

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI, GHANA**

**ADDRESSING ENVIRONMENTAL SUSTAINABILITY IN GHANA THROUGH
PUBLIC PROCUREMENT**

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ECONOMICS)**

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OF**

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DECLARATION

I hereby declare that this submission is my own work towards the MSc Procurement Management and that, to the best of my knowledge, it contains no material previously published by another person, nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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ABSTRACT

Sustainability concepts encompass all functions and examine how societies interact and live. The means of trying to sustain life of humankind is the ability to work, live and play in ways that do not hinder the inherent nature is described as sustainability. Realizing our vision to maximize economic growth and ability to deal with the deficit, protecting our environment and stimulating the wellbeing makes sustainable development decision necessary now for future generations not to negatively impact the environment. The aim of the study is to address environmental sustainability in Ghana through public procurement and the following are the specific objectives to achieve the aim; to identify the various procurement procedures, to identify the benefits of incorporating environmental sustainability in public procurement in Ghana and to identify the specific measures adopted by procurement entities to achieve environmental sustainability. Questionnaires were used as tool for data collection. The study population includes management professionals involved in procurement in the Kumasi Metropolitan Assembly, Ejisu Municipal Assembly and Asokore Mampong Municipal Assembly such as Procurement Officers, Engineers, Planning Officers, Finance Officers, Store Managers and Management. Relative importance index (RII) was used in analysing the data collected. The study identified the following as the significant benefits of incorporating environmental sustainability in public procurement; promotion of efficient use of public resources, increased competition, and reduced environmental impact. The study revealed the measures to achieve environmental sustainability as: capacity building, government legislation, and involvement of top management. The study recommended that management should ensure that capacity building exercises such as training of Procurement staff on environmental sustainability are implemented.

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ABBREVIATIONS

BS	BRITISH STANDARD
CIPS	CHARTERED INSTITUTE OF PURCHASING AND SUPPLY
GDP	.....	GROSS DOMESTIC PRODUCT
ICLEI	.....	INTERNATIONAL COUNCIL FOR LOCAL ENVIRONMENTAL INITIATIVES
IBM	.....	INTERNATIONAL BUSINESS MACHINE
ISO	.....	INTERNATIONAL STANDARD ORGANISATION
NGO	.....	NON GOVERNMENTAL ORGANISATION
PPA	.....	PUBLIC PROCUREMENT AUTHORITY
PPE	.....	PUBLIC PROCUREMENT ENTITY
RII	.....	RELATIVE IMPORTANCE INDEXES
REQ	.....	REQUEST FOR QUOTATIONS
SPP	.....	SUSTAINABLE PUBLIC PROCUREMENT
SPSS	.....	STATISTICAL PACKAGE S FOR SOCIAL SCIENCES
UNICA	INSTITUTIONAL NETWORK OF THE UNIVERSITIES FROM CAPITALS OF EUROPE

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DEDICATION

This research work is dedicated to the memory of my father Mr. Alfred Asiedu Berchie and to my beloved wife, Mrs. Gladys Asante Asiedu and our lovely children; Adwoa Berchie Asiedu, Yaa Amoanimaa Asiedu and Kwaku Amankwaa Asiedu.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Sustainability concept is a multi-discipline that explains how society lives, work and interact within the environment. The main purpose of sustainability is to identify measures for humans to live, work and interact in the environment without hindering nature's ability to sustain life. According to Berry (2011), sustainability examines social, economic and environmental needs by taking responsibility of the way of life at the global level, regional level and the local level. Conway (2018) on the other hand explain sustainable development to be making decisions which are necessary to stimulate economic growth whiles minimizing deficit, maximizing wellbeing and protecting the environment without minimizing the ability of future generations to do same. Brundtland Commission in its report 'Our Common Future' captured the concept of sustainability to mean development that meets the needs and aspiration of the current generation without compromising on the ability of future generation to meet their own needs.

