conveniently sampled for the semi-structured interviews. Three (3) respondents each from the Municipal Assembly, the Zonal Council and the Unit Committee were interviewed. Thus, a total of twenty (20) respondents participated in the study. Thus, the population for this study involved all the inhabitants of the Municipality.

4.2.8 Data management and analysis

Data in the form of voice recordings were transcribed. Field notes were all arranged and analysed descriptively. Data were reviewed and categorized based on themes, patterns and relationships that were determined. Data were subsequently organized according to the patterns identified. A final summary of data were analysed and were then provided. Connected precise statements were quoted in the study where necessary.

4.5 Validity and reliability

A good number of exceedingly much-admired research studies succeed on top of towering excellent standards. According to Easterby-Smith, Thorpe & Lowe (2002), validity and reliability are the two main imperative standards in exploratory studies. This study of course seeks to uphold high academic and ethical standards. Validity is much interested in how correctly a variable suits an idea, that is to say, from first to last influencing how correctly the tool selected measures the characteristics proposed to be considered. According to Easterby-Smith, Thorpe & Lowe (2002) there are three fundamental means of estimating validity, explicitly they include:

- Face validity examines either the instrument or its items are possible.
- Convergent validity gives a verification that commences comparing the tool with extra autonomous measurement procedures; and finally
- Validation by identified clusters as recommended compares groups also known to vary on the factor in question.

For this study, the interview questions were carefully constructed based on the objectives used in the research in order to achieve, as certain as possible, the intended results from the questions probed. Reliability is interested in the constancy of the study (Easterby-Smith,

Thorpe & Lowe, 2002). As affirmed in (Christensen, Engdahl N., Graas, & Haglund, 2001) an exploratory study ought to be carried out a second time through new research investigators as well as produce similar outcome on condition that it has a towering reliability.

Easterby-Smith, Thorpe & Lowe (2002) suggest with the intention that tests for validity and reliability ought to be carried out next to the pilot phase of a study or right ahead of the core phase of the facts gathering and compilation. As such a pilot study had been carried out to make sure that the interview questions were built to check, as strongly as promising, what it should check. In sum total, the rationale behind the pretesting was to spot and rectify some of the challenges which were possible to crop up in the core case study. The pre-test study discovered respondents' comprehension and broad reactions to the interview questions. Again, it helped to assess either the technique of data gathering adopted was correct for the study or not. Further, the pilot study also enhanced the examination of the data analysis techniques used in the core research.

Reliability and validity in research are very critical components of all studies in view of the fact that they will highlight the potency in data upon which the ultimate conclusions are drawn. To guarantee the validity and reliability of the findings, data were collected in two time periods after gaps were identified in the initial findings. In the second part of the data collection process, the researcher contacted some of the informants who were interviewed initially and were asked questions which were earlier asked even though some new questions were also added. Even though some respondents demonstrated diffidence as they had already answered such questions, the researcher managed to induce them by saying that he needed to ask again because they formed the basis upon which some few new questions could be probed. This enabled the researcher to crisscross whether there could be some differences in the responses of the same respondents at different time periods. Moreover, data were

collected from a wide variety of stakeholders in the local government mainstream to reflect the varied interests in environmental sustainability in the Municipality.

This ensured that quality data were collected as responses of different stakeholders were compared for similarities and differences where necessary and were factored into the analysis process.

Furthermore, the researcher involved community members from all the sub-districts of the Municipality. For the purpose of this research study, the study area was divided into three including Obuasi central, Tutuka and Kwabenakwa. To increase reliability, the researcher ensured that community members were selected across all the three areas to accurately reflect the totality of environmental sustainability in the full Municipality.

4.6 Ethics

The study was conducted in line with the ethical principles of the University Of Ghana Business School. Study participants were glad to do so since their consent and permission were sought before involving them in the study. An introductory letter which was addressed to the Municipal Chief Executive was presented to the Obuasi Municipal Assembly and was well received by the Municipal Co-ordinating Director who assured me of writing back to me to inform me when I had to start the interview since he was going to write to inform the respondents to prepare towards the interview process. After three weeks, a reply to the introductory letter was received and the Municipal Assembly wrote letters to the key community informants and other respondents to officially explain to them about their meetings with the researcher for the interview to be conducted. The purpose of the study was extensively explained to prospective respondents before responses were recorded and where respondents declined to be recorded, permission was sought before notes were taken. Also, interviews were conducted with confidentiality and privacy at a time which was fixed by

respondents. Participants were also encouraged to spontaneously give data without fear or favour since they were assured of anonymity throughout the research process.

4.7 Limitations of research methods

According to Farris (2009), the qualitative research technique postulates that: research excellence is deeply reliant on the personality skills of the researcher and much more effortlessly influenced by the researcher's personal prejudices and idiosyncrasies; it is occasionally not as well comprehended and established as quantitative research in the methodical area; the magnitude of facts makes study and analysis time unbearable; the researcher's being there all through data gathering, which is repeatedly obligatory in qualitative exploratory study can change the respondents' answers; concerns of secrecy and privacy can create challenges at the time of submitting result; thoroughness is much more complex to uphold, evaluate and make obvious; and result can be much more complicated and time consuming to typify in a diagrammatical means.

The research study involved some financial commitments and travelling risks on the part of the researcher since the researcher had to frequently travel to the study area which was far from Accra where the researcher was pursuing the programme and needed to travel for about several hours to and back from the study area in order to collect data. Again, the bad nature of some parts of the road made the research study very mind-numbing as the researcher was gripped with fear since there were a number of potholes on the road which were seen as a recipe for motor accidents.

One very acknowledged limitation of the research method was the poor flow of information among some personnel of the Municipal Assembly. The high level of information asymmetry among some personnel of the Municipal Assembly to some extent caused an undue delay in the data collection process. There were a number of information distortions and some

personnel were very uncooperative and made the data collection process a much more tedious activity than expected. Again, as a result of poor flow of information among personnel of the Municipal Assembly which emanated from escalating level of disseminating unconfirmed information excessively delayed the data collection process.

Another important limitation documented by the researcher was the level of bureaucracy at the Obuasi Municipal Assembly and this was as a result of the strict adherence to the demands of protocol. The researcher needed to take written letters to a number of places to some key community informants to solicit data from them but that was a very tedious task to perform since it was difficult to meet them as a result of their busy work schedules. To buttress this challenge, since the respondents, especially the key community informants had busy schedules; it was difficult for the researcher to meet them at the various times scheduled. The researcher regrettably acknowledged the situation where key respondents failed to respond to the number of telephone calls the researcher made to reach such respondents even though earlier arrangements had been done for such meetings to commence the interviews.

Also, the study solely engrossed in activities at the Municipal level and did not embrace the views of regional and national bureaucrats whose opinions as strategic policy specialists would have irradiated the findings.

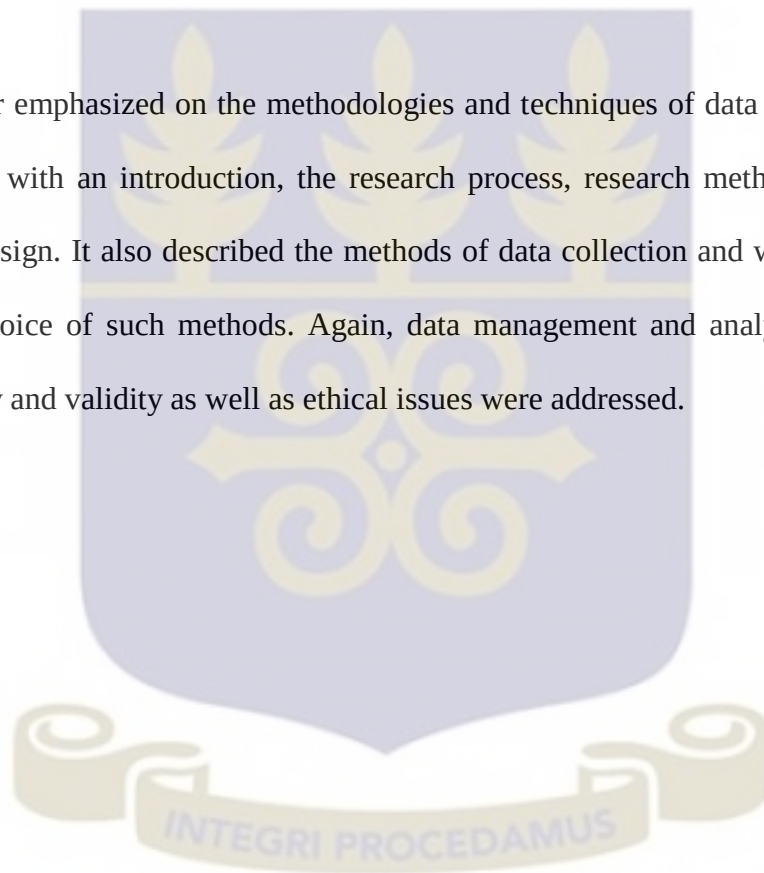
Another limitation which the researcher fittingly admitted was the lack of compromise on the paradigm agreeable for analyzing the results of decentralisation. Selected authors trust that qualitative methods have a strain on studying the outcomes of decentralisation since it is especially challenging to pinpoint independent and dependent variables and to visibly outline the associations between them. It has also been said that it is difficult to quantify magnitudes like responsiveness and equity. Consequently, qualitative methods have become popular in

studying the effects of decentralisation since it is believed that quantitative methods do not suitably address issues regarding implementation (Pope & Mays, 1995; Saltman *et al.*, 2007).

On the other hand, quantitative methods are regarded as providing solid outcomes that go beyond mere opinions or common sense of people (Ratnesar & Mackenzie, 2006). The researcher applicably recognized the limitation in using a particular approach for this study and undoubtedly should have used the mixed approach to guarantee more reliability.

4.8 Summary

The chapter four emphasized on the methodologies and techniques of data collection for the study. It started with an introduction, the research process, research methods, the research approach and design. It also described the methods of data collection and what categorically informed the choice of such methods. Again, data management and analysis, measures to ensure reliability and validity as well as ethical issues were addressed.



CHAPTER FIVE

DATA ANALYSIS AND INTERPRETATIONS

5.1 Introduction

The focus of this chapter is to analyse the data generated from the interviews on decentralisation and environmental sustainability in the Obuasi Municipality, explain the findings along existing literature and theories of other academic works on the link between decentralisation and environmental sustainability and explain the significance of the various variables in the conceptual framework to the research objectives and discuss their relevance to decentralization and environmental sustainability in Ghana, using the Obuasi Municipal Assembly as a case study. The findings of the study have been subjective to the decision-space approach and the agency theory which views decentralized units as agents of the central government in the local area mandated to implement policies of the central government on environmental sustainability in the Obuasi Municipality. The study confirms that for local bodies to implement policies effectively on behalf of the central government, there should be enough information on: how decentralisation can be used for the implementation of policies relating to environmental sustainability aiming at improved human health; availability of resources and their effective use to improve environmental sustainability in the Obuasi Municipality; efficient use of economic resources to ensure quality environmental sustainability and to improve the health needs of the local people; capacity and commitment of local actors to ensure environmental sustainability geared towards an improved human health in the municipality; enough authority; adequate financial resources; among others. In the direct absence of these and other relevant conditions, little could be achieved in the area of quality environmental sustainability and improved human health in the Obuasi Municipality in the Ashanti Region of Ghana.

5.2 Description of findings

To examine the link between decentralisation and environmental sustainability aiming at improved human health in the Obuasi Municipality, stakeholders in the Municipality were asked questions about:

1. Causes of poor environmental sustainability in the Obuasi Municipality;
2. The effects of decentralisation on environmental sustainability leading to an improved human health in the Obuasi Municipality; and
3. Strategies put in place by the Obuasi Municipal Assembly in ensuring quality environmental sustainability in the Municipality.

5.2.1 Causes of poor environmental sustainability in the Obuasi municipality

This sub-chapter looks at the analyses and interpretations relating to the various factors responsible for the causes of the poor environmental sustainability in the Obuasi Municipality in the Ashanti Region of Ghana. The analyses and interpretations will be done in line with the various objectives of the study.

- ***Environmental challenges***

The preliminary study revealed that there were several environmental challenges confronting the Obuasi Municipality which the study found them to be the main causes of poor environmental sustainability and had badly impacted on improved human health of the local people in the Obuasi Municipality and notable among them included: encroachments by private developers; building in waterways; building haphazardly; poor waste disposal methods; poor architectural design; air pollution; land pollution; water pollution; forest degradation; soil erosion; bad farming practices; illegal mining activities; which in the local phraseology are called “galamsey” and other human related activities such as poor refuse

disposal methods. All these environmental issues had impacted negatively on environmental sustainability leading to an improved human health in the Obuasi Municipality.

The preliminary study also discovered that farmlands in the area were being destroyed as a result of the small-scale mining activities in the Obuasi Municipality defeating proper environmental sustainability leading to an improved human health of the people in the municipality. The study revealed that every piece of land that gold was found was being dug to bring out the gold ores making such areas susceptible to erosion especially when pits were left uncovered. The research further identified that chemicals used in the extraction of the minerals also aided in the loss of soil fertility alongside erosion possibly resulting in low yield hence food insecurity and thereby reducing the physical land size of the farm lands for agricultural purposes.

The study additionally exposed the fact that farms had been neglected at the expense of gold extraction in so doing maddening the truncated productivity of food in the municipality which had had untold effects on the health of the local people in particular and the country at large. The study noted with much concern that people and farm animals were not left out of these injurious situations as the uncovered pits which were found almost all over the place functioned as death traps. Very often, a good number of animals got lost through uncovered pits and people fell into these pits and died.

A member of the community in an interview professed that the miseries of the Obuasi Municipality had been the numerous environmental challenges confronting the municipality which had occasioned the poor environmental sustainability and brought some dire consequences on the health of the people in the municipality.

A member of the Municipal Assembly who could not hide his frustration about the spate of damage caused to the environment and human health of the Obuasi Municipality crossly stated that:

“We the people of the Obuasi Municipality have had to endure some solid environmental challenges which have had some untold effects on our health conditions, most especially those that live in the areas where such environmental challenges are rife; in my candid opinion, I believe that they do not promote an improved health of the people in our municipality and very often, subjecting the local people to poor sustainable environment resulting in the poor quality of human health in this municipality; and the earlier we deal with them the better for us as a community; all the stakeholders must come on board to help tackle them before they get out of hands”.

An employee of the District office of Environmental Protection Agency (DEPA) intimated that the usurpation of the powers of the traditional leaders in the name of modern democracy had contributed to these numerous environmental challenges which had led to the poor environmental sustainability and subdued health improvements in the lives of the local people in the Obuasi Municipality. He buttressed his point by saying that the traditional leaders could punish their natives who flouted the environmental bye-laws during the pre-colonial era since they were the repositories of executive, legislative and judicial powers and at the same time were living in the communities and for that matter, were closer to the environmental law-breakers and vigilante groups could easily report those culprits for them to be dealt with but this was not the case in this democratic dispensation. The employee insinuated that:

“Now that the powers of the traditional leaders have been usurped to modern democratic institutions like the executive, legislature and judiciary, which makes the law-breakers further from the repositories of powers, some of the traditional leaders now show apathy in promoting environmental sustainability since they feel that they do not have the power to punish those environmental law-breakers and some of these local people do not even have any veneration for these traditional rulers any stretch”.

Conversely, the employee was quick to mention that even though a lot of the powers of the traditional leaders had been usurped, a greater number of them still ensured that regular communal activities were undertaken to help in the sustenance of the environment thereby promoting quality health improvements in the lives of the local people in the municipality.

In addition, the study revealed that in spite of the numerous environmental challenges bedevilled the municipality, the land surface of the area was very fertile for agricultural activities and the green colour of the vegetation in the municipality provided an ambiance for human settlement.

The literature or narrative on greening the economy elucidates several of the academics significant for sustainable development and an enhanced fitness in the late eighties and early nineties tackled the area under discussion from an economics background (for instance, Dasgupta, 1993; Pearce, 1989) making an effort to cost the environment all the way through a framework of monetary controls and incentives (Dresner, 2002). This narrative debates that the most excellent way of safeguarding the natural environment is to allocate it a monetary value based on consumers' readiness to compensate. This would help in the apportionment of all costs to the economy in the areas of pollution, resource reduction and human health.

There have been several comments against this assertion together with how to value one-off resources, how to guarantee just or equitable allocation, or both, in and connecting nations and how to replicate the resource needs of potential generations within the current market price. Aubrey Meyer further describes the assertion as the “economics of genocide” (quoted in Dresner, 2002).

- ***Causes of air pollution***

The study disclosed that the indiscriminate illegal mining activities by some youth from the Municipality and other migrants from other parts of the country and other immigrants beyond had exposed the environment to air pollution which had been the main cause of air-borne diseases in the municipality making it difficult for the local people to achieve sustainable environment and improved human health. The study disclosed that Carbon Monoxide (CO), Ground-Level Ozone(O³), Lead (Pb), Nitrogen Dioxide(NO²), Particulate Matter(PM) and Sulphur Dioxide (SO²) were the main air pollutants in the Obuasi Municipality subjecting the municipality to poor environmental sustainability which had adversely affected the health status of the local people. The preliminary study further observed that the Carbon Monoxide which was fuel combustion from vehicles and engines reduced the amount of oxygen reaching the body's organs and tissues, often resulting in chest pain and other symptoms. Again, the research identified that Nitrogen Dioxide (NO²), which emanated from fuel combustion especially, from vehicles and wood burning in the municipality through the activities of the heavy-duty vehicles of the mining companies and charcoal producers respectively in the municipality had worsened lung diseases of people leading to respiratory symptoms, increased susceptibility to respiratory infection. The study found out that the 2014 report of the OMHD indicated that 12 people died of malaria, 9 people died out of occupational accidents, 8 people died of typhoid, 7 people died of diarrhoea and 3 people

died of asthma which constituted 15.2%, 11.4%, 10.1%, 8.9% and 3.8% respectively in the Obuasi Municipality. The study recommended that the Government of Ghana should invest in wind energy and solar energy as well as other renewable energy in order to minimise burning of fossil fuels, which could cause heavy air pollution.

An interview with a leading member of the Municipal Assembly revealed that the activities of the legal and illegal miners as well as sand winning and quarrying companies had had some ineffable effects on the health of the people most especially, inhabitants dwelling in areas closer to the mining, sand winning and quarrying sites. This member in his candid opinion recommended that the government without fear or favour should compel companies operating within the Obuasi Municipality to ensure that they were more responsible with their operational activities so that even though they still caused pollution, they were a lot controlled.

The study added that the dynamite and other chemicals used in the extraction of the gold ores were very poisonous and usually released harmful pollutants into the atmosphere which triggered air pollution and also had the tendency to produce some noise which usually contributed to noise pollution and could even create cracks in the walls of the buildings in areas closer to the said sites. The study unequivocally recommended that the Government of Ghana should encourage its citizens and other foreigners living in the country to import through legislation more energy efficient cars which polluted less than before.

An interview with the Environmental Health Officer of the Obuasi Municipal Assembly revealed that the adverse effects of air pollution on environmental sustainability and the health improvements of the local people needed an urgent attention. He explained that chemical reactions involving air pollutants could produce sour compounds which could cause damage to buildings and vegetation. He indicated that sometimes, when an air pollutant, for

instance, sulphuric acid combined with the water droplets which made up clouds, the water droplets became acidic rain. He added that when acidic rain fell over an area, it could kill trees and hurt animals, fish and other wildlife and this had the tendency to cause poor environmental sustainability and thereby affecting the quality of human health of the local people.

A member of the Municipal Assembly who said he was an expert in agriculture lamented on the adverse effect of air pollution on the quality of health of the local people and how it could prevent proper environmental sustainability. He argued that air pollution could cause eutrophication. In his submission, he stated that the rain could transmit and dump the Nitrogen in some pollutants in rivers and soils. This he intimated could badly affect the nutrients in the soil and water bodies and could result in algae intensification in lakes and water bodies as in the case of the water bodies in the Obuasi Municipality and could make conditions for other breathing organisms destructive.

The Head of Environmental Protection Agency in the Obuasi Municipality added that acidic rain had the tendency to destroy plants and leaves. He buttressed his submission by saying that normally, when acid was able to permeate into the soil; it could change the chemistry of the soil making it unhealthy for many living things which relied on that particular soil as a habitat or for nutrition. He noted that acid rain too could change the chemistry of the lakes and streams which the rainwater flowed into harming fish and other aquatic life calling for the urgent need to put certain measures in place to improve environmental sustainability and quality health of all living organisms in the municipality. The Head of Environmental Protection Agency suggested that the people in the municipality should encourage their families to many often use the metro mass buses, train and bicycles when commuting and this

would have the tendency to reduce the number of cars on the roads in the municipality and thereby reduce fumes.