Gandu et al (2009) noted that consuming raw material without replacing them is a threat to human survival on earth. Government at both the regional and local levels have therefore recognised the importance of incorporating sustainability into plans and policies. Mebratu (1998) opine that government and organisations are required to consider the economic, social and environmental aspect of sustainable development without allowing one to dominate the other. Gelderman et al., (2017) continue that there has been growing recognition for government agencies and organisations to address the issue of sustainability in their activities. It is obvious to consider sustainability in public

procurement considering the size and its contribution to Gross Domestic Product (GDP) (Gelderman et al., 2017). Edquist et al. (2015) revealed that the contribution of public procurement to GDP is roughly estimated to be 15-20 per cent. In explaining public procurement, Snider et al., (2018) defined public procurement to include means or ways by which public organisations and agencies acquire goods, works and services from outside source.

Procurement in the public sector forms the highest percentage of government spending and therefore there should be efficient and effective management and appraisal to achieve value for money (Bower, 2003). Given the size and importance of government purchases, procurement decisions are, in the best of cases, supposed to be aligned to contribute to targeted results of government policy through detailed rules and procedures (Prier et al., 2016). Gelderman et al. (2017) stated that local governments are not doing a lot to utilize the procurement function to promote sustainability. According to Roos (2009) if sustainable procurement is properly integrated in public procurement it can contribute in meeting environmental challenges in order to achieve binding international target. Thus, sustainable procurement is considered as a platform where economic, social and environmental factors can be linked, taken purchasing decisions into consideration, thereby making development sustainability more feasible and practical (Islam et al., 2016). Many developed countries in the world have benefited immensely from the use of sustainable procurement to achieve compliance in terms of social and labour law. Sustainable procurement has also improved living conditions, social justice, has reduced cost for the society as a whole and finally promotes sustainable production and consumption just to mention but a few. However, despite these benefits a lot of developing

countries including Ghana lag behind as a result of lack of clear policy guideline in place for its implementation. Recognizing, the significant role that public procurement plays in support of sustainable development, this research aims at addressing environmental sustainability through public procurement.

1.2 PROBLEM STATEMENT

The concept of sustainable development has been studied by many in both developed and developing countries due to increasing impacts of global warming (Abidin, 2010; Akadiri et al., 2012). Berry (2011) stated that the lack of awareness, behaviour change and understanding of sustainable development concept has affected its implementation over the years by governments, organisations, leaders and individuals at all level. These developments have threatened the consumption of world resources with little thought of ability to replace them thereby putting the lives of future generations into jeopardy. Bower (2003) highlighted that the procurement in the public sector forms the highest percentage of government spending and therefore there should be efficient and effective management and appraisal to achieve value for money.

Public Procurement which takes a huge chunk of state resources in its quest to address environmental aspect of sustainability and its related matters have not been able to achieve the desired results. Currently, lack of comprehensive sustainable development policy documents which provides essential guide on how organisations and practitioners operationalize the concept of sustainable public procurement in Ghana shows little evidence of implementation. It is therefore necessary to conduct a study into addressing

environmental sustainability through public procurement in Ghana. This study therefore seeks to bridge this gap.

1.3 RESEARCH QUESTIONS

The following are the research questions that will be used to facilitate the study;

1. What are the various procurement procedures?
2. What are the benefits of incorporating environmental sustainability in public procurement in Ghana?
3. What specific measures can be adopted by procurement entities in achieving environmental sustainability?

1.4 AIM AND OBJECTIVES

1.4.1 Research Aim

The aim of the research is to address environmental sustainability in Ghana through public procurement.

1.4.2 Research Objectives

The following are the objective the research seeks to achieve;

1. To identify the various procurement procedures;
2. To determine the benefits of incorporating environmental sustainability in public procurement in Ghana and;

3. To assess specific measures adopted by the procurement entities in achieving environmental sustainability.

1.5 SCOPE OF THE STUDY

The research will focus on three (3) public institutions; namely Kumasi Metropolitan Assembly, Ejisu Municipal Assembly and Asokore Mampong Municipal Assembly in the Ashanti Region of Ghana. This is because these public institutions usually undertake large volumes of public procurement activities. Furthermore, these public institutions are chosen in terms of the geographical scope of this study because of their proximity to the researcher and this will make the retrieval of questionnaire easy. The data set will be obtained from a sample selection of procurement professionals working within the Kumasi Metropolitan Assembly, Ejisu Municipal Assembly and Asokore Mampong Municipal Assembly in the Ashanti Region of Ghana.