A community member who bemoaned the escalating levels of air pollution intimated that the negative effects of air pollution on environmental sustainability and the quality of health of the people in the Obuasi municipality did not augur well for the local people. He was of the view that ground-level ozone which explained chemical reactions involving air pollutants created poisonous gas ozone (O^3) which could affect the local people's health and could damage vegetation types and some animal lives too.

The study further identified the release of poisonous vapours and harmful substances into the atmosphere in the environment of the municipality through the activities of commercial vehicles, heavy-duty vehicles working for the mining companies and other sand winning and quarrying activities. It further stated that the Carbon Dioxide released into the atmosphere by the activities of humans which should have been used up by trees and other green plants to manufacture their foods through the process of photosynthesis had not been fully used all because of the incessant activities of foresters, miners, farmers, and other adjacent users of the forests for one purpose or the other. These had caused poor sustainable environment and had adversely affected the health of the local people. The study revealed that activities causing air pollution could result in poor environmental sustainability and could unfavourably affect the quality of health of the local people in the Obuasi Municipality. The study observed that all pollutants could be in the form of particulate matter which could be very detrimental to the dear lives of the people in the rich mineral municipality of Obuasi. The research further identified that the level of effect had usually depended on the length of time of exposure, as well as the kind and concentration of chemicals and particles exposed to by the individuals.

The Municipal Environmental Health Officer (MEHO) intimated that the undiscerning felling of trees as a result of human habitation, mining and other human related activities such as farming and deforestation by the illegal lumbers had increasingly worsened the environmental sustainability challenge in the Obuasi Municipality and had negatively affected the health of the local people. The study reported that the Municipal Environmental Health Officer (MEHO) also gave an account that:

“The environmental sustainability difficulties in this municipality are very serious and we will need to espouse some dreadful and radical measures to confront them and further admonished the Obuasi Municipal Assembly to apply the environmental sustainability bye-laws to the latter to ensure quality environment and improved human health”.

The MEHO suggested that the people in the municipality could control the incessant air pollution bedevilled them by always ensuring that their stand and ceiling fans and lights are regularly switched off whenever they were leaving their respective houses for work or any other place. He explained that large amounts of fossil fuels were burnt to turn out electricity and further admonished the local people to save the environment from degradation by reducing the amount of fossil fuels to be burnt. He intimated that this could be one of the numerous ways of conserving energy.

The Director of the Obuasi Municipal Health Directorate mentioned that air pollution could cause irritation to the eyes, nose and throat and was responsible for upper respiratory infections such as bronchitis and pneumonia. He alluded that air pollution could cause headaches, nausea and allergic reactions. He also indicated that short-term air pollution could

magnify the medical conditions of the individuals in the municipality with asthma and emphysema. He indicated that:

“Chronic respiratory disease, lung cancer, heart disease and even damage to the brain, nerves, liver or kidneys were some of the long-term health effects of air pollution on the people of the Obuasi Municipality”. He cautioned that continual exposure to air pollution affected the lungs of growing children and might heighten and cause difficulties in medical conditions in the elderly.

A member of the Municipal Assembly lamented on the poor nature of the roads linking the various towns in the Municipality. He explained that the various roads linking the towns were so deplorable that some had developed potholes and because they were not tarred, vehicles which shuttled from one area to another within the municipality produced much dust and subsequently released significant pollutants into the atmosphere, causing air pollution which had resulted in air-borne diseases defeating the singular objective of improving human health in the municipality.

He further directed that besides the commercial vehicles which produced a large quantity of dust into the atmosphere, the heavy duty vehicles which were used by the mining, sand winning and quarrying companies also produced a lot of dust and released smoky pollutants from their exhaust pipes into the atmosphere in the Municipality. He added that the rate at which these heavy-duty vehicles used the roads in the Municipality had further deteriorated the roads. He however, suggested that the Municipal Assembly should enact bye-laws to compel these mining, sand winning and quarrying companies as part of their corporate social responsibility to maintain the roads in the municipality especially, those heavily used by these companies.

Again, the study revealed that the inability of the government to release funds to the local government authorities had worsened the environmental sustainability and sanitation challenges in the entire country and for this reason, the entire municipality required to get on board to deal drastically with the challenges confronting environmental sustainability and improved human health in the municipality before they developed into “sustainable environmental menace”.

A member of the community and another member of the Municipal Assembly concurred with in their contributions towards sustainable environment made a special reference to Chapter 28.1 of the Millennium Development Goal 7 which talked about the Local Agenda-21 and stated that:

“Because so many of the problems and solutions being addressed by - 21 have their roots in local activities, the participation and co-operation of local authorities will be a determining factor in fulfilling its objectives”.

This they explained by saying that the bad environmental practices which often resulted in poor sustainable environment were the handiwork of the local people, therefore, their complete involvement in finding lasting solutions to such problems they had created was a right decision in the right direction. This assertion by some well-meaning local people in the Obuasi Municipality would strongly require the OMA to ensure that the local people were regularly involved in all areas of decisions booked to sustain their own environments for improved human health. This meant involving all stakeholders such as the mining companies, educational institutions, clubs and associations, health institutions, NGOs, banking and non-banking institutions, CSOs, operating in the municipality as well as donor countries and all International Organizations which had interests in sustaining the environment and fostering

Sister-City relations with other foreign cities in the area of sanitation and environmental sustainability which could result in promoting sustainable improved human health.

The above discussions on the causes of air pollution in the Obuasi Municipality can be backed by the Miasma Theory (Wikipedia). The miasma theory is also called the miasmatic and assumed that morbidities such as cholera, Chlamydia or the Black Death were caused by miasma (early Greek word for “pollution”) a harmful form of “bad air” identified as “night air”. The theory believed that the source of epidemics was as a result of a miasma, produced from rotten untreated substance. The study further identified that miasma was measured to be a venomous mist or ought to be filled by means of particles from decayed substance. The miasmata were identified as harmful substances which caused diseases. The miasmatic point was that diseases were the result of environmental factors such as polluted water, unclean air and reduced hygienic conditions and such infectivity was not passed between individuals but would have an effect on individuals in the locality that gave rise to such fumes. The theory concludes that air pollution is peculiar to its unspeakable odour (John, 2007).

Another essential premise that wires the result on the causes of air pollution in the Obuasi Municipality is the Astronomical Theory (Kawakatsu, 2007) which elucidates the recurrent frost ages of the most recent few million years happens to be related to changes in the engrossed happening astrophysical rays which in twist is harmed by course changes of the Earth, the so-called astronomical theory.

- ***Causes of land pollution/land degradation***

The study revealed that the critical causes of land pollution and land degradation in the Obuasi Municipality were the consistent and dreadful mining activities which surrounded the municipality by both legal and illegal miners which had caused indiscriminate felling of trees to enable especially, proscribed miners to find mineral sites in the rich mineral municipality

of the Ashanti Region. This situation had aided incessant soil erosion in the Obuasi Municipality and inwardly decreased soil fertility which had made the land inappropriate for agronomy leading to poor quality of health in terms of quality of food production.

The preliminary study revealed that the area of the Obuasi Municipality had endured severe land pollution and land degradation due to waste disposal, mining, urbanization, agricultural chemicals, atmospheric deposition and soil erosion. On waste disposal, the study disclosed that due to the growth in the population of Obuasi Municipality as a result of the mining activities, the large population often produced cosmic quantities of waste in the various business centres and offices, in their homes and schools and in such unfortunate places as the hospitals, clinics, maternity homes, health centres and the like. A report from the Government of Ghana in 2014 which had been depicted in Table 3.1 showed that there were three hundred and forty-one (341) schools in the entire Obuasi Municipality and each of these schools could produce huge quantities of waste. On mining, the study revealed that surface mining done in the Obuasi municipality and its environs required the removal of the topsoil which was the rich cover of soil and organic matter that was specifically important for agriculture. On urbanization, the research identified that since the population of the Obuasi Municipality kept on swelling, humans had been making permanent settlements by clearing the green cover of the land to put up buildings and other structures and some for commercial purposes, for instance, putting up structures to operate businesses in the area could produce deleterious effects on quality environmental sustainability and the quality of health of the people in the municipality. The introductory study indicated that since 25% of the active workforce engaged in agriculture in the area on lands that were infertile, the local farmers often applied fertilizers and other chemicals that contained Nitrates and Phosphates which caused destruction to the soil. Again, the pesticides and insecticides used by the local farmers to kill

pests and weeds were seen to be poisonous and could destroy soil nutrients thereby adversely affecting an improved human health.

This was exclusively the case with the few economic trees being removed to make way for the mining activities. Below is a picture showing some of the devastating effects of the mining activities on the land as well as the vegetative cover as exposed by the deracinated vegetation. Observe the uncovered pits and the signs of erosion at the background.



PLATE 1: PORTION OF A FARM LAND BEING DESTROYED BY MINING ACTIVITIES IN THE OBUASI MUNICIPALITY.

(Source: Field Survey for December, 2014).

The Presiding Member (PM) of the Municipal Assembly alleged that the perpetual and escalating land pollution and land degradation in the municipality could partly be attributed to the indiscriminate lumbering and mining activities in the forest areas of the municipality for commercial purposes.

An opinion leader of the community intimated that individuals who flouted the environmental sustainability laws were not severely punished and this unwholesome behaviour had encouraged such unscrupulous citizens to continue to contravene the environmental sustainability bye-laws with impunity. This opinion leader admitted in his submission that:

“Some unscrupulous citizens demolished the trees in our forests with impunity as if there is no future generation for our community”.

Conversely, a member of the Municipal Assembly (MA) who pleaded anonymity insinuated that the only way to deal with this environmental menace was to ensure that the Municipal Assembly embraced a non-partisan approach to fight the environmental menace in the municipality and this he believed would help sustain the environment and improve human health to a point. He added that the introduction of the National Sanitation Day (NSD) by the government would no doubt make some positive strides on environmental sustainability and improved human health in the Obuasi Municipality if given much needed attention by all nationals in the country and the constituents of the Obuasi Municipality.

The Municipal Head of Water and Sanitation on his part had this to say:

“The National Sanitation Day has been introduced by the government at a time when the Obuasi Municipality for that matter, the entire country is being engulfed in filth”.

He therefore encouraged the Obuasi Municipality in particular and the Ghanaian society at large to always be part of this all important national exercise to make it a success. He was however, very quick to propose that:

“In my candid opinion, I wish parliament could make this NSD a law to ensure that nationals and constituents who fail to partake in this all

singular national exercise could be punished by law, through the enactment of “trash laws” setting up of “green courts” in all districts, municipalities and metropolises in the country by the judiciary to help sustain the environment and to bring about improved human health”.

The above findings were backed by an accepted technique which was predominantly unmistakable near the beginning of the Dutch policies for sustainable development called the Environmental Utilisation Space Concept (EUSC) (Siebert, 1982; Opschoor, 1987). This aims to mirror restrictions or thresholds to the quantity of load that the ecological unit can endure devoid of irretrievable injure and to make use of these to decide on the functioning limitations of the environmental space that can be utilised.

The antagonists of the Environmental Space Approach of which Pearce (1989) is one maintain that a drop in resource utilization in the North will not essentially perk up the welfare of the individuals in the South, except this leads to fall in resource prices globally, which would permit poorer nations to utilise much more for the same charge. Conversely, it could evenly make the South most unpleasant on condition that they are the same exporters of these resources and so could decrease their chance of developing.

- ***Causes of water pollution***

The preliminary study revealed that water pollution in the municipality was principally caused by the various mining activities whether they were lawful or unlawful through the use of those poisonous chemicals used in the extraction of the gold ores causing destruction to the sources of potable water of the people in the municipality. This development had inadvertently affected the health status of the people in the municipality since they only had to in most situations draw water from the contaminated sources where the miners washed the dredged minerals and at the same time, animals such as cattle, sheep and goats depended on

as their source of water supply. This situation had economically overburdened the ordinary and average dweller of the municipality and had increased their ill-health risk level of suffering from water-borne diseases most especially, those who depended on the streams where these animals used as their source of water supply.

The preliminary study also identified that Nitrates and Phosphates which were found in fertilizers used by the farmers in the municipality could cause water pollution. The study observed that these chemicals which were found in fertilizers could cause environmental and health problems for the people and animals. It was said that the Nitrates and the Phosphates were often washed from the soils to nearby water bodies and caused eutrophication which was detrimental to marine environments. The study recommended that the people in the Obuasi Municipality should desist from throwing rubbish away anyhow by always looking for the correct waste bin and buy more environmentally safe cleaning liquids for use at home and other public places since they are less dangerous to the environment.

A member of the Water and Sanitation Committee reiterated that the major sources of water for the municipality included rivers, streams, boreholes, hand-dug wells, dams and pipe-borne water but he was sharp to mention that the members of the municipality used these water sources for agricultural, domestic and commercial purposes such as watering their plants, washing of clothes and washing of the gold ore extracted respectively. Wastes left on the ground after the processing of the gold ore were washed into wells, dams and rivers either by rain or wind. This made such sources unsuitable for use alike. Chemicals such as Mercury and Acid discharged on the land went a long way to pollute the water bodies thereby affecting the health of the local people who depended upon these water bodies for domestic purposes such as for drinking. This unhealthy practice affected aquatic species unpleasantly with some even becoming extinct. In his view, since Mercury and Lead were clanging

elements they caused environmental and health problems for humans and animals as a result of their poisonous nature. He indicated that the problem with these metals was that it was very hard to clean them up from them once they got into them because of their non-biodegradable nature. This unhealthy practice affected aquatic species unpleasantly with some even becoming extinct. He also added that a domestic toilet which was connected to septic tank was usually located outside the house and each time poop was flushed down the toilet, it went into this tank, where the solid part was separated from the liquid part. He intimated that biological processes were used to break down the solids and the liquid usually drained out into a land drainage system and eventually could escape into the soil and nearby water bodies in the area.

Another member of the Water and Sanitation Committee disclosed that besides what was called agricultural pollution, mainly caused by agricultural activities as in the case of the Nitrates and the Phosphates, water pollution could also be caused by domestic activities by the local people in the municipality which had untold effects on environmental sustainability and improved health of the local people. He stated that every day, people in the municipality cooked, did laundry, flushed the toilet, washed cars and showered and did many things that used water and these wastes produced by these activities found themselves in water bodies as a way of disposing them off thereby polluting the water bodies. He further indicated that some even had to go and do the washing of their dirty clothes at nearby water bodies due to easier access to water supply and that had often triggered water pollution in the municipality. He recommended that the people in the municipality should not throw chemicals, oils, paints and medicines down the sink drain or the toilet. Again, he recommended that the Obuasi Municipal Assembly should be mandated to have a chemical disposal plan for the local people.

The Municipal Head of Water and Sanitation (MHWS) reaffirmed that the various sources of water supply for drinking and other domestic uses had been destroyed by the activities of the illegal miners (“Galamseyers”) for washing the dredged gold minerals. He further stated that most of these illegal miners dredged the gold minerals in the streams and the lakes which were considered as the major sources of water supply for the people in the municipality.

The Municipal Head of Zoomlion-Ghana (MHZG) intimated that trash which was supposed to be disposed of by his outfit was dumped by some of the indigents on sites closer to sources of drinking water and this unhealthy attitude invariably polluted those sources of water. He revealed that garbage that was supposed to be disposed of by his outfit found its way into the streams and other sources of water supply as a result of poor refuse disposal methods adopted by the indigents in the rich mineral municipality.

He added that as a result of bad environmental practices by some of the inhabitants in the municipality, some of the people habitually gathered refuse in the middle of the road with impunity and others in their attempt to dispose of this junk burnt it in their immediate environment and this further exacerbated the air pollution situation in the municipality which had been discussed under the causes of air pollution in the Obuasi Municipality since the burnt garbage produced smoke and soot affecting the health status of the local people. The MHZG intimated that:

“The smoke inhaled by the people made them vulnerable to air-borne diseases”.

The Municipal Coordinating Director (MCD) explained that in order to ensure efficient, effective, equitable and responsive sustainable environmental and improved human health in the municipality, the Municipal Assembly had been organising a number of sensitisation

programmes to ensure that the environment was devoid of diseases which emanated from poor sustainable environment such as cholera, diarrhoea, dysentery, malaria and a host of them. This had the tendency to promote quality and improve human health of the local people in the Obuasi Municipality. The MCD buttressed his fact by saying that AngloGold Ashanti Limited and the Obuasi Municipal Assembly had introduced Integrated Malaria Control Programme (IMCP) focusing on Indoor Residual Spraying (IRS) in the Obuasi area from February, 2006 to date with 116 spray men, split into 7 groups. He intimated that the programme aimed at reducing malaria morbidity in order to promote quality human health. Also, the Information, Education and Communication (IEC) programme initiated by the Malaria Control Liaison Section (MCLS) of the Obuasi Municipal Assembly was also designed to inform the community of the means of malaria transmission, what could be done to prevent the spread of malaria and to explain and sensitise them on the IRS programme.

An employee of the Water and Sanitation Unit (WSU) of the Municipal Assembly explained that the Unit was financially handicapped and highly under resourced due to the inadequate government subvention to the local government authorities in Ghana and that had somehow enfeebled their lawful functions. This employee intimated that:

“The WSU of the Municipal Assembly has been financially under-resourced for far too long and this has triggered its ineffectiveness and whilst exposing its inefficiency since the intellectual abilities of a number of the employees are being unexploited”.

The literature on “The Common Law Solution to Water Pollution” (CLSWP) of the United States of America (Roger et al; 1992) disagrees with the findings and proposes that before the passage of the Clean Water Act (CWA), the right to pollute water was determined primarily by the state common law rules of nuisance and of water rights. The common law rules were

strict. As Texas court noted “any corruption of water which prevents its use for any of its reasonable purposes is an infringement on rights of riparian owners”.

- ***Causes of forest degradation***

The study let slip that there were a number of factors responsible for the causes of forest degradation in the Obuasi Municipality which had adversely affected environmental sustainability and improved health of the people in the Obuasi Municipality and key among them included: clearing the forests for agricultural purposes; clearing the forests for illegal mining activities; clearing the forests for human settlements; burning the forests in search of game for food and negative activities of some hunters in and outside the municipality; felling trees for lumbering purposes, burning the forests as a result of the careless actions of “wee” smokers who used the forest areas as their haven, poor fire control practices by palm-wine tappers who used fire in their activities in the forests and bad farming practices exhibited by some farmers in the forest areas of the municipality.

An employee of the Municipal Environmental Protection Agency (MEPA) during an interview disclosed that the continual depletion of the forests would possibly cause the ozone layer depletion which was a recipe for “greenhouse effect” or what was popularly called the “global warming” if the municipality in particular and the country as a whole failed to adopt radical and pragmatic forest management policies to save our forest reserves. He indicated that the “greenhouse effect” could produce intense high air temperatures and could contribute directly to deaths from cardiovascular and respiratory disease, most especially, among the aged and malaria in the Obuasi Municipality. The 2014 report of the health status of the Obuasi Municipal Health Directorate in Table 3.5 of the chapter three of this thesis reported that the Obuasi Municipality recorded 16 deaths caused by cardiovascular diseases and 12

deaths caused by malaria representing 20.3% and 15.2% respectively of total deaths reported in the year 2014 by the OMHD. The research reported that the cardiovascular diseases and malaria were principally caused by environmental problems which had killed a total of 28 people in the Obuasi Municipality in the year 2014.

An employee of the Environmental Protection Agency (EPA) postulated that the degradation of the forests of the Obuasi Municipality had impacted negatively on the health of a number of the local people who depended on plants for medicinal purposes. The employee explained that the forests represented a significant habitat for medicinal plants used by the local people to treat ailments such as malaria, jaundice, stomach aches and others but the barks, leaves and roots of these plants were cut for lumbering, firewood and other purposes which had affected the health status of some of the local people who could not afford costs of medical treatments in the government and private hospitals in the municipality. The study identified that all these were largely attributable to the negative activities of the illegal miners in the municipality as well as clearing the land for residential purposes as a result of the overgrowing populations of the municipality due to the influx of migrants and immigrants into the Obuasi due to the mining activities and the contiguity of the municipality to the Ashanti Regional capital-Kumasi. He recommended that the government of Ghana should expand the activities of the GSOP to enable many of the youth in the municipality have access to decent jobs in order to reduce the activities of illegal miners which had caused forest degradation in the Obuasi Municipality. All these had subsequently impacted adversely on the health of the local people in the rich mineral municipality. For example, Table 3.5 depicted that poor environmental sustainability had resulted in morbidities such as malaria, typhoid, diarrhoea, and asthma and these had resulted in 30 mortalities out of the total of 79 recorded in the year 2014.

The research further revealed that sixty-five thousand (65,000) hectares of the Ghanaian forests were degraded annually. An interview with an employee of the Forestry Commission revealed that the activities of the illegal lumbers had deprived the nation millions of cedis since the revenue from the sale of these illegal timber logs found itself in the pockets of private individuals. This employee revealed that the persistent felling of these trees without recourse to the practice of re-afforestation was the main bane of the Forestry Commission. He bemoaned the absence of adequate government subvention to enable the Commission regularly monitor the illegal activities of these lumbers. He also bewailed the government's decision to take the commission out of its subvention list which would have the tendency to magnify the existing forest degradation challenge. However, he was high-pitched to mention that the government should reconsider its decision of taking away the name of the Forestry Commission from its subvention list but should even increase the subvention to help curb this evil.

The Head of Environmental Protection Agency (HEPA) of the Municipal Assembly stated that the activities of the illegal lumbers who had connived with some of these forest guards had further depleted the forests the worse and had even harmfully affected the activities of the Wildlife Commission. He further whispered that:

“The municipality’s forest reserves have greatly been degraded as a result of the negative environmental practices by the folks in the municipality”.

He bemoaned the escalating levels of the forests degradation and feared that if no proper sustainability measures were put in place by the Municipal Assembly to assuage this challenge, the forest reserves of the municipality were likely to degrade into deserts in the few years ahead of us and this would cause deleterious effects on the health of the local people.



PLATE 2: PART OF DEGRADED FOREST DESTROYED THROUGH MINING ACTIVITIES AT THE OBUASI MUNICIPALITY. (SOURCE: FIELD SURVEY; DECEMBER, 2014).

The study discovered that vast swathes of lands had been denuded as a result of small-scale mining activities in the Obuasi Municipality. The study revealed that small-scale miners cleared the vegetation and then dug for mineral bearing ore without commensurate re-afforestation. These activities had disfigured the landscape with extracted depths of despair and ditch which in turned rendered the land unsuitable for any other drive, coupled with poor quality of human health.

A member of the Zonal Council disclosed that residue (waste) was often left on the land which was harmful to micro-organisms in the soil and again dugout depths of despair left uncovered also triggered soil erosion occasioning soil aridity, making the soil very infertile for agricultural purposes, thereby truncating the level of productivity in the agricultural sector in the municipality and its subsequent deleterious effects on human health.

The dugout pits which had been left behind uncovered served as starting points for gully erosion. Runoffs further expanded these dugouts and carried away the top soil which contained plant nutrients would stunt the growth of plants and crops. Trees nearer to the dugouts were pushed down by any little wind that blew. This was because many of the roots which supported the trees to stand were being exposed by the mining activities.

The literature on UNREDD (2005) by Lasco *et al.*, published in (2012) on environmental degradation supports the above findings on forest degradation in the Obuasi Municipality and postulates that this is a mechanism that has been under negotiations by the United Nations Framework Convention on Climate Change (UNFCCC) since 2005 with the objective of mitigating climate change through reducing emissions of greenhouse gas through enhanced forest management in developing countries. During the negotiations for the Kyoto Protocol and then in particular its Clean Development Mechanism (CDM), the inclusion of tropical forest management was debated but eventually dropped due to anticipated difficulties in establishing- in particular- additionality and leakage.

- ***Causes of soil erosion***

The study reported that the main causes of soil erosion in the Obuasi Municipality were not all that poles apart from the main causes of forest degradation since there was that possibility that a degraded forest could lead to soil erosion if pragmatic measures were not taken. The

study additionally specified that as a result of the use of the heavy duty equipment on the land for the extraction of the gold mineral ore, the mining areas had been degraded and such areas were no longer environmentally sustainable since they were not humanly habitable and they were full of manholes and gullies deliberately dug by these illegal and legal miners which had become death traps to the people in the community especially, those that had their farms in such areas. The research identified that these activities had negatively affected the quality of human health in the municipality.

The preliminary study also indicated that the Obuasi Municipality which was farming and mining area had suffered severely from soil erosion due to the various mining activities and the various subsistence farms engaged in by the people in the municipality. The study revealed that soil erosion in the Obuasi Municipality was mainly caused by the removal of vegetation cover due to the mining and agricultural activities in the municipality and had exposed the topsoil to water and wind and these water and wind caused the topsoil to be removed thereby causing soil erosion. It was observed that the unscientific farming methods such as bush burning, shifting cultivation, land rotation, bush fallowing adopted by the local farmers had created barren lands and others with gullies. The study indicated that erosion increased the amount of dust carried by wind which not only acted as an abrasive and air pollutant but also carried about twenty (20) human infectious disease organisms, with anthrax which could bout farm animals such as cattle and tuberculosis which could attack humans.

A member of the community alleged that the rate at which the soil in the mining areas was being eroded, it would take the intervention and a collaborative effort of the central government and the Obuasi Municipal Assembly to deal with this environmental menace. He buttressed his fact by mentioning that soil erosion in the Obuasi Municipality had reduced the

ability of soil to store water and support plant growth, thereby reducing the soil's ability to support biodiversity.

Another member of the community buttressed the above submission by articulating that as a result of the royalties and kickbacks paid by registered mining companies and some illegal miners respectively to some of the “big men” in the Municipality, these miners encroached on some mining concessions they were not supposed to do with impunity. He stated that barely 30% of the arable land of the Obuasi Municipality without substantiating the figure with records had become unproductive due to mining and bad farming practices which had given birth to soil erosion in the municipality. However, he suggested that the simplest and most natural way of preventing erosion is through planting vegetation. He disclosed that plants established root systems, which in turn stabilised the soil thereby preventing soil erosion.

A member of the Municipal Assembly indicated that the inflow of a large number of migrants and immigrants especially, the former, into the rich mineral municipality had been the unbearable economic hardships and enormous social responsibilities which had bedevilled a large number of the youth and the working class without commensurate government social interventions. He lamented on the escalating poverty levels in the municipality in particular and the country at large and admonished the central government to come out with achievable economic measures to alleviate the poverty levels in the country and insulate the entire economy from its current deplorable state. This community member opined that:

“I don’t see why we the natives of the Obuasi and its environs should still be swimming in abject poverty, with all these abundant gold mineral resources, in fact, it is my prayer that one day, I will have the

chance to travel to even South Africa and leave this poverty stricken country of ours”.

The above findings are in contrast with the Optimal Control Theory (OCT) (Applequist, Suirekoglu, Pekny, & Reklaities, 1907). Which occasionally suggests that soil that is deposited in another place through the process of erosion will augment crop production at the place of deposition, hence the trouncing of production in one place may be offset to a greater or lesser extent by an increase in productivity elsewhere (Crosson, 1983).

McConnell (1983) developed a simple model using the O.C.T. in which soil depth and loss were incorporated in a simple production function. In the tradition of natural resource economics, McConnell argues that soil is an asset which must compete with other assets.

- ***Human activities***

The study reported that environmental sustainability in the Obuasi Municipality had been very difficult since bad environmental sustainability practices had gained roots in the rich mineral Municipality affecting the quality of health of the local people in the area. The preliminary study revealed that human actions had unswervingly or in some way put strain on the natural environment hampering environmental sustainability and reducing the quality of health of the people in the Obuasi Municipality. It was revealed that land-cover change, logging, urbanisation, reassigning of land to agriculture use, road construction, human occupation and others had adversely affected environmental sustainability and reduced improved health. The introductory studies acknowledged that land –cover change could cause biodiversity failure and weaken the release of imperative ecosystem services, together with the water-retaining and flood-attenuating ability of soil.

A member of the Zonal Council added that human activities that had caused poor environmental sustainability and had also badly affected improved health of the people in the Obuasi municipality included pollution, climate change, rapid population growth, indiscriminate utilization of natural resources such as gold and timber in the Obuasi Municipality, overused of the inadequate natural resources of the Obuasi Municipality which could trim down the stocks of even renewal resources beneath sustainable levels, rural-urban migration, population growth, shift in households economic status due to the incomes generated from mining activities in the area, increased in economic growth which had brought about increased in consumption and production in the Obuasi Municipality, rising incomes which were associated with investments in environmental improvements and agricultural production systems.

The PM mentioned that the basic environmental challenges confronting the Obuasi Municipality ranged from farming activities, activities of hunters, bad practices of palm-wine tappers, bad farming methods such as the shifting cultivation, bush fallowing and a host of them through acquiring land for residential purposes to illegal mining activities engaged in by both residents of the Municipality and other aliens. He stressed that all these activities had had untold effects on the people's health in one way or the other and had greatly affected environmental sustainability in the rich mineral municipality.

An opinion leader of a town in the municipality revealed that the growing size of the population in the municipality had multiplied excessively and as a result of this the various activities of these people had contributed to poor environmental conditions and these had resulted in poor quality of human health in the municipality.

The study further revealed that since 25% of the population engaged in agriculture, apart from mining, most of the land surface of the area had been earmarked for farming purposes

even though the farming was done on small-scale and these had ultimately depleted the green vegetation making environmental sustainability in the Obuasi Municipality a serious challenge to be confronted by the Environmental Protection Agency and other institutions interested in sustainable environmental and improved human health in the Obuasi Municipality.

On the contrary, a member of the Municipal Assembly signposted that sustaining the environment would require the efforts of all the stakeholders of the environment most especially, the youth in the Municipality who were the worst culprits when it came to the engagement of the illegal mining activities.

A member of the community who felt very worrying about this unhealthy environmental practice, on his part, suggested that the Municipal Assembly and the traditional leaders must vigorously involve the youth in matters relating to environmental sustainability since much worse of the destruction was caused by the youth through unlawful mining activities. He maintained that the youth in the municipality should be given tutorials on the collateral damage that actions had caused the municipality and their health implications to all the people in the municipality in particular, and Ghana at large.

The study revealed that the saying “entirely political affairs is indigenous” is exceedingly true. This stemmed from the fact that solving the problems of access to education, healthcare, water, sanitation, environmental sustainability, livelihoods and social justice could only be worked out at the local level, directly with the people involved. So, as soon as we say “we” and “government” we need to think of native people and their indigenous government, and here and in this context, the researcher referred to the people of the Obuasi Municipality. The Head of Environmental Protection Agency who reinforced the above avowal whispered:

“We may not be able to achieve full environmental sustainability and improved health if decisions relating to our environment do not centre on the youth of our community; we need to let them appreciate their worth in protecting the environment today; let us engage them in meaningful youth programmes to discourage them from these “galamsey” businesses which are making our environment highly unsustainable and causing a number of diseases in the municipality”.

The above findings can be explained by the literature on sustainable development. This literature suggests that as human populations persist to grow, material consumption intensifies and production technology further expands; by consequence the quantity and quality of environmental resources keep steadily diminishing. Following the United Nations Environmental Programme (United Nations Environmental Programme, 2002) and the European Environmental Agency (European Environmental Agency, 2003, 2005) there is progressing distress about nature of fragmentation and loss of biodiversity shortages in freshwater accessibility, over fishing of the seas, global warming, severe weather events, urban air pollution and environmental noise. The recent UNEP (2005) atlas: “One planet, many people” shows vivid pictures of the way in which human settlements and road infrastructure are proliferating in rapidly urbanising areas throughout the world.

- ***Mining activities***

The study reported that mining activities in the rich mineral municipality had largely been responsible for the various causes of poor environmental sustainability and reduction in the quality of health of the people in the Obuasi area, especially, land pollution, air pollution and forest degradation, soil erosion, water pollution and a host of them. The study further revealed that mining activities in the rich mineral municipality had caused over sixty-percent

of the poor environmental sustainability challenges in the municipality in the forms of land pollution and land degradation, air pollution, forest degradation, and water pollution especially, in the areas contiguous to the mining sites. The survey indicated that of all the various activities that had contributed to poor environmental sustainability and reduced quality of health coupled with the reduction in school drop-out in the Obuasi Municipality, mining activities had had greatest untold consequence on the people, their land surface and on their health. The preliminary study identified that there was an increased risk of chemical contamination of underground water in the Obuasi Municipality when minerals in the upturned earth seep into the water table and watersheds were destroyed when disfigured land lost the water it once held.

A member of the Municipal Assembly and an opinion leader in one of the towns in the Obuasi Municipality concurred on the fact that the rate at which the mining activities had destroyed their farmlands without commensurate compensation to the owners of these farmlands was very disquieting. They also explained that most of these illegal miners were unmindful of the devastating effects of the mining activities on the health of the local people. They disclosed that open cast mining had lethal levels of arsenic, fluorine, mercury and selenium were often emitted by coal fires in the municipality entering the air and the food of those local people living nearby. They were however, quick to mention that some of the traditional leaders through the Municipal Assembly had made some remarkable strides to ensure that individuals who had lost their farmlands through mining activities would be appropriately compensated.

The study further reported that the sanctions meted out to illegal or small-scale miners were not severe enough to deter such recalcitrant small-scale miners from engaging in such activities. The study bemoaned the escalating levels of illegal mining in the rich mineral

municipality of Obuasi and identified that the economic and social challenges were strongly responsible for these. The study identified that there were a number of health hazards posed by coal mining in the Obuasi Municipality and its environs. The study documented that cardiopulmonary disease, chronic obstructive pulmonary disease, lung disease and kidney disease had been found in higher than normal rates among residents who lived near coal mines as in the case of those residents in the coal mines of Obuasi Municipality. It added that hypertension was a disease that could be caused by coal mining. For example, the annual report of the OMHD for the year 2014 shown by Table 3.5 on the top-ten causes of deaths in the Obuasi Municipality reported that 6 deaths were recorded as a result of hypertension disease out of the total of 79 deaths in the year under review which constituted 7.6% of the total deaths for the year 2014.

The Head of the MEPA admonished those small-scale miners to be careful about the dire consequences of their undertakings on the health of the local people in particular and the nation at large. He said he had noted that strip mining or open cast or surface mining in the Obuasi Municipality had produced cosmic quantities of dust and noise pollution when the topsoil was disrupted with heavy-duty machinery and coal dust was created in mines in the Obuasi municipality and its environs. He added that most of the illegal miners dug holes in the municipality in search for gold ores with impunity and were highly oblivious of the health threats such actions could result in. He intimated that sometimes, some of the mines collapsed and accidentally some of these miners got trapped or killed. He however, suggested that the idea of licensing these small-scale miners would be a much better decision in order to restrict them to certain concessions to enable the Municipal Assembly monitor their activities and possibly detect deviations and other law-breaking activities of these small-scale miners.

The above findings on the mining activities can be linked to the literature on Environmental Justice (EJ). The literature on Environmental Justice postulates that regardless of the uncompleted controversies about specifically when, how and to whom an environmental discrimination can be said to happen, there is all-purpose consent that Environmental Justice (EJ) is based on the human right to a strong and protected environment, a just allocation to natural resources, the right not to endure excessively from environmental policies, regulations or laws and reasonable access to environmental information combined with involvement in environmental management (Economic and Social Research Council (ESRC), 2001; Agyeman, Bullard, & Evans, 2003; Cudworth, 2003).

The Social Cognitive Theory (SCT) which was propounded in 1941 (Glanz, Rimer, & Lewis, 2002) recommends that there exists a correlation between behaviours and attributes of adjoining users in a social network. The SCT has three factors and they include: homophily; influences; and confounding. The Social Cognitive Theory is in tandem with the findings of the above study in line with mining activities of illegal miners and can be explained by a number of social networks by these illegal miners who have similar characteristics. For explain, the “homophily factor” in this context, explains the tendency of illegal miners to connect to others that share certain similarity with them to engage in these illegal mining activities. The “influence factor” suggests that people tend to follow the behaviours of their friends and adjacent users are likely to exhibit similar behaviours. The “confounding factor” explains the correlation between users that can also be forged due to external influences from environment.

5.2.1.1 Human attitudes

The study revealed that human attitudes played significant role in the causes of poor environmental sustainability in the Obuasi Municipality since most of the factors such as air

pollution, water pollution, land and forest degradation and soil erosion responsible for the poor environmental sustainability in the rich mineral municipality were the handiwork of the most of the people living in the municipality.

The study recognized that factors and chemicals such as carbon monoxide, sulfur monoxide, hazardous air pollutants, greenhouse gases, and particulate matter, vehicle exhaust fumes, dust and dirt that go airborne to everyday labour in agricultural and construction industry, household chemicals used without adequate ventilation and forest fires responsible for the causes of air pollution were largely caused by the activities of human in the Obuasi municipality.

The study further identified that the human attitudes were largely responsible for a number of morbidities which had caused several mortalities in the municipality in the year 2014. It was identified that poor environmental sustainability caused by the negative human attitudes of some of the people in the municipality resulted in morbidities such as malaria, occupational accidents, asthma, diarrhoea and typhoid causing the deaths of 39 people in the municipality in the year 2014.

5.2.1.2 Participation

The study revealed that participation as one of the variables of the conceptual framework was relevant and significant to causes of poor environmental sustainability as it called for the involvement of all the stakeholders of decentralization and environmental sustainability to bring their expertise on board to deal with the menace of poor environmental sustainability on improved human health in the Obuasi Municipality.

The study disclosed that environmental issues were best handled with the participation of all citizens and stakeholders including international actors since their adverse effects on human health could cause the municipality in particular and the nation at large huge sums of money

and other economic resources to deal holistically with it. Participation was noted as a significant variable to decentralization and environmental sustainability since it had the tendency to make possible and encourage public consciousness and involvement by making environmental information generally obtainable to the local people in the municipality.

The study acknowledged that participation of the local people in the design of programmes and policies for curbing environmental sustainability challenges was very crucial since their complete participation would be seen as a morale booster for the complete implementation of such programmes and policies.

5.2.1.3 Local agenda-21 of local authorities

The study revealed that the Local Agenda-21 of local authorities as one of the variables of the conceptual framework was very significant to this study as the local community as in the case of this context, the Obuasi Municipality had a role to play by ensuring that it had put in place environmental sustainability policies and programmes to make its environment devoid of sustainable challenges and was not harmful for human habitation.

The Local Agenda-21 of local authorities impacted positively on decentralization and environmental sustainability in the Obuasi Municipality in the sense that the Obuasi Municipal Assembly in its quest to promote quality and sustainable environment that could improve on human health of the people in the municipality had outlined a number of strategies, policies and programmes to achieve this.

The study disclosed that the Obuasi Municipal Assembly through its DACF and the IGF had supported a number of environmental education programmes and policies to help deal with the environmental menace in the municipality in the bid to improve on the quality of human health among the people in the municipality. The OMA had organized series of such programmes in schools and colleges within the municipality and supported groups with

materials and financial assistance to inform the local people about the unpleasant effects of poor environmental sustainability on their health.

The research acknowledged that Local Agenda-21 of local authorities was very vital in decentralization and environmental sustainability since the concept had helped the OMA to liaise with the local schools and colleges in finding solutions to the environmental problems through talks and visits to some of these institutions in the municipality. It was noted that the Local Agenda-21 of local authorities had invariably affected decentralization and environmental sustainability positively since the local authority had assisted the initiatives of local voluntary groups compiling and publishing local environmental information and setting up focus groups as well as holding open days to educate the local people on the need to promote sustainable environment.

5.2.1.4 Information

The study revealed that information on the policies, strategies and programmes needed to promote sustainable environment would go a long way to ensure quality environmental sustainability and improved human health in the Obuasi Municipality.

The study insinuated that a relevant decentralized programme aimed at achieving quality environmental sustainability which could result in quality improved human health in the Obuasi municipality would flourish very well when information pertaining to decentralization and environmental sustainability had been communicated well to the local people. This made information an all-important variable in the conceptual framework. The conceptual framework showed that resources, information and structures were interdependent but decentralization, local agenda-21 of local authorities, information, human attitudes, participation and environmental sustainability and improved human health were dependent.

The study revealed that information played a significant role in ensuring environmental sustainability and improved human health in the Obuasi Municipality. It was revealed that information was needed to check the improvement towards the drinking water and sanitation target all the way through modernized and developed estimates in partnership with UNICEF in the Joint Monitoring Programme for Water Supply and Sanitation.

The study further disclosed that information as an important variable to decentralization and environmental sustainability would assist to report on changes in the guiding principle, institutional and finances issues linked to sanitation and drinking-water of the people in the Obuasi Municipality through the United Nations Water Global Annual Assessment of Sanitation and Drinking-Water and advance strategies on excellence of drinking-water , innocuous practice of excess water in agronomy to certify that in the quest of the Municipal Assembly to deal with poor environmental sustainability, the challenge did not resurface in another form.

The study disclosed that significantly, information was needed to assist in the management of particular issues such as small-community water supply vital for the promotion and dissemination of information on household water treatment and safe storage of water and for drinking water regulators in the rich mineral municipality of Obuasi.

5.2.2 Effects of decentralisation on environmental sustainability in the Obuasi municipality:

- ***Using Decentralisation to Sustain the Environment***

The study reported that the focus of decentralisation on environmental sustainability was principally on strategies for promoting consistency in the implementation of national environmental laws to ensure that quality human health was achieved. The study identified that three programme elements of environmental enforcement were vital to guaranteeing its

regularity in the Obuasi Municipality: the identification of conformity monitoring instruments to promote improved human health; the choosing of an execution tool and the achievability of time guaranteed for non-compliance reaction; and the size of financial penalties for non-compliance by the local people and companies' whose operations were impacting negative on environmental sustainability and the human health of the local people.

The preliminary study revealed that precise and absolute information on the performance of the Obuasi municipal assembly on environmental sustainability and improved human health was an important prerequisite for the evaluation of municipal-wide consistency of enforcement of environmental sustainability laws which could result in quality and improved human health.

The study further identified that accountability by the Obuasi Municipal Assembly was a necessary mechanism for information and monitoring and it was considered as a prerequisite for improved local government performance and that information was regarded as the vital element of accountability and without which accountability to the local people in the Obuasi municipality would be considered as a mere wishful thinking. The logical collection, analysis and reporting of information on quality environmental sustainability leading to an improved human health were critical elements of decentralised programmes because that information could be used to verify compliance by the local people and companies operating within the Obuasi Municipality which had in one way or the other contributed to the poor environmental sustainability and low improved human health with policy goals of the Obuasi Municipality being; to analyse alternative outcomes to the Assembly to guide its future decisions relating to policies to sustain the environment and to ensure an improved human health; to access information on financial flows of the Obuasi Municipal Assembly, that is, budgeting and expenditure reporting as well as on other inputs needed to promote environmental

sustainability and to ensure that quality improved human health could be achieved for the local people and possibly, outcomes were very much needed to determine the policy direction of the Obuasi Municipal Assembly. Such dynamic administrative information was equally essential both at the municipal-level and at the constituency level to inform local constituents about the efforts of the Municipal Assembly to ensure quality environmental sustainability and improved human health. The study identified that this could bring about perceived transparency in the administration of the Obuasi Municipal Assembly thereby encouraging public participation in all the programmes of the Obuasi Municipal Assembly which would be geared towards environmental sustainability and the quality of improved human health. In addition, the study revealed that the local people needed information to enable them monitor and supervise the projects funded by District Assembly Common Fund and central government sources of the Obuasi Municipal Assembly at the local levels in order to repose their trust in the leadership of the OMA.

The democratic local governance initiatives currently under way in Ghana held much promise for developing effective systems of public accountability which would ensure that government servants were responsible to the public that elected them in the first place. In the process, these systems of accountability had increased the pressure for more transparent local governance in which corruption would be easier to bring to light and thus to curtail.

The above findings keep in touch with those of Couttolenc (2012) who asserts that even though Ghana is in transition to bursting decentralization, such imprecise reporting lines (such as MA, LGS and MLGRD,) is a blueprint for uncertainty in the meantime, in case of ambiguous measures or programmes, a precise establishment should take responsibility and that should be comprehensible to all. In addition, the research depicts that decentralized units obtain modest or no response from superior bodies following reporting to them and in

circumstances where response was acknowledged, there were significant delays in them. The reporting system thrust Municipal Assemblies to put forward such information to the region and the Ministry of Local Government and Rural Development but does not put pressure on response to the decentralised units. In his study on the communication complexities in executing health sector devolution at the constituency level in Ghana, Sakyi (2010) asserts that information course was “one way” with constituency bodies reporting to the national height with no response from the national height. This does not foretell well for responsibility intention and contravenes the elucidation of responsibility specified by Mulgan (2000) that responsibility entails societal interface and swap.

The study also discovered responsibility tools or mechanisms in the preparation of budgets by Municipal Assemblies and through approval and scrutiny of budgets by the Ministry of Local Government and Rural Development to ensure that environmental sustainability problems were not unduly delayed especially, those that required urgent attention of the OMA that were likely to worsen the health plight of the local people, more especially those that related to water and sanitation in the municipality. This process was however, bent with excessive delays and reductions in proposed estimates at the regional level. Sakyi (2008) found that even though financial control has been contracted to the districts with the institution of semi-autonomous budget management centres (BMCs), budgets prepared by the Municipal assembly still required to be accepted at the regional level or by the Ministry of Local Government and Rural Development before their implementation. This is however, seen as an accountability mechanism where financial issues and decisions are monitored and checked by central bodies and has been hardened by Bossert *et al.*, (2000) and Couttolenc (2012). As a device to guarantee answerability in the consumption of resources, the research discovered the continuation of financial monitoring systems at the municipal height and from national height. The research further discovered that present were inside auditors and outside auditors

who continuously controlled the actions of the local bodies at the municipal height and that any office that was found to have altered documents leading the misappropriation of economic resources was punished or made to react to justify its actions at the right authority. This works in consistency with the ideas of Schedler, Diamond & Plattner (1999) and Behn (2001) who avow that ban or penalty as well as responsibility are imperative condiments of a clarification of answerability.

Enhancement in procurement following decentralisation since an accountability mechanism had been hardened by Bossert *et al.*, (2004) whilst they assessed seventeen logistics purposes in Ghana following decentralisation. The research conversely, discovered that not all the guiding principles in the Procurement Act (PA) were observed in view of the fact that municipal assemblies' personnel received donations from prospective suppliers however, alleged that these had no effect on the reward of contracts. Verification of such practices, behaviours and their influence on the reward of contracts had been recognized by Vian (2005) and Apoya (2009) who established that procurement actions in health facilities in Ghana were fraught with bribe and conspiracy in the midst of other malpractices which were not all that dissimilar to what had been experiencing at the local government levels.

- ***Availability of Resources and their Effectiveness for the promotion of environmental sustainability in the Obuasi Municipality***

The study revealed that pressure on resources increased when people lacked alternatives and that development policies must widen people's options for grossing a sustainable source of revenue, particularly for resource deprived families and in areas under ecological trauma. In a mountainous area, for instance, economic self-interest and ecology could be combined by helping farmers swing from grain to tree crops by providing them with intelligence, equipment and marketing support. Programmes to protect the incomes of farmers, fishermen

and foresters against short-term price debilities might decrease their need to overexploit resources. The study vehemently proposed that the promotion of environmental sustainability and improved health through the prevention and reduction in air and water pollution in the Obuasi municipality would remain a critical task of resource conservation. Air and water quality came under pressure from such activities as fertilizer and pesticide use, urban sewage, fossil fuel burning, the use of certain chemicals and various other industrial activities as a result of the activities of farmers, illegal miners, foresters, sand winning companies and large-scale companies using toxic chemicals in their productive activities. Each of these was expected to increase the pollution load on the biosphere substantially, particularly in developing countries such as Ghana. Clean up after these events to disinfect such places were an expensive solution. The study identified that the Obuasi Municipal Assembly needed to anticipate and prevent these pollution problems, by, for instance, enforcing emission standards in the entire municipality, most especially in those that reflected likely long-term effects, promoting low-waste technologies and anticipating the impact of new products, technologies and wastes.

The study identified the idea of emerging environmental sustainability and improved human health and economics in decision-making process in the political administration of the Obuasi Municipal Assembly. The common theme throughout this strategy for sustainable environment, development and improved human health was the need to integrate economic and ecological considerations in decision-making. The study noted that this strategy would require a change in attitudes and objectives and in institutional arrangements at every level of the Obuasi municipality. The study further revealed that economic and ecological concerns were not essentially in opposition. For example, policies that conserved the quality of agricultural land and protected forests and improved the long-term prospects for agricultural development could be integrated in the mission and vision statements of the Obuasi

Municipality as the broad goals of the rich mineral municipality of the Ashanti Region. The study revealed that an increased in the efficiency of energy and material use in the Obuasi Municipality through prudent decentralisation programmes was geared towards serving ecological purposes but could also reduce costs. However, the compatibility of environmental and economic objectives was often lost in the pursuit of individual or group gains, with little regard for the impacts on environmental sustainability and improved human health in the municipality with a visionless conviction in knowledge's ability to find solutions and being oblivious of the distant consequences of today's decisions relating to sustainable environment and improved human health.

The study again revealed that institutional rigidities in the Obuasi Municipality were additionally responsible for this poor environmental sustainability and improved human health myopia. To further ascertain the mechanisms for ensuring accountability in the environmental sustainability and improved human health services in the Municipality, the researcher asked questions on the extent of community involvement in planning, budgeting and control in environmental sustainability and improved human health services. The study revealed in this regard that MA planning and budgeting should start from the community level through activities of assemblymen and women and the Unit Committee members who met community members to deliberate on community concerns including environmental sustainability and improved human health needs. Community respondents however, felt that this was rarely done and that their involvement and participation was consistently low. The study revealed that there were no formal mechanisms by the MA to interact with community members in order to detect community needs and to inculcate in them environmental sustainability planning and the need for quality human health in the Obuasi Municipality. Environmental sustainability experts indicated that community participation in environmental sustainability leading to an improved human health decision-making was low. The low

participation in environmental sustainability decision-making corresponds with Bossert *et al.*, (2000); Couttolenc (2012); and (Partners for Health Reform plus, 2002) who used the decision-space model to substantiate their claim that community involvement was stumpy following the application of the concept of decentralisation. The study discovered that group answerability philosophies such as participatory policy formulation, budget formulation, expenditure tracking and public assessment and monitoring were insufficient in the Obuasi Municipality. This was due to the fact that the role of civil society organizations and community members in exacting answerability was constrained. This is in line with the following texts all driving home the point that where the members of public are not vigorously involved in such actions, answerability is stumpy (World Bank, 2004; Malena et al., 2004; Edwards 2005; Wampler, 2007; Rocha & Sharma, 2008; (Ringold, Holla, Koziol, & Srinivasan, 2012).

The study further recognised that sustainability of the environment and improved human health required the enforcement of wider responsibilities for the impacts of decisions. This required changes in the legal and institutional frameworks of the Obuasi Municipal Assembly which would enforce the common interests of the local people. Some necessary changes in the legal framework started from the proposition that a sustainable environment adequate for improved human health and well-being was essential for all human beings including future generations. Such a view placed the right to use public and private resources in its proper social specific measures.

The findings again disclosed that the law alone could not enforce the common interest. It principally needed community knowledge and support of the Obuasi Municipality, which entailed greater public participation in the decisions that affected the environment. This was best secured by decentralising the management of resources upon which local communities in

the entire municipality depended and giving these communities an effective say over the use of these resources. This would also require promoting citizens' initiatives, empowering people's organisations and strengthening local democracy.

The study further exposed that some large-scale projects in the Obuasi Municipality, however, required participation on a different basis. Public inquiries and hearings on the development and environmental impacts could help greatly in drawing attention to different points of view. Free access to relevant information and the availability of alternative sources of technical expertise could provide an informed basis for public discussion. When the environmental impact of a proposed project was particularly high, public scrutiny of the case should be mandatory and wherever feasible, the decision should be subject to prior public approval, through environmental impact assessment notification statement publication in the newspaper or perhaps by the referendum by the people in the municipality.

The findings of the research showed that changes were also required in the attitudes and procedures of both public and private sector enterprises in the Obuasi Municipality. Moreover, environmental regulations promulgated to deal with sustainability and improved human health, especially in the area of sanitation and water for the local people must move beyond the usual menu of safety regulations, zoning laws and pollution control enactments; environmental objectives must be built into taxation, prior approval procedures for investment and technology change, foreign trade incentives, sister-city relationships and all components of development policy of the Municipal Assembly.

- ***Promoting efficiency to ensure environmental sustainability in the Obuasi Municipality;***

The findings revealed that putting people first involved the most fundamental set of changes in local governments. These changes were an integral part of the Assembly's comprehensive

programme to improve the way political system serves the local people. The reforms should include: making the political funding system in the Obuasi Municipality more transparent; increasing the participation of women in water and sanitation issues of the municipality; establishing the constitutional principle in the award of contracts in the municipality to ensure efficient utilisation of the DACF; and introducing legislation to strictly address environmental sustainability and improved human health needs, especially, water and sanitation challenges as part of programmes to achieve the MDG7, targets 10 and using the non-partisan approach to address matters relating to conflicts of interests, lobbying procedures; and to strengthen the planning system of the Obuasi Municipal Assembly to ensure proper sanitation which could result in quality improved human health.

Another important revelation of this study in promoting efficiency at the Obuasi Municipal Assembly was to institute reforms which would put a strong emphasis on accountability as the bedrock of a properly functioning system of local democracy providing for better engagement with citizens. In the light of this, the study indicated that renewing those structures and introducing more effective democratic arrangements in the municipal assembly which would increase efficiency and provide better value for money for the people it served. This would involve radical measures such as a substantial reduction in the number of assembly members and the number of employees working at the Obuasi Municipal Assembly.

The study disclosed that local governments must operate to the very high standards. Putting people first should introduce new degrees of accountability, transparency and external scrutiny as essential pillars of local democracy. The study proposed that key performance indicators of the Obuasi Municipal Assembly should in as much as possible include: providing quality local government services to its constituents and comparative performance

of the OMA with others in Ghana; strengthening the Procurement Act to compel the spending officials of the Assembly to adhere to procurement compliance; and giving the Public Accounts Committee of Parliament much more power to prosecute members and officials of the Obuasi Municipal Assembly who engaged in misappropriation of public funds and other economic resources belonging to the Assembly.

The research disclosed that harnessing the commitment of elected members of the assembly and public officials was a way forward to ensure local government efficiency. The study commended a stronger, more cohesive local government, giving it a greater capacity not only to address the challenges of environmental sustainability and improved human health, especially, water and sanitation but also, to promote the OMA's, socio-economic development, and collectively to maximise the strengths of the municipality as a place in which to live, to invest and to work.

The study identified that the institution of an Action Programme which would authorize the Obuasi Municipal Assembly in an exclusively new way, principally in relation to economic development and most importantly, sustaining and creating decent jobs that would have the authority to sustain the environment and improve human health for the people as against the illegal mining which had deteriorated the environment and affected quality human health in the municipality. This programme would affirm the need for the system to wrap up transformation, contribute to the load, modify, get used to fresh fiscal conditions and deliver smooth enhanced services with insufficient resources.

The above findings correspond with Tiebout Mechanism (1956) and "Public Interests Theories of Regulation" (Joskow & Noll, 1981; Baldwin and Cave, 1999; Morgan & Yeung, 2007; Ogus, 2004), the above theory wires the result of the study in endorsing competence by local government authorities which offer unrestricted services to the local people at rational

costs all the way through minimising charge of service provision whereas sustaining excellence which is the trademark of publicly financed agencies and institutions. The supposition explains rivalry amongst public providers of local public goods and private suppliers of the same goods. The narrative asserts the significance of providing good motivating packages to manufacturers of local public goods. The supposition of the consumer proposes a method that allows choice over public goods to mimic choice over private goods. The findings of the study in promoting efficiency at the local government level coincides with the “Theory of the Local Public Goods Producer as the cost-minimising entrepreneur” who steps in to offer a new jurisdiction of a marginally lower price to any group of consumers whose current jurisdiction is earning rent. The theory of the Local Public Goods Producer was derived from the “theory of incentives for regulation of quality” especially Laffont & Tirole (1993). The “Public Interests Theories of Regulation” further elaborates that regulators do not have sufficient information with respect to cost, demand, quality and other dimensions of firms’ behaviour. To link this with the study, the study proposed that by promoting efficiency at the Obuasi Municipal, there was the need to renew structures and introduce more effective democratic arrangements which would increase efficiency and provide much better value for money for the people it served and this study postulated that renewing those structures and introducing more effective democratic arrangements would increase efficiency and provide better value for money for the people it served. This would involve radical measures such as a substantial reduction in the number of assembly members and the number of employees working for the Assembly. The “Public Interests Theories of Regulations” are described as rationalising existing regulations as one of the methods of achieving efficiency in the allocation of resources after a market failure is identified in government regulation (Arrow, 1970, 1985; Shubik, 1970). This rationalisation would help to reduce waste and increase efficiency.

- ***Enhancing commitment of the Obuasi Municipal Assembly to ensure environmental sustainability***

The study revealed that the enhancement of the budget and planning process should involve grassroots organisations and Local Government Units (LGUs) in the identification of priority poverty reduction projects which would be funded by national government agencies. Participants of the study identified Open Government Partnership (OGP) which would provide a platform for domestic reformers to be too committed to making their governments more open, accountable and responsive to citizens. The research disclosed that OGP of the Obuasi Municipal Assembly would go a long way to ensure that all stakeholders would get on board to deal with environmental sustainability and improved human health challenges confronting the Obuasi Municipality and thereby reducing the rate at which the local people often sat aloof when it came to dealing with environmental sustainability and improved human health issues.

The research further proposed conferment of a Seal to LGUs that would hold on to performance criteria on any of the following areas: water and sanitation issues; high-quality financial house keeping; disaster preparedness; social protection for the basic sector; business responsiveness and competitive environmental compliance; law and order; and public safety.

The study proposed an engagement of civil society in public audit. The participants in the research unequivocally mentioned that there should be the conduct of joint audits by COA and CSOs to select infrastructure projects including the setting up of systems, tools and processes to institutionalise participatory audits and this they alleged would create the room for commitment in ensuring sustainable environment and improved human health by all in the Obuasi Municipality.

The research proposed that there should be a support for the passage of legislations on access to information and protection of whistle blowers. These legislations would include Freedom of Information Act (FIA), and the Whistle-blowers' Protection Act (WPA). The proposed Freedom of Information Bill (FIB) would mandate the disclosure of public documents whilst the proposed Whistle-blowers' Protection Bill would seek to aid in the prosecution of corrupt and erring public officials and employees through the provision and reward for whistle blowers. The study identified that the Whistle-blowers Protection Bill would help to protect whistle-blowers in the municipality who would report individuals whose actions and inactions might cause poor environmental sustainability and subsequently affect the quality of human health in the Obuasi municipality for prosecution.

The participants in this study established that enhancing commitment at the Obuasi Municipal Assembly would involve an eccentric height of sustaining precision in the plans and budgets of the Assembly. There should be a compulsory exposé of key budgets and major plans of the various committees and agencies of the Obuasi Municipal Assembly, for example, SAOB, expenditure and income, and procurement plans in their respective web sites under the Transparency Seal (TS) for public scrutiny and this was reported as a step forward in ensuring efficiency in the Obuasi Municipal Assembly's policy of providing sustainable environment and improved human health.

The study identified that enhancing commitment at the Obuasi Municipal Assembly would require the capacity to augment the government procurement system and this could be ensured by considering the installation of additional functionalities in the current government electronic procurement system, such as facilities for e-bidding, uploading of agencies procurement plans and e-payment.

The above findings are in tandem with the stakeholder-agency theory (Eisenhardt, 1985, 1988, 1989; Kosnic, 1987) which identifies: certain aspects of a firm's tactical actions; the constitution of management-stakeholder contracts; the shape taken by their legitimate structures which keep an eye on and impose contracts between managers and other stakeholders; and the evolutionary process that shapes both management-stakeholder contracts and the institutional structures which police those contracts. The above theory asserts that there is a direct relationship between the local governments and the local people where the local people are viewed as principal in the contractual agreement and the local governments are considered as the agents which have legal obligations to perform on behalf of the local people. In the area of engaging civil society in public audits, the local governments in their attempt to show utmost good faith to the local people must discuss their priority areas and their budgets with the local people through their local government representatives (assembly members) which would make them accountable to their people. Again, the theory makes Municipal, Metropolitan or District Chief Executives and their local people accountable to each other and ensures that there are always institutions and structures to monitor and police local government contracts to check corrupt practices of government and public servants. This is evidenced in the conduct of joint audits by COA and CSOs to select infrastructural projects including the setting up of systems, tools and processes to institutionalise participatory audits.

5.2.2.1 Decentralisation

The study revealed that decentralization was very significant for the achievement of maximum environmental sustainability and improved human health since the conceptual framework depicted that it depended on local agenda-21 of local authorities, and local agenda-21 of local authorities also depended on information and information depended on human attitudes and the human attitudes depended on participation and participation would

ensure and promote quality environmental sustainability leading to an improved human health.

Significantly, decentralization was identified as a key ingredient in sparking and energizing the interaction that existed among the Municipal Assembly, the civil society and the private sector in the municipality. It further indicated that good decentralization comprised the complex mechanisms, processes, institutions through which citizens and groups articulated their welfare, mediated their differences and exercised the legal rights and obligations at the local levels.

Decentralisation had helped the Obuasi Municipal Assembly to ensure that the local people were vigorously made to involve in all the processes in ensuring environmental sustainability starting from the policy and programme designed stage through the implementation stage to the monitoring and evaluation stage and that had helped them to appreciate their value in sustaining their local environment.

The study revealed that decentralization was very relevant and significant and uncovered the fundamental principles of good governance such as respect for the right of the local people to be involved in the conduct of environmental impact assessment of projects initiated by the Obuasi Municipal Assembly to identify the risks associated with such projects and the health effects of such initiatives on the local people to enable them approve or disapprove of such projects.

The study disclosed that decentralization was an acceptable way of ensuring that there was political openness in formulating policies and drafting programmes at the local level to deal with the menace of environmental sustainability in the Obuasi Municipality by allowing the local people to decide on the selection of alternative projects that they felt could help them reduce much more environmental risks. It was revealed that decentralized systems have the

tendencies to create participatory tolerance and administrative efficiency since the local people felt that they were part of the problems of the environmental sustainability and for that reason could effectively contribute towards its sustenance.

The study further disclosed that decentralization entailed the creation of effective partnerships between the local people and the Municipal Assembly by ensuring that political, social and economic priorities were based on broad consent in the municipality to enable the voices of the poorest and the most helpless be heard in the decision-making process geared towards sustaining the environment of the municipality. It was also noted that bringing stakeholders collectively to define priorities for projects and programmes through decentralization could increase interest and sense of ownership by the local people and would in turn promote quality sustainability in their environmental issues.

The research revealed that decentralization was very significant to environmental sustainability by heartening a civilization of participatory democracy thereby assisting in ensuring answerability of elected local government officials entrusted to promote quality environmental sustainability in the municipality.

5.2.2.2 Information

The study revealed that the poor flow of information between and among decentralized agencies at the Obuasi Municipal Assembly had contributed adversely to the inability of the Assembly to effectively and efficiently utilize the concept of decentralization to deal with the menace of environmental sustainability in the municipality. It was noted that the poor flow of information from one department to another relating to how the local government could give and receive relevant information from appropriate agencies responsible for tackling environmental sustainability challenges especially, those issues which needed the Assembly's

utmost and urgent attention to prevent causes of poor environmental sustainability which could result in communicable diseases in the municipality.

Furthermore, the study revealed that the significance of information in dealing with environmental sustainability could not be overemphasized. The study identified that decentralized systems needed refined and reliable information on records pertaining to environmental sustainability, especially, the degraded areas in the municipality.

The study uncovered that information from policy formulators was needed to inform policy implementers about strategies which had been put in place to deal with environmental sustainability menace in the municipality. It was also identified that information was very significant in monitoring the activities of groups and individuals who breached environmental sustainability laws and ascertain whether punitive measures meted out to them were being complied with so that follow-up actions could be taken to guarantee total compliance.

The study revealed that information was needed by the Obuasi Municipal Assembly to examine improvement towards drinking water and sanitation target through rationalized and refined estimates and develop guidelines on quality of drinking water, safe use of wastewater in agriculture and administration of leisure waters.

5.2.2.3 Resources

The study revealed that human and financial resources were very vital for using decentralization to promote environmental sustainability in the Obuasi Municipality. It was closely noted that decentralized structures when well equipped with technology could help track the activities of illegal miners, foresters and other activities which had the tendencies to cause poor environmental sustainability in the Obuasi Municipality.

The study indicated that resources played significant role in decentralized structures since they made provision for determining which individuals within the municipality would be involved in the decisions relating to environmental sustainability leading to an improved human health in the Obuasi Municipality and this the study observed would go a long way to accept the inputs of not only members of the Municipal Assembly but also, the entire municipality. It was also noted that resources played significant role in achieving sustainable environment and improved human health. This was explained by mentioning that in order for the Obuasi Municipal Assembly to achieve a maximum sustainable environment, adequate provision of financial resources would help to acquire logistics to monitor the activities of groups and individuals who flouted the environmental bye-laws in the municipality.

The study revealed that financial resources were significant in promoting environmental sustainability and improved human health through consistent organization of capacity building programmes to help ensure environmental sustainability and improved human health in the Obuasi Municipality. It further revealed that the Obuasi Municipal Assembly should draw a timetable to inform and organize follow-up programmes to guarantee the success of the policies and programmes designed for improving the quality of the environment.

5.2.2.4 Participation

The research revealed that the essence of decentralization was to bring governance closest to the local people and to help them participate in the governance process of themselves and without this the decentralization policy would not be successful. The study discovered that full participation of all the local people in the municipality was needed to achieve full environmental sustainability leading to an improved human health in the Obuasi Municipality. By this, the study recognized that full participation of all stakeholders in the municipality at all levels of the environmental sustainability programme right from the design

stage through the implementation stage to the evaluation stage should involve all the local people especially in conducting environmental impact assessment of large-scale projects initiated by the Municipal Assembly.

The study acknowledged that environmental issues were top handled with the participation of all community members and that the Municipal Assembly should facilitate and encourage community awareness and participation by making environmental information widely accessible.

The study identified that the full participation of women was essential to achieve sustainable development and equally identified that the creativity, ideals and courage of the youth and the knowledge of the indigenous people in the municipality were significantly needed to guarantee a maximum environmental sustainability leading to an improved human health. It further added that the assembly should deal with environmental sustainability issues on non-partisan basis to encourage everyone in the municipality to partake in this exercise since the safety of the earth was the responsibility of everyone.

The research revealed that participatory policy formulation, budget formulation, expenditure tracking and policy evaluation and monitoring which involved all manner of people in the municipality could motivate the ordinary people and strengthen their effort in helping to promote sustainable environment leading to an improved human health.

The study identified that civil society organizations and community members' participation would significantly help in achieving an increased environmental sustainability leading to an improved human health and sincerely engage in open and proactive dialogue with all stakeholders could fortify them in putting in extra effort in promoting environmental sustainability leading to an improved human health.

The study identified that the full active involvement of women in environmental decisions and in policy management processes at all levels; including traditional community planning, non-governmental organizations and formal institutions at all levels would boost their morale in making sure that environments of the municipality were kept cleaner for sustainable development.

5.2.3 Strategies put in place by the municipal assembly in ensuring environmental sustainability:

- ***Specific Policies Formulated by the Obuasi Municipal Assembly***

The preliminary study revealed that the Obuasi Municipal Assembly had come out with a number of policies all geared towards environmental sustainability and improved human health especially in the areas of water and sanitation, mining, pollution, soil erosion and forest and land degradation.

The introductory study revealed that the Obuasi Municipal Assembly out of its 2014 DACF had spent GH¢20,000 on cleaning drains along major roads in the Obuasi Municipality in order to ensure that the MDG7's target 10 which highlights on water and sanitation could be achieved for improved and quality human health. The preliminary study further disclosed that this routine activity was continuation of the IRS exercise by the OIMCP which was introduced in February, 2006 by the Obuasi Municipal Assembly to ensure that a reduction in malaria became a reality through vigorous environmental sustainability programmes of the Assembly geared towards quality human health. For example, Table 3.5 which depicted the top-ten diseases and causes of deaths in the Obuasi Municipality for the year 2014, revealed that 12 people out of the total deaths of 79 died of malaria which constituted 15.2% of total deaths in the municipality under the year review, buttressing the fact that the introduction of the IRS by the OMA was a very laudable measure to reduce the spread of malaria caused by

poor environmental sustainability in order to improve upon the human health of the people in the municipality and its environs.

A member of the Water and Sanitation Committee disclosed that the 2014 Composite Budget of the Assembly for that fiscal year revealed that the Assembly had spent GH¢182,000 on organising sanitation exercises to ensure that all insanitary conditions were completely dealt with as part of its mandate to improve the human health conditions of the people in the area. He added that the Assembly spent a whopping sum of GH¢155,000 on fumigating public places and disposal sites in the bid of the Assembly to deliver on its promise of bringing sustainable environmental and improved human health to the people in the Obuasi Municipality. The Table 3.5 showed that typhoid and diarrhoea which were noted to be caused by environmental problems killed 15 people in the Obuasi Municipality in 2014.

A member of the Municipal Assembly on his part whispered that the Assembly had established the Obuasi cemetery with a cholesterol amount of GH¢20,000 from its DACF and the IGF to ensure that dead bodies were not scattered around the municipality which could be a recipe for poor environmental sustainability and its adverse repercussions on the human health of the local people. This member buttressed his stand by alleging that before this was done, the area around the cemetery was very unhygienic but the establishment of the cemetery by the Assembly had improved environment sustainability and quality of human health.

The Head of Environmental Health Directorate opined that the Municipal Assembly had acquired and cleared a final dumping site to ensure that refuse in the municipality would be properly disposed of to avoid the old practice of burning the refuse in the neighbourhoods which caused air pollution and subsequently caused pollution-related diseases such as asthma, cardiovascular attacks, typhoid, diarrhoea and malaria which had claimed the lives of

46 people in 2014. He reiterated that the OMHD Report for 2014 had reported that poor environmental sustainability caused the deaths of 46 people out of the total of 79 deaths reported in the year 2014. He mentioned that 16 people died of cardiovascular attacks, 12 died of malaria, 8 died of typhoid, 7 died of diarrhoea, 9 died of occupational accidents and 3 died of asthma. Based on the above information, he intimated that an amount of GH¢20,000 was completely spent on this exercise and admonished the local people to regularly maintain the cemetery to prevent the spread of diseases emanating from poor environmental sustainability rather than allowing the diseases to occur and spending much more economic resources to control their spread.

The Municipal Chief Executive and the Municipal Coordinating Director concurred that the Assembly had paid a total amount of GH¢318,000 to the Zoomlion-Ghana, a waste management organisation in Ghana to clean the Obuasi markets, drains and public areas and dispose of wastes throughout the 2014 fiscal year all in the bid to ensure proper and quality environmental sustainability leading to an improved human health in the Obuasi Municipality devoid of any forms of diseases.

The Head of Water and Sanitation of the Municipal Assembly indicated that the Assembly had constructed one (1) mechanised borehole at Nkampung at a cost of GH¢18,000 to improve accessibility to potable water to improve on their human health needs. He added that before the construction of this mechanised borehole at Nkampung, a town in the municipality, the local people had had a challenge in terms of access to quality drinking water and had impacted harmfully on the health needs of that particular community in the sense that most of their sources of water supply for domestic purposes had been destroyed by the activities of illegal miners and improper disposal of refuse as well as the activities of headsmen who had invaded the municipality with their farm animals.

The researcher discovered that the Obuasi Municipal Assembly had also constructed three (3) mechanised boreholes at North Nyamebekyere, Obuasi Central and Obuasi JJ, all communities in the Obuasi Municipality to provide them with quality drinking water to improve on their health needs as a way forward to achieve the target 10 of the MDG7 which highlights on water and sanitation.

The Presiding Member intimated that the Assembly had engaged in the construction of drains and retaining wall at Sampsonkrom water site to ease the water situation in that town and its environs. He disclosed that in the year 2013, the Assembly constructed two (2) boreholes and mechanised three (3) systems at Antobuasi, Anikoko, Mmamriwa Apitikoko and Obuasi Zongo. He added that the Assembly had rehabilitated the municipal abattoir at Kwabenakwa in the Obuasi Municipality to ensure that the indigents in such communities could have access to quality drinking water and hygienic place to sell and buy their meat.

- ***Provision of resources to help in the promotion of quality environmental sustainability in the Obuasi Municipality***

The preliminary study revealed that the OMA through its DACF and IGF had been able to provide thirty (30) communities with quality sources of drinking water either from boreholes or hand-dug well. The study also disclosed that the Assembly had provided both financial and human resources to supply thirty-three communities with pipe-borne water to improve access to quality drinking water in the municipality as measure to improve water and sanitation situations in the municipality. This indicated that the thirty-three (33) communities had had one hundred percent (100%) of quality water supply. The study however, noted that utilisation of the pipe-borne water was very low and was limited to washing and other

domestic uses instead of drinking purposes due to the fact that the water was contaminated by mining activities especially illegal mining and domestic wastes.

A member of the Municipal Assembly professed that since 2011, the Assembly had constructed and mechanised ten (10) boreholes to supply water to ten (10) communities. He also disclosed that the Assembly had provided economic, financial and human resources to construct seventy (70) public toilet facilities in the municipality all in the bid to improve on the levels of quality water supply and improved sanitation respectively in the rich mineral municipality to reduce the numbers of diseases related to poor environmental sustainability.

A member of the Zonal Council in his submission insinuated that:

“We the members of the Obuasi Municipal Assembly are happy that about fifty percent of our people now have access to domestic private toilet facilities”.

He was however, quick to state that although half of the local people in the periphery of the municipality did not have access to domestic toilet facilities, he believed that from time to time, the situation would improve tremendously to enable them to fully achieve target 10 of the MDG7.

A member of the Water and Sanitation Committee of the Assembly disclosed that the Assembly had attracted private capital, by giving land to twenty-three (23) investors to construct twenty-three (23) W/C toilet facilities in the BOT arrangement in 2012 and 2013. This member of the Sanitation Committee closely indicated that the Assembly had focused its attention on school toilets, by constructing ten (10) eight-seated toilet facilities in selected schools in the 2012 and 2013 fiscal years to promote proper sanitary conditions in those schools all in the Assembly's effort to ensure quality environmental sustainability which could give birth to improved human health in the municipality.

- ***Policies formulated by the Obuasi Municipal Environmental Health Directorate to ensure Environmental Sustainability in the Obuasi Municipality***

The preliminary study discovered that the OMEHD through the OMA had identified various strategies to sustain the environment and improve the quality of human health in the Obuasi Municipality. In his submission, the Environmental Health Officer indicated that notable among those strategies included: the implementation of the water and sanitation for all; strengthening the capacity of the environmental sanitation facilities; acquisition and development of land or sites for the treatment and disposal of solid waste in major towns in the municipality; improvement in the institutional capacity of the security agencies including the Police, Immigration, Forestry Commission and the Wildlife Commission; improvement in case management systems of the courts in the municipality including scaling-up mechanisms to enhance human resource levels in the municipality and subsequently expanding infrastructure; ensuring strict adherence to guidelines for the operation of the MP constituent fund; provision of adequate resources and incentives for human resource capacity development in education; improvement in water and sanitation facilities in educational institutions at all levels; adoption of new and innovative means of promoting development, control and building regulations; and building the capacity of the municipal units to promote growth, employment and social protection.

A member of the WSD in his contribution indicated that measures had been put in place for effective operation and maintenance, system upgrading and replacement of water facilities. He further intimated that the department had adopted cost effective boreholes drilling mechanisms to enable the Assembly provide many boreholes for the local people to satisfy

their water needs as a way forward for ensuring improved quality human health in the Obuasi Municipality .

A member of the Municipal Assembly indicated that as part of efforts of OMA to do away with illegal mining activities, the OMA had adopted and implemented a number of local economic development activities to generate employment and other social protection strategies to help the vulnerable in the municipality. He added that the Municipal Assembly had introduced enhanced income-generating opportunities for the poor and the vulnerable especially, women and food crop farmers in the municipality to reduce the rate at which the forests were depleting and sinking escalating levels of illegal mining engaged in by these women as a result of the heightened poverty in the municipality.

A member of the Zonal Council of the Obuasi Municipal Assembly insinuated that:

“There has been increased access to modern forms of energy to the poor and vulnerable especially, in the rural areas through the extension of national electricity grid”.

He alleged that this intervention had impacted positively on the local people since a number of them no longer depended on firewood from the forests for cooking and other purposes which had helped in environmental sustainability, especially a reduction in the depletion of the vegetation, which had resulted in the occurrences of some environmental-related diseases in the municipality which could have possibly killed some of the local people.

- **The Role of Development Partners in Ensuring Environmental Sustainability**

The study revealed that there were a number of development partners available to the Obuasi Municipality in the area of environmental sustainability and improved human health. The research disclosed that the major development partners to the Obuasi Municipality for

sustaining the environment and improving the quality of human health included: the Obuasi Municipal Assembly; the GOG; the AngloGold Ashanti; and other NGOs.

The research disclosed that AngloGold Ashanti Limited, a mining company from the Republic of South Africa operating in the Obuasi Municipality in its bid to help in the proper environmental sustainability management and improved human health in the municipality had implemented measures such as reviewing its operation methods, re-forestation, and the provision of alternative sources of drinking water and health facilities as well as health education programmes in the communities within the Obuasi Municipality all in its bid to ensure that the environment was not subjected to challenges which could cause deaths and reduce quality health of the local people.

Similarly, an interview with a member of the Municipal Assembly revealed that the AGA Limited had also hinted that its safety and health programmes would be well structured and intensified to cover the entire municipality for a maximum environmental sustainability and improved human health achievement.

The study further identified that there was the promotion of agricultural and sustainable livelihood activities in seven (7) communities in the Obuasi Municipality which had been supported to cultivate about two thousand (2000) acres of cassava plantation under the PSI between the years 2000 and 2003 and a total of GH¢23,150 from the APAF was granted as loans to farmers and members of trade associations who wanted to be self-employed all in their quest to improve the health sustainable needs of those communities. It was added that training programmes for the youth in beekeeping, mushroom, snail and glasscutter farming were supported by AGA Limited in collaboration with the Obuasi Municipal Assembly, MOFA and NYC.

The study also disclosed that there had been a capacity building in entrepreneurial development and vocational skills. It noted that dissimilar informal vocational and technical workshops in such trades such as dressmaking, hairdressing, welding, auto mechanics and metal fabrication abound in the municipality and training apprenticeship was already taking place in the workshops. For example, the study illustrated that over the past ten years; one hundred and thirty-eight (138) youth had been trained in hairdressing, dressmaking and carpentry skills which had helped some of them to improve upon their livelihoods. The research noted that one hundred and two (102) out of the above number had been self-employed whilst the remaining was still waiting for some financial support from the government and other philanthropists to enable them set off.

The research further revealed that under the STEP, the Obuasi Municipal Assembly had trained a total of two hundred and fifty (250) youth under the supervision of OMYC in various trades like Batik and Tie and Dye production, basketry, and cosmetology and shoe-making to enable them improve upon the quality of their health through sustainable development.

The research identified that the OMA in collaboration with the DCD and respective trade associations had set up plans to promote and expand the traditional apprenticeship system.

The research disclosed that AGA Limited had also introduced apprenticeship training programmes to students in technical schools. It had also initiated training programmes at its workshops to upgrade the professional skills and orientation of master craftsmen in the municipality and provided support to the Association of People Living with HIV/AIDS by the Municipal AIDS Support Committee with a seed capital of GH¢3, 900.00 to train its members in the tie and dye and batik making.

- ***Routine Sanitation Exercises and Activities Undertaken by the Obuasi Municipal Assembly to Ensure Environmental Sustainability***

The research revealed that the OMA regularly undertook a number of environmental sustainability training and actions to ensure that most parts of the municipality were got rid of mosquitoes and other putrid untreated matters as a way forward to ensure environmental sustainability and improved human health.

A member of the Water and Sanitation Committee of the OMA indicated that the OMA budget for the 2014 fiscal year saw the spending of GH¢20, 000.00 on the removal of solid wastes from drains along major roads in the municipality. Again, he intimated that the OMA spent GH¢182, 000.00 on organising sanitation exercises in the municipality both in the interest of sustaining the environment and improving the health of the people in the municipality.

An interview with the MEHO revealed that in 2010, OMA spent an amount of GH¢155, 000.00 to fumigate most of the public places and disposal sites. He also stressed that an amount of GH¢100, 000 was spent on clearing final dumping sites which was captured in the OMA Composite Budget for the 2014 fiscal year all pointing at ensuring sustainable development through quality environmental sustainability leading to an improved human health.

The study further revealed that the OMA contracted the Zoomlion Company, a waste management organisation in Ghana to clean the markets, drains and public areas and disposed of wastes throughout the year under review which had in a way helped to sustain the environment tremendously.

The study revealed that the OMA had happily embraced the NSD exercise introduced by the government and the local people in the municipality always deemed it necessary to participate as a national sustainable environment and improved human health assignment.

- ***Availability of Standing Committees***

The study disclosed that the Obuasi Municipal Assembly had put in place a number of committees which were mandated to perform varying functions ranging from provision of social amenities through infrastructural development to environmental sustainability and improved human health. The study discovered that these committees were purposely set up by the OMA to perform selected functions towards socio-economic development, especially in the area of environmental sustainability leading improved human health. The study further revealed that in the performance of its functions, the MA worked through committees and notable among them included the Executive Committee (EC) and its sub-committees. The study discovered a number of committees and sub-committees and prominent among them included: the Development Planning Sub-Committee; the Water and Sanitation Sub-Committee; Social Services Sub-Committee; Finance and Administration Sub-Committee; Works Sub-Committee; Justice and Security Sub-Committee; and Public Relations Sub-Committee and other committees the MA would deem necessary.

An interview with a member of the Municipal Assembly revealed that the EC of the Municipal Assembly co-ordinated plans and programmes of the sub-committees and submitted these as comprehensive plans of actions of the Municipal Assembly. She further indicated that the EC implemented resolutions of the Municipal Assembly. However, she was not happy with the delay in the release of funds by the government for the EC to perform its lawful responsibilities.

A member of the ZC in an interview lamented on the enormous responsibilities on the shoulders of this committee and described the Executive Committee of the Municipal Assembly as the pivot around which all the other committees and sub-committees revolved. He went further to reveal that besides its core mandate, the EC had other equally important functions to perform and mentioned that the EC had the responsibilities to oversee the administration of the municipality in collaboration with the office of the MCE, to recommend where necessary, in case of the municipality's non-decentralised departments to the appropriate government/ministry/department/agency, the appointment and replacement grounds of officers with the area of authority of the assembly, to adopt measures to develop and execute approved plans of the units, areas, towns and sub-municipal areas within the area of authority of the assembly and recommend to the municipal assembly the co-ordination, most importantly, integration and harmonisation of municipal development plans and policies which had the tendencies to ensure environmental sustainability and improved human health in the Obuasi Municipality. On the contrary, he indicated that since the MCE was a member of the EC, and a government appointee, it did not make him accountable to the local folks and this he said was a breeding ground for corruption since the MCE would only account to the Head of State who happened to hail from the same political party as the MCE. The study further revealed that the development planning sub-committee of the OMA was set up to assist in the formulation and overseeing the implementation of the MA's Medium-Term Strategic Socio-Economic Development Plans.

The PM of the Assembly intimated that the DPSC of the Assembly had to oversee the identification of economic resources and potentials of the municipality. He added that the DPSC had the mandate of the Assembly to supervise the identification of opportunities and constraints for the exploitation of municipality resources to generate revenue for the Assembly and to check overexploitation of the municipality's resources which could be a

recipe for poor environmental sustainability resulting in poor quality of improved human health in the municipality.

A member of the EC disclosed that the DPSC's responsibilities were not only limited to the above but also, had the responsibility of consulting with other sub-committees' and private sector for the implications the proposed district plan might have on other sub-committees' plans. The member insinuated:

“This sub-committee has the backing of the Assembly to submit the plans to the EC for harmonisation”.

The research further discovered that the SSSC which was one of the very important sub-committees of the OMA had the mandate to initiate, co-ordinate and manage the social policies of the Municipal Assembly. The research also revealed that the SSSC had the mandate to promote education, be it formal or informal and to assist in the implementation of health policies especially, those that relate to preventive healthcare which could help ensure sustainable environment and improved human health , social welfare and general well-being at the Municipal Assembly level .

An interview with the MCD revealed that the SSSC had the responsibility of co-ordinating the activities of NGOs in the implementation of social development agenda in the municipality. The interview further disclosed that the SSSC had the assembly's mandate to supervise, monitor and regulate activities relating to social development of the municipality as well as making recommendations to the EC of the Assembly on social development issues. On the contrary, the interview exposed the administrative challenges that confronted this sub-committee especially, the poor supervisory and monitoring of social services in the municipality due to political parties' affiliations by some contractors who believed to be card-bearing members of the ruling party whose social services to the Municipal Assembly were

detected to be far below standard or did not conform to the SOPs of the OMA. However, he was quick to state that the OMA had put certain measures in place to ensure those contractors and other social services providers of the OMA who would provide shoddy services to the Assembly would have their contracts terminated without a commensurate compensation.

The study also made known that the SSSC had been mandated to take action on social and issues referred to it by the Assembly or the Executive Committee and to investigate and make recommendations in areas of social distress such as educational problems, natural disasters, environmental challenges in the municipality to the MA or EC. On the flip side, the study revealed that the Assembly had not been able to address a number of such distressed social issues due to its financial incapacitation since most of these situations involved a huge capital outlay from the OMA.

A member of the SSSC explained that this sub-committee had been empowered to review, integrate and co-ordinate policies and activities of relevant decentralised departments in the MA's policies annually.

The study disclosed that the Work's Sub-Committee was identified as one of the key and instrumental committees in the physical development of the OMA. The study added that the WSC had been given the mandate to provide a framework for ensuring and promoting efficient physical development works in the municipality to reduce the incessant environmental challenges affecting human health. However, the study bemoaned that this sub-committee was bedevilled with inadequate material resources to enable it achieve its mandate in the area of physical development in the municipality.

The Head of Municipal Environmental Health in his submission explained that the WSC had the responsibility of monitoring and supervising all civil works in the municipality and to

regulate and ensure appropriate procedures in the award and execution of all works in the municipality.

The HMEH added that the WSC could recommend potential works required in the municipality to the MA or EC and could handle all relevant matters referred to it by the municipality in order to ensure that all physical development programmes in the municipality did not result in poor environmental sustainability which harmfully affected improved human health of the people in the municipality.

The study further identified the Finance and Administrative Sub-Committee as one of the various sub-committees which enhanced the MA's work. It became clear that the core mandate of the FASC was to provide a policy and strategic framework for effective and prudent utilisation of Municipal Assembly's economic resources as well as sound and efficient financial management.

A member of the FASC of the OMA in an interview explained that besides the core mandate of the FASC, there were other functions performed by this sub-committee and notable among them included facilitating the efficient management of the Municipal Assembly's finances, examining the financial position of the assembly and identifying strategies to warrant judicious use of available resources and assisting in the development of the MA's budget and fee fixing resolutions all to ensure equity and efficient resource utilisation of the Assembly's resources.

The MCD in an interview submitted that as part of its core mandate, the FASC was largely tasked to assist in the judicious management of the DACF and other sources meant for the development of the municipality. He added that the FASC had the mandate to help in the generation of funds for development.

The PM intimated that the FASC had been empowered by the MA to monitor and evaluate the assembly's financial inflows and outflows to track all manner of misappropriation on the part of members and officials of the Assembly.

The study further discovered that the OMA had set-up the Justice and Security Sub-Committee (JSSC) to promote peace and ensure stability in the municipality and work to work hand-in-hand with other security agencies in the municipality to promote sustainable environment which would promote improved human health. The research revealed that the JSSC of the OMA was mandated to attend to all complaints and petitions within the municipality including deforestation and environmental degradation issues and identifying areas of security threats to the municipality.

A member of the JSSC indicated that it was the responsibility of the JSSC to help resolve all conflicts in the municipality and to co-ordinate the activities of all security agencies in the municipality. The member intimated that: "Our sub-committee is the security hub of the municipality and without this sub-committee; this municipality would have been plunged into chaos". He further stated that this sub-committee had been empowered to liaise with other institutions and security agencies such as the police, the military, the fire service, the forestry commission, the game and wildlife commission and others to maintain peace and stability. However, the member in an interview lamented on the rate at which the municipality had been taken over by the activities of illegal miners and other foresters whose actions had depleted the municipality of its natural resources especially, the mineral deposits and timber logs. He stressed that there was the need for the government, the Municipal Assembly and other development partners to co-operate in order to deal with these challenges. He further recommended that the government and the Municipal Assembly needed to establish a "green

court” to severely punish the local folks who normally caused destructions to the environment of the municipality.

Another member of the Municipal Assembly indicated that the JSSC had the mandate of the OMA to recommend the formation of ad hoc security committees in times of need to deal with emergency situations in the municipality. He added that the sub-committee had the responsibility to pre-empt all potential conflict situations in the municipality re-echoing the adage “prevention is better than cure”. He was of the view that it would always cost less in preventing conflicts than controlling conflict situations in the municipality.

The study recognised that the OMA in its attempt to constantly interact with the public and appreciate the challenges confronting them, had set-up the Public Relations and Complaints Committee (PRCC) chaired by the PM to ensure that aggrieved citizens could get fast and fair hearing when performing its adjudication function.

The PM who chaired this all important committee received complaints made against the conduct of members of the Assembly by the public and to make recommendations to the Assembly. On the contrary, he bemoaned the inadequate resources of the Assembly and the time constraints on the part of the Assembly. He calmly added that most of the vigilante groups in the municipality feared that some of the staff of the Assembly would expose such vigilante groups and their lives would be jeopardised should they report their attitudes and actions which had the tendency to damage the environment especially, the illegal miners and the illegal timber dealers. He therefore recommended that the Municipal Assembly should institute a reward scheme to reward such well-cherished vigilantes to motivate them and attract more of them to facilitate environmental sustainability programmes which could warrant improved human health in the municipality.

- ***Capacity to enforce environmental sustainability bye-laws in the Obuasi Municipality***

In the year 1974, the Government of Ghana established the Environmental Protection Council (EPC) by the National Redemption Council (NRC) Decree 239. The EPC was principally a consultative and exploratory institution and it was given the power to synchronize the actions and activities of the other bodies interested in environmental concerns. It was mandated to serve as a summit point for the bodies which essentially exercised control with regard to the diverse sectors of the environment and subsequently enhanced the synchronization of environmental programmes and activities in the state (EPC, 1991).

Subsequent to the above, the EPC had the authorization to make sure that it promulgated programmes which could encourage environmental sustainability to guarantee an improved human health in the people of Ghana at large and the people of the Obuasi Municipality in particular. As a Council, the EPC had the authority to safeguard the environment of the municipality on behalf of the state by making sure those individuals and corporate organisations whose actions were seen as threats to sustainable environment and improved human health were reported to the security agencies in the municipality for punitive measures to be taken against them.

The preliminary study discovered that in view of the fact that the EPC did not have the mandate to directly prosecute such individuals and corporate organisations, it had decided to co-operate with the security agencies in the Obuasi Municipality to consistently identify areas within the municipality which had been subjected to poor environmental sustainability and the possible actions to be taken against such entities all in the interest of improving the human health of the local people in the municipality against morbidities caused by poor environmental conditions such as cardiovascular attacks, malaria, occupational accidents,

asthma, typhoid, and diarrhoea which caused 55 mortalities out of a total of 79 mortalities recorded by the OMHD in the year 2014.

The study further revealed that in March 1988, the government initiated a major effort to put the issue of environmental conservation on the priority agenda. The exercise culminated in the preparation of a strategy to address the key issues relating to the protection of the environment and better management of renewable resources. The product of this effort is what had become the Environmental Action Plan (EAP) which described a set of policy actions related, related investments and institutional reinforcement actions to make Ghana's development plan much more environmentally sustainable.

The study also revealed that by 1994, it had become palpable that a much more powerful body than the EPC was essential to orchestrate these down to business efforts and to arise as a keeper of the environment.

Despite the fact that the EPC was established by a decree (NRC Decree 239 of January 23, 1974) the Council was principally a consultative and an exploratory institution that was expected to simply synchronize activities of other bodies (EPC, 1991) it was devoid of the authority to unswervingly implement any measures in the performance of its tasks or to met out punitive actions against environmental offenders.

The study identified that in order to correct this limitation of the EPC, the Council was reorganized into Environmental Protection Agency in December, 1994. It is imperative to mention that for now, it is an institution that has an undeviating responsibility for safeguarding the environment of Ghana (EPC, 1991).

- **Mandate of the Water and Sanitation Committee**

The introductory study revealed that the achievements of the targets in terms of water and sanitation in the Obuasi Municipality coverage depended to a hefty degree on the setting up of institutions such as the Water and Sanitation Committees (WATSAN) for effective operation and maintenance of water and sanitation facilities. The study revealed that the operations of WATSAN were limited in terms of scope and effectiveness, mainly due to their limited financial potency.

It further revealed that the institutional environment within which WATSAN operated as well as their methods of operations determined the community's response to the maintenance and service delivery challenges.

A member of the WATSAN at the OMA recommended that the institutional framework and composition of the WATSAN be strengthened and beefed upwards to the Municipal Assembly and the members should be financially rewarded from the proceeds of the user fees so that they could effectively safeguard sustainable water and sanitation services delivery. He boldly added that these measures were in line with the principles of the new public management strategies for public service delivery.

The PM in his submission disclosed that the MWST had been mandated by the MA to perform a number of responsibilities. He intimated that the committees' responsibilities included but not restricted to making an appropriate strategies for the management of the water system either by contracting competent staff to manage the system or by training the existing staff to manage the system, in prior consultation with the community, propose an equitable tariff to cover the full cost of operation and maintenance of the system and the cost of replacement and the proposed tariff should be subject to the approval of the MA among others as a way forward for maintaining water facilities and to ensure their sustenance.

The study further revealed that the MWST was also responsible for recommending appropriate and relevant bye-laws for the enactment by Assembly to regulate water use, enforce tariff and other financial obligations and promote appropriate sanitation and good hygiene practices within the area or community. The study added that the MWST should undertake community education and training on tariff obligations and sound sanitation and hygienic behaviour within the area or community to reduce the number of morbidities which caused a number of mortalities in the municipality and prepare and submit to the MA for approval an annual business plan for the management of the system and the promotion of improved water, sanitation and hygiene deemed as sine qua non for the achievement of the target 10 of the MDG7.

A member of the MWST professed that besides the above responsibilities, the team had the mandate of the Municipal Assembly to make an efficient and accessible customer relations systems and to manage the funds of the water system prudently, transparently and accountably on behalf of the area or community to ensure constant flow of water for the people in the municipality.

- ***The role of the community in ensuring environmental sustainability in the Obuasi Municipality***

The introductory study revealed that the local people in the municipality of Obuasi performed varying responsibilities in ensuring environmental sustainability and improved human health. The research identified that there were vigilante groups which often reported individual citizens and corporate organisations within the municipality who broke the laws of environmental sustainability. It further disclosed that there were environmental sustainability activists who regularly monitored the behaviours and activities of the folks in the municipality by ensuring that both citizens within and without the municipality who polluted

and degraded the environment were reported to the EPA and the security agencies and punitive actions were taken against them all in their effort to help sustain the environment and improve human health in the municipality and its environs.

The study also disclosed that a number of the youth who were part of the environmental sustainability challenges had openly embraced the social intervention policies and the GSOP initiated by the assembly and other development partners and they had fully participated in the various activities undertaken by the OMA to reverse the challenges of the environmental sustainability in the municipality.

A member of the community opined that the acquisition of a landfill site by the MA had also helped to ensure proper refuse disposal which could be one of the ways of maintaining proper sustainable environment and improved human health in the municipality. This he said had had a positive impact on the entire sanitation exercise by dumping refuse at the right place or point. On the contrary, the member of the community recommended that the local folks in the municipality should be encouraged to cultivate the habit of dumping the refuse at the selected points to help reduce poor environmental sustainability in the Obuasi Municipality in order to improve human health of the local folks.

The study revealed that even though the youth had been involved in the finding of solutions to those environmental challenges, such solutions were not sustainable since most of the youth who had been employed to engage in the NYP and STEP were not been paid their salaries by the government due to the delay in the release of funds by the GOG.

An interview with a community member revealed that the introduction of the policy “your waste is gold” by the MLGRD which mandated every house hold to have a toilet facility was a right step in the right direction to reduce the rate at which waste especially, both liquid and solid found themselves in places where they were not needed and subsequently caused poor

environmental sustainability in the rich mineral municipality of Obuasi. He added that the MLGRD should initiate a bill in parliament for the law-making body to debate on this and when approved, should be submitted to the executive for a presidential assent to become a law to bond all landlords and landladies to mandatory provide toilet facilities for their respective tenants as a way of reducing the escalating levels of defecating in open places most especially around water bodies which the Local Agenda-21 of local authorities sought to achieve.

5.2.3.1 Human attitudes

The study reported that human attitudes could contribute substantially towards ensuring environmental sustainability and improved human health in the Obuasi Municipality. It revealed that since the causes of the poor environmental sustainability in the Obuasi Municipality were caused by human factors, these same humans could be very useful and important in dealing with such problems.

The research revealed that the commitment from the local people themselves in ensuring sustainable environment could facilitate and compliment the strategies put in place by the Obuasi Municipal Assembly in its quest to promote quality environmental sustainability aimed at an improved human health. For example, the study revealed that if the local people could minimize the rate at which they engaged in indiscriminate felling of trees and the incessant illegal mining within the municipality, then the environment would witness a massive quality of sustenance that could reduce those diseases and mortalities caused by poor environmental conditions.

The study further revealed that a massive local participation in all activities within the local area geared towards environmental sustainability could help in reducing the increasing spate of the poor environmental conditions in the area.

The study revealed that controlling the population growth in the municipality could help reduce the environmental challenges in the municipality since a number of these challenges resulted from the need for human settlement and improved standard of living in the area

5.2.3.2 Information

The study reported that information played a significant role in the strategies put in place by the Obuasi Municipal Assembly in ensuring environmental sustainability. It revealed that a number of policies earmarked for quality environmental sustainability in the areas of water, sanitation, mining, soil erosion and forest degradation needed to be communicated to the local people in return for their inputs in the planning, designing, implementation and evaluation of such programme areas.

Significantly, the study revealed that information was needed to find out from the OMA what economic resources had been channelled into ensuring sustainable environment and improved human health in the local area. It disclosed that information available to the local people indicated that the OMA had spent GH¢20, 000 on cleaning the drains along the major roads in the municipality from its DACF for the year 2014.

The study further revealed that as part of the strategies of the OMA to deal with the poor conditions of the environment of the municipality, it had introduced various educative programmes to inculcate in the local people the need for them to maintain good environmental practices. For example, the Assembly through the Malaria Control Liaison Section, had introduced Information, Education and Communication Programme aimed at informing the community of the means of malaria transmission, what could be done to prevent the spread of malaria and to explain and sensitize the local people on the Indoor Residual Spraying programme all in the bid to ensure quality environmental sustainability that could promote improved human health of the local people in the Obuasi Municipality.

5.2.3.3 Resources

The study reported that resources played significant role in ensuring environmental sustainability and improved human health in the Obuasi Municipality. It revealed that the provision of both human and material resources had facilitated in varying ways of ensuring environmental sustainability and improved human health.

The research explained that the Assembly through its IGF and DACF had been able to provide thirty (30) communities with quality sources of drinking water either from boreholes or hand-dug wells to promote quality human health through quality drinking water in such communities. It further explained that the Assembly had provided both financial and human resources to supply thirty-three (33) communities with pipe-borne water to improve access to quality drinking water in the municipality all in its bid to promote quality sustainable improved human health. The study explained that the aim of this was to reduce the and if possibly eradicate all forms of morbidities such as malaria, diarrhea, typhoid, asthma and other related ones caused by poor environmental conditions in the Obuasi Municipality.

The study disclosed that the Assembly had constructed and mechanized ten (10) boreholes to supply water to ten (10) communities to reduce the spate at which the local people in such communities were suffering from water-borne diseases. It was believed that the adequate provision of such facilities by the Assembly would go a long way to reduce water-borne diseases such as typhoid and diarrhea which killed fifteen (15) people in the Obuasi Municipality in the year 2014.

The study admonished that the contributions of the central government and other organisations in the provision of financial and human resources would help in the reduction in other diseases in the area such as malaria and asthma which emanated from poor environmental conditions.

5.2.3.4 Participation

The research revealed that the participation of the local people and other stakeholders of environment in the promotion of quality environmental sustainability and improved human health could not be over emphasized.

The study disclosed that the participation of the community members and other development partners in a number of environmental sustainability exercises and activities in the municipality would ensure that most parts of the Obuasi Municipality would be got rid of mosquitoes and other decomposed matters. The aim of this was to reduce the spread of malaria which had killed twelve (12) people out of seventy-nine people who died in the Obuasi Municipality in the year 2014. Again, it became clear that the full participation of all stakeholders of the municipality in environmental sustainability would limit the prevalence of diseases such as typhoid, diarrhea, and others caused by poor environmental conditions in the municipality.

5.2.3.5 Environmental sustainability and improved human health

The study reported that environmental sustainability and improved human health was a significant variable in the conceptual framework and penultimate aim of all strategies put in place by the Obuasi Municipal Assembly in ensuring that quality sustainable management of the environment could be achieved.

The study disclosed that in order for the OMA to ensure that decentralization could promote quality environmental sustainability and guarantee sustainable improved human health in the Obuasi municipality, the Assembly devoted GH¢182, 000 on organizing sanitation exercises in 2014 fiscal year to eradicate all insanitary conditions in the municipality under review to promote quality human health. It was also revealed that in that same year, and as part of its strategies to prop up quality human health through quality sustainable environment, the

Assembly spent a whopping amount of GH¢155, 000 on fumigating public places and disposal sites in the bid of the Assembly to deliver on its promise of bringing sustainable environmental health to the people in the Obuasi Municipality in order to fulfill its vision of aspiring to be a prosperous, harmonious and environmentally friendly society.

The study concluded on environmental sustainability and improved human health as the control variable of the conceptual framework since the study sought to find out how decentralization could be used as an instrument to promote quality sustainable environment that could encourage an improved human health. The study disclosed that this would go a long to experience a greater reduction in malaria, diarrhea, asthma, typhoid and other diseases in the area caused by poor environmental conditions.

5.2.4 Summary

This chapter focused on the analyses of responses from interviews with key informants and community members and used existing literature and theories to explain the various responses. The existing literature and theories were used to either support or reject or disagree with the findings from the responses of the interviewees and the personal findings of the researcher. The chapter brought out the important themes which satisfied the study objectives and used precise statements from respondents to explain them. The next chapter discusses the summary, findings, conclusions and recommendations of the research study and the research gap.

CHAPTER SIX

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter summarises the findings of the study based on the data gathered and gives conclusions as well as recommendations on the study. The chapter ends with the discussions of the limitations of the study and suggests prospective areas for future studies.

6.2 Summary

This study sought to evaluate the link between decentralisation and environmental sustainability in the Obuasi Municipality in the Ashanti Region of Ghana. Specifically, the study aimed at identifying causes of poor environmental sustainability leading to low quality of improved human health in the Obuasi Municipality, effects of decentralisation on environmental sustainability leading to an improved human health in the Obuasi Municipality and strategies put in place by the Municipal Assembly to help ensure environmental sustainability leading to an improved human health in the Obuasi Municipality. The study adopted the qualitative approach. Interview guides were used to collect data from key informants in the municipality in order to get an in-depth understanding of the link between decentralisation and environmental sustainability in the Obuasi Municipality. A semi-structured interview guide was used to collect data from community members. Data were analysed thematically.

6.3 Findings

The findings of the study were primarily based on the eight variables in the conceptual framework of the study and were subsumed under the three specific objectives of the study. The variables in the conceptual framework included: decentralization; local agenda-21 of

local authorities; information; resources; structures; human attitudes; participation and environmental sustainability and improved human health.

6.3.1 Findings on decentralization

On decentralization, the study made the following findings:

- The Assembly had failed to improve water governance and facilitate decentralization of decision-making on water and sanitation matters.
- The Municipal Assembly did not have the adequate capacity to enforce the environmental bye-laws and subsequently punish the people who broke such bye-laws;
- Most of the ‘green laws’ were passed by the central government and the Assembly only had the mandate of the central government to implement them.
- Most of the environmental laws were formulated by the central government without the inputs of the Municipal Assembly thereby making the implementation and the enforcement of such laws by the Assembly practically difficult.
- The Municipal Assembly’s decisions relating to the punishment of ‘green law breakers’ sometimes were greatly influenced by culprits’ political affiliations thereby subjecting environmental sustainability issues to the dictates of political leaders, especially, the Metropolitan, Municipal and District Chief Executives at the regional and the local levels.
- The Assembly’s decisions were sometimes quashed by the traditional rulers due to the maintenance of status quo.
- The interaction among the Municipal Assembly, civil society and the private sector was restricted.

- There were no mechanisms, processes and institutions through which the local people and groups within the municipality articulated their interests and exercised their legal rights and obligations.
- There was lack of political openness, participatory tolerance, administrative and efficiency which constituted fundamental principles of good governance.
- The decentralization system in the municipality did not fashion sufficient successful partnerships to ensure political, social and economic priorities based on extensive compromise in the municipality because the voices of the poorest and the most susceptible were hardly heard in the decision-making process.
- There was limited participation of community, organizations, stakeholders in the private sector, global support organizations and the local people and experts in decentralization in deciding on matters relating to sustainable environment and improved human health of the municipality.
- There were no sufficient integrating programmes initiated by the Municipal Assembly to address participation of the local people, promote advocacy groups, and include women and the poor in policy decisions, aid in poverty reduction and environmental initiatives at the municipal level to resourcefully tackle local needs.
- The Assembly failed to bring stakeholders together to define priorities for projects and programmes to deal with environmental sustainability challenges.
- Only few women and few under-privileged were empowered and supported by the assembly in alleviating poverty as against the masses in the municipality.

6.3.2 Findings on local agenda-21 of local authorities

On local agenda -21 of local authorities, the study came out with the following findings:

- There were no long-term plans by the Obuasi Municipal Assembly to ensure safe water supply and environmental sustainability issues for the local people.
- The Municipal Assembly did not have clear guidelines meant to conduct environmental impact assessment on a number of projects and programmes initiated by the Assembly to reduce environmental challenges posed by these initiatives.
- Most of the environmental management policies of the Municipal Assembly did not take into consideration the expert knowledge of environmentalists in the municipality.
- The Assembly did not have the financial strength to develop and perk up wastewater management and recycle since they involved huge capital outlay.
- The Municipal Assembly lacked the political will to ensure effective capacity, operating and maintaining sanitation and sewage systems since most of these programmes were seen as mere political gimmicks.
- The Assembly had failed to put in place strong and effective monitoring systems to guarantee that bye-laws on environmental sustainability in the municipality were strictly adhered to.
- The Local Assembly had failed to strengthen the institutions responsible for guaranteeing environmental sustainability at the Municipal Assembly level coupled with weak enforcement strategies.

- The Assembly had deliberately failed to advance public consciousness and public involvement in matters relating to environmental sustainability and improved human health.
- Due to the Assembly's public image, it had failed to expand local capacities to deal with environmental issues through training volunteers and advocacy groups.

6.3.3 Findings on information

On information, the research was able to come out with the following important findings:

- There was a sensitization programme introduced by the AngloGold Ashanti Limited and the Obuasi Municipal Assembly, which was called the Integrated Malaria Control Programme which focused on Indoor Residual Spraying in the Obuasi Municipality but this programme did not cover the entire municipality.
- The malaria control liaison section organized information, education and communication programme informing the community about the means of malaria transmission and what could be done to prevent the spread of malaria but the Assembly did not have the adequate resources to sustain this programme since that programme was intermittently organized.
- There were no accurate and complete information on the performance of the Local Assembly especially in the area of environmental sustainability.
- There was inadequate information on the budgeting and expenditure reporting and other inputs required for environmental sustainability.
- Insufficient information on the emergence of environment and economics in decision-making.

- Information on environmental sustainability was not often communicated to the members of the community.
- There was the delay in the dissemination of information relating to environmental sustainability and improved human health.
- There were no clear-cut policies that conserved the quality of agricultural land and protected forests and approved the long-term prospects for agricultural development.
- There was no free access to relevant information and alternative sources of technical expertise.
- There was poor flow of information between policy formulators and policy implementers of environmental sustainability issues thereby posing environmental sustainability challenges.
- Poor record keeping of information relating to land degradation, forest degradation, soil erosion and other related activities.
- Information about environmental sustainability was not often communicated to the members of the community.
- The public were not often informed about environmental policies which required prompt attention of the public.
- The flow of information about environmental policies was the top-down approach making those at the bottom who were closer to the problem and solution to environmental sustainability mere passive listeners.
- There was poor co-ordination between the security services on one side and other agencies on the other in ensuring environmental sustainability.

- The environmental policies were confronted with information asymmetry.
- The Assembly did not have adequate and sustainable programmes to monitor achievements towards the drinking water and sanitation target of the MDG7.
- The Assembly's information on trends in policy, institutional and finance issues related to sanitation and drinking water was not regularly communicated to the public.
- The Assembly's developed guidelines on quality of drinking water, safe use of wastewater in agriculture and management of safe recreational waters were not often reviewed to meet current demands and changes.
- The Assembly could not adequately manage networks of specialized issues, for example, small-community water supply management for the promotion and dissemination of information on water treatment and safe storage and for drinking water regulators in the municipality.
- The Assembly lacked the political will to assess needs and ensuring drinking water and sanitation and health facilities could get to the vulnerable groups during emergencies and natural disasters in the municipality.
- Finally, even though the assembly had been able to provide a number of boreholes and hand dug well to the local people, as a result of poor maintenance culture some of them had been damaged.
- Environmental Impact Assessment Notification Statements on large-scale projects in the municipality were not often published in the newspapers for public inputs.

6.3.4 Findings on resources

The research, in the area of resources availability made a number of findings and key among them included:

- There was the delay in release of funds by government to promote environmental sustainability campaigns.
- The contributions of NGOs, companies and other stakeholders in the municipality in terms of resources were not ample to deal completely with environmental sustainability challenges.
- The Water and Sanitation Unit was financially handicapped and under-resourced due to inadequate government grants and subventions to the Local Assembly.
- The Water and Sanitation Unit of the OMA lacked the adequate trained personnel to enforce the environmental sustainability bye-laws.
- The forestry commission could not regularly monitor the activities of illegal lumbers and other foresters due to insufficient logistics.
- There was limited collaboration between the Municipal Assembly and the local people.
- The environmental protection agency in the municipality was inadequately resourced to deal with environmental sustainability issues, especially; technologies that could help them track illegal lumbers and others who were responsible for numerous environmental challenges confronting the Obuasi Municipal Assembly.

- Decisions relating to environmental sustainability were not centred on the youth who were seen as the main architect of poor environmental sustainability in the municipality.
- There were no changes in the environmental sustainability enforcement policies for impacts of decisions to be felt.
- There was no community knowledge and support that called for proper public participation in environmental sustainability issues.
- There were no policies to decentralize the management of resources that could possibly reduce bureaucracy at the local level.
- The decentralized structures were not well equipped with modern technologies that help track the devastating activities of illegal miners, foresters and other activities which had the tendencies to cause poor environmental sustainability.
- The decentralized structures did not make provision in terms of which individuals within the municipality would be involved in the decision-making process of environmental sustainability policies.
- The Municipal Assembly did not have the adequate financial resources to acquire logistics to monitor the incessant activities of groups and individuals who flouted the environmental bye-laws in the municipality.
- There were inadequate financial and human resources to ensure constant monitoring of the various activities of the local people which had the propensity to endanger the environment.

- The Assembly had a few trained personnel working in the department responsible for environment health.
- The reduction and stoppage of government subventions to the forestry commission had reduced the monitoring rate of this department.
- As a result of insufficient financial resources, the assembly was not able to constantly organize capacity building programmes to help ensure environmental sustainability in the Obuasi Municipality.
- The Assembly did not have the timetable to organize follow-up programmes to ensure compliance and check deviations.

6.3.5 Findings on structures

On structures, the research identified the following as the main findings about the structures of the Obuasi Municipal Assembly:

- There were no “green courts” to prosecute the environmental law culprits.
- The Assembly lacked the proper reporting system to receive complaints from people in the municipality relating to environmental sustainability challenges.
- There were inadequate supervisory activities to guarantee compliance of environmental sustainability bye-laws.
- There were no structures put in place by the Obuasi Municipal Assembly to monitor forest guards and foresters as well as other small-scale miners in the municipality.
- There were no stringent measures and mechanisms put in place to check counterproductive behaviours of some traditional rulers and opinion leaders as well as

forest guards thereby exposing the forests and the mining sites to excessive degradation.

- Punitive measures put in place to sanction environmental law breakers were not so severe to deter them from future engagements in such acts.
- There was no accountability mechanism to ensure that the Municipal Assembly was responsible to the local people.
- The mechanisms to verify the compliance of environmental sustainability bye-laws in the municipality were very selective.
- The size of monetary penalties for non-compliance was very small.
- There was no time bound for non-compliance responses.

6.3.6 Findings on human attitudes

On human attitudes, the following findings were made:

- A number of people believed that environmental sustainability challenges should only be dealt with by the fragment of the community that was responsible for this menace.
- A sizeable number of the local people had negative attitudes towards re-afforestation which could deal with the challenge of forest degradation in the area.
- A greater number of the local people in the municipality often showed negative attitudes towards the national sanitation exercise and other activities geared towards the sustenance of the environment.
- Organizational rigidities made it complex to deal with urgent environmental problems.

- The Assembly had failed to acknowledge and implement modern trends of sustaining its environment.

6.3.7 Findings on participation

In the area of participation, the research came out with the following findings:

- There was limited involvement of the local people in the environmental sustainability programmes.
- The local people were only made to participate in the aspects of the environmental sustainability programmes which did not practically involve any monetary issues and this was seen as a disincentive to them.
- The planning and implementation of environmental sustainability issues were limited to few stakeholders, especially, to those in the sensitive positions in the Municipal Assembly.
- Most companies operating within the municipality which were perceived to have contributed in one way or the other to the poor environmental sustainability in the area had done very little in salvaging this menace.
- Most of the people saw environmental sustainability as the social responsibility of the municipal assembly and the central government and failed to actively participate in exercises earmarked to ensure environmental sustainability and improved human health in the area.
- Participatory policy formulation, budget formulation, expenditure tracking and policy evaluation and monitoring were inadequate.

- Civil society organizations and community members participation was largely restricted.
- There was no engagement of civil society in public audit.
- The community was not involved in the assessment of large-scale projects.
- The Municipal Assembly did not have an action programme that would empower the local people to be fully involved in all activities which could promote environmental sustainability and improved human health.
- There were no joint audits by the COA and CSOs in selecting projects for the municipality.

6.3.8 Findings on environmental sustainability and improved human health

On poor environmental sustainability in the Obuasi Municipality, the research found out that the municipality was faced with a number of environmental challenges and notable among them included:

- Air pollution; water pollution; land pollution; soil erosion; forest degradation/land degradation; bad human practices; and mining activities.
- Intensive and extensive activities of sand winning and quarrying companies in the municipality created and released a lot of dust into the atmosphere of the Obuasi Municipality causing air pollution.
- Activities of commercial vehicles shuttling within the municipality also created dust and released carbon dioxide into the air causing air pollution.
- Bad nature of the roads linking the towns within the municipality's roads were not tarred and subsequently created dust.

- Indiscriminate burning of refuse in the municipality released smoke and other hazardous substances into the atmosphere.
- The release of carbon dioxide from the exhaust pipes of heavy-duty commercial vehicles within the municipality caused air pollution.
- A number of diseases such as malaria, typhoid, diarrhoea which affected the people in the municipality were as a result of poor environmental challenges such as air pollution emerging from “bad air”.
- Most of the illegal miners used the sources of drinking water for the people in the municipality in washing the gold mineral deposits thereby polluting the water sources.
- Some of the people in the municipality always dumped or threw garbage into the streams polluting the sources of drinking water for the people thereby endangering the lives of others who regularly used such streams as their sources of potable water.
- The mining companies and some of the small-scale miners used some poisonous chemicals when dredging the minerals and these poisonous chemicals eventually found their way into the streams in the municipality due to poor drainage system in the municipality.
- The streams were closer to the various points at which the mining activities were being undertaken making them susceptible to water pollution.
- The water bodies were not well protected by the local people.

On land pollution, the research identified that land pollution in the Obuasi Municipality was caused by:

- Indiscriminate felling of trees by miners to find mineral sites.

- Inadequate commitment on the part of law-enforcement agencies to give out severe punishments to individuals who broke the environmental laws.

On causes of forest degradation, the study made the following findings as the main causes of forest degradation in the Obuasi Municipality:

- Clearing the forests for agricultural purposes caused land degradation.
- Clearing the forests in search of game and other negative practices of some hunters in the municipality.
- Clearing the forests for human settlements.
- Felling trees for lumbering purposes,
- Burning the forests as a result of careless actions of ‘wee’ smokers who found the forests as their haven as well as activities of palm-wine tappers and counterproductive behaviours of forests guards and foresters.
- Continual activities of small-scale miners were identified as some of the causes of forests degradation in the Obuasi Municipality.

In line with the causes of soil erosion, the research made the following findings:

- The use of heavy-duty equipment on the land for the extraction of the gold mineral ore contributed to soil erosion.
- Acceptance of kickbacks from some small-scale miners by some people in authorities in the municipality encouraged illegal miners to erode the soil with impunity.
- The poverty levels had greatly contributed to the escalating levels of soil erosion in the Obuasi Municipality since social justice had not been rooted in the area.

On human activities which caused poor environmental sustainability, the research identified:

- Bad farming practices, palm-wine tapping, bush fallowing; acquisition of land for residential purposes and increase in the size of the population of the municipality due to its closeness to the regional capital had largely contributed to poor environmental sustainability and improved human health.
- The large and small-scale mining activities were noticed as the primary causes of poor environmental sustainability in the Obuasi Municipality.
- The escalating mining activities were largely responsible for land pollution, land and forest degradation, air pollution, and water pollution.
- Sanctions meted out to individuals who breached environmental sustainability laws were not deterring enough to maintain proper environmental sustainability in the municipality.

6.4 Conclusions

Per the findings of the study, it can be inferred that the link between decentralisation and environmental sustainability in the Obuasi Municipality remains mixed. Whilst using decentralisation to sustain the environment has seen some remarkable improvements even though there are still some steeplechases to overcome; availability of resources and their effectiveness in ensuring environmental sustainability have not been enriched suggestively subsequent to decentralisation. The expansions in promoting efficiency are also not bursting under decentralisation since there is no equity consideration in the transfer of funds from the central government coupled with the fact that programmes for the poor areas of the Municipality are not noticeable to decentralisation alone and that such programmes are faced with sustainability challenges. Also, the level of commitment of the Assembly in

implementing its development policies under the decentralisation system in the Obuasi Municipality was a big challenge as a result of the high level of bureaucratic principles of the central government in the area of funds accessibility; and this institutionalized phenomenon has undesirably affected the Municipal Assembly's ability to receive its share of the common fund on time to be able to undertake development projects in the municipality.

6.5 Lessons for policy implementation/recommendations

The findings of this study embrace many suggestions for policy-makers on the link between decentralisation and environmental sustainability in the Obuasi Municipality.

On causes of poor environmental sustainability in the Obuasi Municipality, the study points out low participation of community actors on environmental sustainability and improved human health in the decision-making process in dealing with the situation. Moving forward, the study reveals that all stakeholders should be reinvigorated to participate actively and effectively in the planning, designing, implementation and evaluation of decentralized programmes with fortified mechanisms for municipal engagement. In this regard, open communication and availability of reliable and confirmed information on environmental sustainability should be strengthened among stakeholders. Social accountability creativities aimed at making the Municipal Assembly responsible to the local people rooted in participatory systems should not be regarded as civil humanity initiatives since these will be seen by governments as a depression on their authority neither should it be regarded solely as government initiatives as this will endanger participation by community actors who will be doubtful of being controlled. There is therefore the need for the maintenance of equilibrium between government and the leadership of civil society. International actors can play a key role in this alliance by encouraging and prodding governments to relinquish control of certain

initiatives to civil society which is the hallmark of the concept of decentralisation. However, for all this to be representative, there is the need for training of government thespians in environmental sustainability service delivery regarding their relations with civil society as well as civil society actors with government so that there can be effective linkages arising from participatory systems for accountability and improved environmental sustainability service delivery.

In the area of using decentralisation to sustain the environment, which links this study to the effects of decentralisation on environmental sustainability, the recent development in the country shows that there are diminishing trends in central government resources with a decrease in donor inflows. There is therefore, the need for the Municipal Assembly to deepen and toughen internal sources of funding for local authorities since this has the penchant to increase access to financial and economic resources owing to the fact that local authorities have free disposal over internally controlled sources of funds. The Municipal Assembly should also partner with Non-Governmental Organisations, Community-Based Organisations and corporate bodies much more to generate more inducements for environmental sustainability. Also, the problem with resource availability is such that there is the need for collaborative initiatives with the education, environment, water resources, roads and highways, local government and rural development, land and natural resources, the health, the chieftaincy sectors and other agencies such as the Ghana Forestry Commission(GFC), Environmental Protection Agency(EPA), the Wildlife Department(WLD), the Ghana Police Service(GPS), the Ghana Armed Forces(GAF) and other well-meaning groups to promote quality environmental sustainability. Again, there is the need to strengthen the capacity of municipal level actors with regards to the objectives of the decentralisation process. This calls for the institution of educational programmes periodically and tailored towards engendering workforce commitment with regards to the implementation of the objectives of

decentralization. Besides, there is the need for local environmental health managers to conceptualize decentralization as a way of managing corporate bodies and hence knowledge and experience are crucial in this enterprise. Therefore, their personal understanding of decentralisation reforms coupled with their leadership skills are critical to the realization of improved environmental sustainability.

Regarding availability of resources and their effectiveness, the transfer of resources which was linked to strategies put in place by the Obuasi Municipal Assembly in ensuring environmental sustainability, policy-makers should utilize equity mechanisms in the allocation of resources to districts and municipalities such that the districts with pressing environmental sustainability challenges receive resources commensurate with fissures in environmental sustainability in such districts. The study further suggests that effective and adequate monitoring and supervisory mechanisms be put in place by the Municipal Assemblies to ensure that both financial and economic resources provided by the central government are used for their intended purposes so that the various planned programmes of the Assemblies can be effectively and efficiently executed to the latter. With regards to reducing inequities in access and utilization of environmental sustainability provision, since the vision statement of the Obuasi Municipal Assembly is on reducing inequities in environmental sustainability in the areas of access and utilization, there is the need to build on this by practically ensuring equity expectations. In this regard, environmental health providers in the municipality could be made to submit equity plans that detail how equity will be ensured in environmental sustainability delivery. Also, zones and facilities which make the biggest effect on reducing environmental sustainability disparities must be strengthened. This calls for strengthening the various units, committees and departments in-charge of environmental sustainability with the necessary logistics and well-resourced personnel to carry out responsibilities at the community level where the problem and the solution are

usually found. Finally, environmental sustainability educational measures as well as preventive mechanisms should focus much more on areas of the municipality with the greatest environmental sustainability needs and since environmental sustainability systems are under constant changes and reforms, there is the need for the establishment of equity mechanisms in critical directions for environmental sustainability reforms.

On promoting efficiency, the study identifies decentralisation as “the political system of putting the people first” which affirms the saying “all politics is local”. The study suggests that solving the problems of access to education, healthcare, water, sanitation, environmental sustainability, livelihoods and social justice can only be worked out at the local level, directly with the people involved. So, when we say “we” and “government” we need to think of local people and their local government. The study proposes that putting people first involves the most fundamental set of changes in local governments. These changes must be an integral part of the government’s comprehensive programme to improve the way political system serves our people. The reforms should include: making our political funding system more transparent; increasing the participation of women; establishing constitutional conventions; and introducing legislation to address conflicts of interests, lobbying procedures and to strengthen our planning system. Furthermore, there should be reforms which will put a strong emphasis on accountability as the bedrock of properly functioning system of local democracy providing for better engagement with citizens. Renewing those structures and introducing more effective democratic arrangements, which will increase efficiency and provide better value for money for the people it serves. This will involve radical measures such as a substantial reduction in the number of members of the Assemblies and the number of local and regional authorities. Again, the local governments must operate to the very high standards. Putting people first introduces new degrees of accountability, transparency and external scrutiny as essential pillars of local democracy. Key performance indicators include:

customer service and comparative performance of local authorities and strengthening of the role of local government audit committees and harnessing the commitment of elected members and officials of the Assembly. There should be a building of stronger, more cohesive local government, giving it a greater capacity not only to address the challenges we face, but also to promote local community, social and economic development, and collectively to maximize the strengths of our country as a place in which to live, to invest and to work. There should be the Action Programme which will empower local governments in an entire new way, particularly, in relation to economic development, and most importantly, sustaining and creating jobs. This programme affirms the need for the system to embrace change, share the burden, modernize, adapt to new financial circumstances and deliver even better services with scarce resources.

In enhancing commitment, the study proposes that the Assemblies should guarantee meaningful participation of all stakeholders in all decisions of the Assemblies at all levels of the Local Government. In ensuring and guaranteeing meaningful participation, the Assemblies must ensure that both elected and appointed members of the Assemblies are given equal treatment and are provided with the requisite and adequate economic and financial resources to enable them execute their local developmental programmes to meet the needs of the local people. However, the study cautioned the central government and its agencies and institutions to not unnecessarily interfere with the affairs of the local authorities in the discharge of their political and constitutional mandates but must promptly ensure that adequate resources are made available to these Assemblies to enable them deliver on their promise. In addition to the above, the study vehemently proposes that the local governments in Ghana in their quest to encourage a high level of commitment towards the provision of quality services to their local people by monitoring and evaluating progress of the various development programmes they have initiated for their local people. The study remarks that

effective monitoring, evaluative and control measures and mechanisms must be put in place to ensure that individuals, institutions, agencies, companies and other groups which have legal contracts with the Assemblies must discharge their duties according to the standard operating procedures of the Assemblies and also ensure that the needs of the Assemblies take precedence over the personal interests of such contractors. The study recognizes that effective control systems should be put in place to enable other parties perform according to the specifications and standards designed by the Assemblies. The Assemblies should employ the concurrent type of control to enable them monitor the progress of their projects intermittently to identify deviations and where necessary, corrective measures taken to address such deviations. Last but not least, providing remedy and redress where there are deliberate infractions caused by parties, the spirit of commitment ensures that individuals, institutions, companies and agencies must be made to sign the necessary binding and legal documents which will compel them to perform their part of the contracts or otherwise, pay the right compensation to the Assemblies for a possible repudiation of the legal contracts. This aspect of the commitment makes the contract take the form of mutual agreement.

6.6 Suggestions for future research

Decentralisation of environmental sustainability was meant to achieve several objectives including quality of environmental sustainability care and efficiency in environmental health service delivery. This study focused basically on causes of poor environmental sustainability, effects of decentralisation on environmental sustainability and strategies put in place by the Obuasi Municipal Assembly in ensuring environmental sustainability and not on quality of care and efficiency. Future studies could focus on regional efforts to ensure environmental sustainability in the entire Ashanti Region of Ghana and the efficient utilisation of resources following decentralisation.

Besides, this research study was based on only one Municipality in the Ashanti Region of Ghana and the impacts of decentralisation on other districts and municipalities in the Ashanti Region present opportunities for future studies and it is therefore authoritative to conduct a research into the link between decentralisation and environmental sustainability in other Municipalities in the Ashanti Region in particular and Ghana at large.



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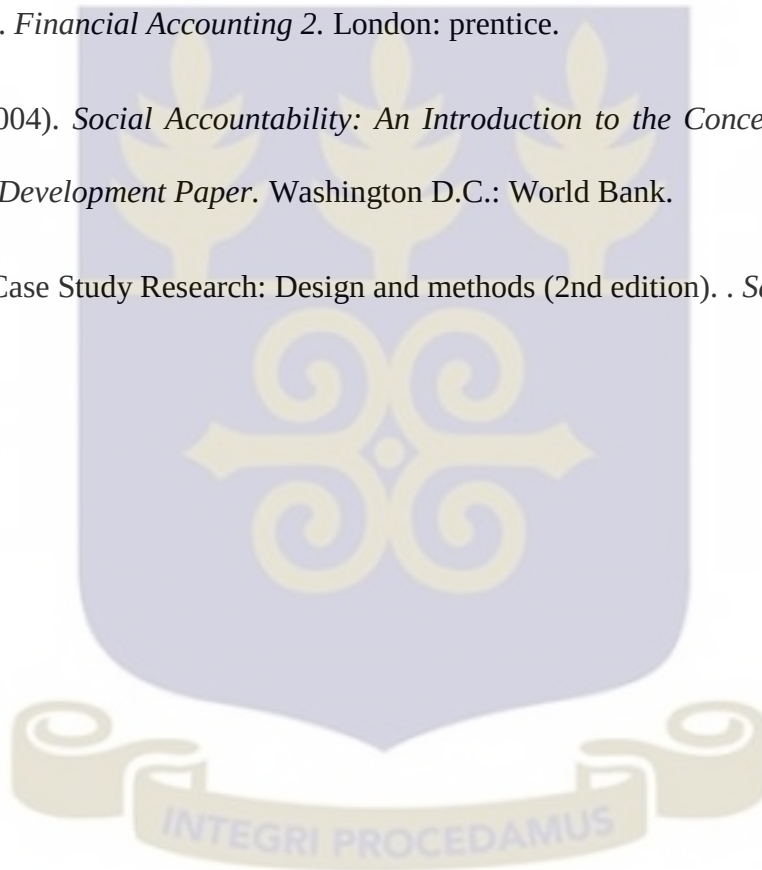
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APPENDICES

APPENDIX A

INTERVIEW GUIDE FOR NOVEMBER 2014

DECENTRALISATION AND ENVIRONMENTAL SUSTAINABILITY IN GHANA:

A CASE OF THE OBUASI MUNICIPAL ASSEMBLY, ASHANTI REGION.

BY OWUSU-ADUOMI CHARLES BOTCHWEY

UNIVERSITY OF GHANA-LEGON

MPHIL IN HEALTH SERVICES MANAGEMENT

KEY INFORMANTS' INTERVIEWS

This interview guide was to collect primary data from Municipal Assembly Members, Heads of Departments of the Municipal Assembly, Members of the Zonal Council, Unit Committee Members and Members of the Community. This interview guide was on Decentralisation and Environmental Sustainability in Ghana. The case of the Obuasi Municipal Assembly as part of a Master of Philosophy Programme in Health Services Management, University of Ghana Business School.

You are invited to participate in the study by responding to the interview questions. Pleased, be assured that the data you will give shall be handled in a confidential and professional manner.

Municipal Environmental Officer

Causes of Poor Environmental Sustainability in the Municipality

1. What are the specific causes of poor environmental sustainability in the Obuasi Municipality?
2. What are the causes of air pollution in the Obuasi Municipality?
3. What are the causes of land pollution in the Obuasi Municipality?
4. What are the causes of water pollution in the Obuasi Municipality?
5. How have mining activities contributed negatively to poor environmental sustainability in the Obuasi Municipality?
6. What specific human activities cause poor environmental sustainability in the Obuasi Municipality?
7. What are the causes of soil erosion in the Obuasi Municipality?

Effects of Decentralisation on Environmental Sustainability in the Obuasi Municipality

1. How can decentralisation be used to sustain the environment of the Obuasi Municipality?
2. What factors in the Municipality promote efficient decentralisation in sustaining the environment?
3. What resources are available to the Municipality in ensuring that decentralisation in sustaining the environment is effective?

Strategies Put in Place by the Municipal Assembly in Ensuring Environmental Sustainability in the Obuasi Municipality

1. What specific policies has the Municipal Assembly formulated to help sustain the environment?
2. What policies has the Municipal Environmental Directorate formulated to sustain the environment of the Obuasi Municipality?
3. What resources does the Municipal Assembly need to help sustain the environment?

Presiding Member

Causes of Poor Environmental Sustainability in the Municipality

1. What are the causes of poor environmental sustainability in the Obuasi Municipality?
2. What are the main causes of forest degradation in the Municipality?
3. What are the causes of soil erosion in the Municipality?
4. Are there other causes of poor environmental sustainability in the Municipality?
5. How have mining activities contributed negatively toward poor environmental sustainability in the Municipality?

Effects of Decentralisation on Environmental Sustainability in the Obuasi Municipality

1. How can decentralization be used to sustain the environment of the Obuasi Municipality?
2. In your candid opinion, do you think the Municipality is fully committed to ensuring environmental sustainability?

3. What factors in the Municipality promote efficient decentralisation that ensures sustainable environment?
4. What resources are available to the Municipality in ensuring that decentralization in sustaining the environment is effective?

Strategies put in place by the Municipal Assembly to sustain the environment

1. What specific policies has the municipal assembly formulated to help sustain the environment?
2. How has the Municipal Environmental Directorate contributed toward the sustenance of the environment?
3. Are there committees established by the Municipal Assembly to sustain the environment?
4. Are there other agencies or institutions available to ensure sustainable environment in the Municipality?

Head of Water and Sanitation

Causes of Poor Environmental Sustainability in the Obuasi Municipality

1. What are the causes of air pollution in the Municipality?
2. What are the causes of land pollution in the Municipality?
3. What are the causes of water pollution in the Municipality?
4. What are the causes of forest degradation in the Municipality?
5. What specific human activities cause poor environmental sustainability in the Municipality?

Effects of Decentralisation on Environmental Sustainability in the Obuasi Municipality

1. How can decentralization be used to sustain the environment of the Obuasi Municipality?
2. What resources are available to the Municipality in ensuring that decentralization in sustaining the environment is effective?
3. In your candid opinion, do you think the Municipal Assembly is fully committed to ensuring environmental sustainability?

Strategies Put in Place by the Municipal Assembly in Ensuring Environmental Sustainability

1. What specific policies has the Municipal assembly formulated to help sustain the environment?
2. What resources does the Municipal Assembly need to help sustain the environment?
3. What routine exercises or activities does the Municipal Assembly undertake to ensure environmental sustainability?
4. What role does the Water and Sanitation Committee of the Municipal Assembly play in the sustenance of the environment?

Municipal Head of Zoomlion Ghana

Causes of Poor Environmental Sustainability in the Obuasi Municipality

1. What are the causes of poor environmental sustainability in the Municipality?

2. What are the causes of air pollution in the Municipality?
3. What are the causes of land pollution in the Municipality?
4. What specific human activities cause poor environmental sustainability in the Municipality?
5. Are there other causes of poor environmental sustainability which are not human related?

Effects of Decentralization on Environmental Sustainability in the Obuasi Municipality

1. How can decentralisation be used to sustain the environment?
2. In your candid opinion, do you think the concept of decentralisation is the cure-all to sustainable environment?

Strategies Put in Place by the Municipal Assembly in Ensuring Environmental Sustainability

1. How does the central government support the Municipality in sustaining the environment?
2. What role does the community play in sustaining the environment?

Municipal Chief Executive

Causes of Poor Environmental Sustainability in the Obuasi Municipality

1. What are the causes of poor environmental sustainability in the Municipality?
2. What are the causes of forest degradation in the Municipality?

3. How have mining activities contributed negatively toward poor environmental sustainability?

Effects of Decentralisation on Environmental Sustainability in the Obuasi Municipality

1. How can decentralisation be used to sustain the environment?
2. What resources are available to the Municipality to ensure sustainable environment?
3. Do you think the Municipality is fully committed to ensuring sustainable environment?
4. What factors in the Municipality promote efficient decentralization that ensures sustainable environment?

Strategies Put in Place by the Obuasi Municipality to ensure Sustainable Environment

1. What specific policies has the Municipal Assembly formulated to help sustain the environment?
2. What routine activities does the Assembly undertake to ensure a sustainable environment?
3. What resources does the Assembly have to ensure sustainable environment?
4. How has the Assembly used the committee or board system effectively to sustain the environment?

Municipal Coordinating Director

Causes of Poor Environmental Sustainability in the Obuasi Municipality

1. What are the causes of air pollution in the Obuasi Municipality?
2. What are the causes of air pollution in the Obuasi Municipality?

3. What are the main causes of forest degradation?

Effects of Decentralisation on Environmental Sustainability in the Obuasi Municipality

1. How can decentralization be used to sustain the environment of the Obuasi Municipality?
2. What resources are available to the Municipality in ensuring that decentralization in sustaining the environment is effective?
3. What factors promote efficient decentralization that ensures environmental sustainability?

Strategies put in place by the Municipal Assembly in ensuring Environmental Sustainability

1. What specific policies has the Municipal Assembly formulated to help sustain the environment?
2. What specific resources does the Municipal Assembly need to help sustain the environment?
3. Do you think the municipality has the capacity to enforce its bye-laws?
4. What development partners are available to help sustain the environment?

Strategies put in place by the Municipal Assembly in ensuring Environmental Sustainability

1. What routine activities does the Assembly undertake to ensure a sustainable environment?

2. How has the Assembly used the committee or board system effectively to sustain the environment?

Assembly Members

Causes of poor environmental sustainability in the Obuasi Municipality

1. What are the causes of poor environmental sustainability in the Obuasi Municipality?
2. What are the causes of air pollution in the Obuasi Municipality?
3. What are the causes of land pollution in the Obuasi Municipality?
4. What are the causes of water pollution in the Obuasi Municipality?
5. What are the causes of forest degradation in the Municipality?

Effects of decentralization on environmental sustainability in the Obuasi Municipality

1. How can decentralisation be used to sustain the environment?
2. What factors in the municipality promote efficient decentralisation in sustaining the environment?

Strategies put in place by the Municipal Assembly in ensuring Environmental Sustainability

1. What routine activities does the Assembly undertake to ensure a sustainable environment?
2. How has the Assembly used the committee or board system effectively to sustain the environment?

Members of the Community

Causes of poor environmental sustainability in the Obuasi Municipality

1. What are the causes of poor environmental sustainability in the Obuasi Municipality?
2. What are the causes of air pollution in the Obuasi Municipality?
3. What are the causes of land pollution in the Obuasi Municipality?
4. What are the causes of water pollution in the Obuasi Municipality?

Effects of decentralization on environmental sustainability in the Obuasi Municipality

1. How can decentralisation be used to sustain the environment?
2. What factors in the municipality promote efficient decentralisation in sustaining the environment?

Strategies put in place by the Municipal Assembly in ensuring Environmental Sustainability

1. What routine activities does the Assembly undertake to ensure a sustainable environment?
2. How has the Assembly used the committee or board system effectively to sustain the environment?

APPENDIX B

INTERVIEW GUIDE FOR ADDITIONAL INFORMATION

DECENTRALISATION AND ENVIRONMENTAL SUSTAINABILITY IN GHANA.

A CASE OF THE OBUASI MUNICIPAL ASSEMBLY, ASHANTI REGION

This interview guide was to collect additional data from the Municipal Assembly, Members of the Zonal Council, Unit Committee Members and Members of the Community. This interview guide was on Decentralisation and Environmental Sustainability in Ghana. The case of the Obuasi Municipal Assembly as part of a Master of Philosophy Programme in Health Services Management, University of Ghana Business School.

You are invited to participate in the study by responding to the interview questions. Pleased, be assured that the information you will give shall be handled in a confidential and professional manner.

Municipal Environmental Officer

1. What laws or bye-laws guide the activities of the Municipal Environmental Directorate?
2. What sanctions are normally meted out to individuals who litter the environment in the Municipality?
3. How is the mandate of the Environmental Protection Agency in the Municipality exercised?
4. In what ways does the Municipal Assembly support the activities of the Environmental Protection Agency?

5. What specific policies does the Municipal Environmental Directorate formulate to protect the environment from illegal miners?

Presiding Member

1. What mandate does the Municipal Assembly have to enforce its bye-laws?
2. In what ways does the central government support the Municipal Assembly in sustaining the environment?
3. How does inefficient allocation of resources affect environmental sustainability in the Municipality?
4. How does the attitude of the Municipal Assembly affect environmental sustainability in the Municipality?
5. What is your general impression about environmental sustainability in the Municipality?

Head of Water and Sanitation

1. How does the water and sanitation unit of the Municipal Assembly monitor the activities of illegal miners in the Municipality?
2. Generally, how can water sources in the Municipality be protected?
3. How does the water and sanitation unit of the Municipal Assembly liaise with other agencies to ensure environmental sustainability?
4. How do the various communities in the Municipality help in the area of sanitation?

Municipal Head of Zoomlion Ghana

1. How does your outfit collaborate with the Municipal Assembly to ensure environmental sustainability?
2. How are your personnel motivated to perform their lawful duties to help sustain the environment of the Obuasi Municipality?
3. How regularly are the personnel provided with the needed logistics to perform their responsibilities?
4. How are the personnel of your outfit in the Municipality supervised?
5. How do you measure the performances of your personnel?

Municipal Chief Executive

1. How does the Municipal Assembly deal with citizens who break sanitation bye-laws in the Municipality?
2. How effective is the Municipal Assembly able to liaise with Zoomlion Ghana to ensure sustainable environment in the Municipality?
3. How does the Municipal Assembly monitor the activities of sanitation companies in the Municipality?
4. How often does the Municipal Assembly involve sanitation companies in taking decisions relating to environmental sustainability?
5. How often does the Municipal Assembly honour its financial obligations to sanitation companies?

Municipal Coordinating Director

1. What role does the Municipal Assembly play towards sustaining the environment?
2. Is the Assembly able to provide the needed resources to sustain the environment?
3. What support do the donor partners normally give to the Assembly to help sustain the environment?
4. How do you measure the performances of the various institutions that help in sustaining the environment?
5. How is the Assembly able to partner with the development

Assembly Members

1. What laws or bye-laws guide the activities of the Municipal Environmental Directorate?
2. What sanctions are normally meted out to individuals who litter the environment in the Municipality?
3. How is the mandate of the Environmental Protection Agency in the Municipality exercised?
4. In what ways does the Municipal Assembly support the activities of the Environmental Protection Agency?
5. What specific policies does the Municipal Environmental Directorate formulate to protect the environment from illegal miners?

Members of the Community

1. How does the water and sanitation unit of the Municipal Assembly monitor the activities of illegal miners in the Municipality?
2. Generally, how can water sources in the Municipality be protected?
3. How does the water and sanitation unit of the Municipal Assembly liaise with other agencies to ensure environmental sustainability?
4. How do the various communities in the Municipality help in the area of sanitation?



APPENDIX C

The appendix C showed the interview guide which was used for the data collection on the topic “Decentralisation and Environmental Sustainability in Ghana”, a case of the Obuasi Municipal Assembly, Ashanti Region.

University of Ghana Business School

Department of Public Administration and Health Services Management

(Interview Guide for Data Collection)

My name is Owusu-Aduomi Charles Botchwey and would like to thank you for taking time to grant me audience. I would like to talk to you about “decentralization and environmental sustainability in Ghana” using the Obuasi municipality as a case study. This study seeks specifically to identify the main causes of poor environmental sustainability in the Obuasi Municipality, the effects of decentralization on environmental sustainability in the Obuasi municipality and the strategies put in place by the Obuasi municipal Assembly as far as environmental sustainability is concerned in order to capture programmes that can be used to help improve environmental sustainability in the municipality.

The interview would take less than an hour. I would be recording the sessions as I would not like to miss out of your rich comments which are very important for this study. Although, I would take some notes during the discussions since I might not be fast enough to write everything you would say and that is why I would use the recorder.

Please, be assured that all responses will strictly be kept confidential since the responses will only be shared with the research supervisor and I will ensure that any responses I record in my report do not identify you as the respondent. Please, remember you do not have to talk

about anything you do not want to and you can end the interview at any time you wish to do so.

Could you please indicate by signing below if you are willing to do participate in the study?

Interviewee.....

Witness.....Date.....