1.6 RESEARCH METHODOLOGY

The methodology will utilize a two-stage approach; desk study and field research. Consequently, the research will adopt a quantitative method of enquiry. An imperative reason why this study would choose quantitative method is to assist in developing the scope as well as extend our understandings from the study (Sandelowski, 2000). A literature review would be steered to determine the theoretical paradigms underpinning the adoption of sustainable procurement within public institutions. The review will also obtain reliable and scientific information from related literature, books, unpublished thesis, publications and journals. The information that would gathered from the Literature review,

as well as the preliminary fact-finding phase will influence the development of the questionnaires that would be used for this study.

The second stage would be the field research, which would be geared towards the collection of data. Questionnaire will be developed and administered by the researcher himself. These questionnaires will be sent to professionals in the three selected assemblies. Purposive sampling will be used to determine the sample size, since purposive sampling have the ability to select some specific respondents from the target population (Kumar, 1999). Finally, the data collected will be analyzed using descriptive statistics and relative importance index rankings for the various phenomenon identified.

1.7 SIGNIFICANT OF THE STUDY

The research work will take an in-depth assessment and address environmental sustainability through public procurement and the result of the study will be of much importance to the procurement activities with the public sector of Ghana. The findings and recommendations of the research study will help procurement entities in addressing the problem of poor procurement within the public sector. Furthermore, the study will also enhance understanding of the procurement procedures and how it affects the environment in general. The study will also provide relevant and useful information in addressing environmental sustainability so as to achieve sustainable development and for future research on the subject matter. Finally, the research work will contribute to the body of knowledge in the field of procurement by giving detailed insight into the purpose, importance and effectiveness of public procurement in enhancing environmental sustainability.

1.8 REPORT ORGANIZATION

The outline of the thesis would be separated into five (5) sections, and would follow the following structure. Chapter 1, "Introduction" will show the research background and implication of public procurement on environmental sustainability. The aim of the research, research questions, objectives, as well as the scope would all be confined in this section. Chapter 2; will contain the literature review. The literature will provide an extensive coverage on earlier works. These aspects of literature that would be reviewed will attempt to tie them together. It will discuss fully the various procurement procedures, benefits of incorporating environmental sustainability in public procurement, and specific measures adopted by the procurement entities in achieving environmental sustainability. Chapter 3; will focus on the methodology which would position it within its suitable jurisdiction. The forth chapter would fully cover experiential analysis including discussions of result from the field which will help answer the research questions in other to achieve all the stated objectives of the study. The concluding chapter which is titled as Chapter 5 would present the conclusion, recommendations' and summary of the whole research endeavor by studying the core add-ups of the study to knowledge. Policy recommendations as well as restrictions of the research would also be delineated.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The literature review documents theoretical and empirical evidence on ensuring environmental sustainability through public procurement. Existing literature on the environmental impacts on public institution were identified to establish the need for the application of environmental sustainability. It then elaborates on the concept of sustainability taking into consideration the historical perspective, benefits and measures in the utilization of environmentally sustainable procurement amongst public entities. Furthermore, the theoretical framework for environmental sustainable procurement in public entities developed in different parts of the world was subsequently studied with empirical evidence of environmental sustainable procurement.

2.2 OVERVIEW OF PROCUREMENT

Carter and Kirby (2006) argue that forces that embody globalization such as demographic changes, pressure on the environment, resources scarcity, technological changes, government regulations and shift in consumer demand are currently reshaping industries, markets and products. The writers further indicated that institutions and organizations are now falling on their procurement function for aid in this trying time since procurement function alone forms about 50 to 60 per cent of the total expenditure of these institutions.

Procurement represents one of the highest expenses in organizations cost structure (Nath and Angeles, 2007). Furthermore, Kwakye, (2007) opines that procurement is where organization acquires goods and services from third parties. The work of government is

supported by public procurement which includes the provision of routine ranges of items such as stationary, temporary office to complex spending areas like supporting major change initiatives, construction and private finance inventiveness (Kwakye, 1997). Again, procurement involves areas where private and third sectors provide goods and services directly to citizens or consumers in areas such as education, health and welfare-to-work. Such services can also be provided by the public sector through procurement. A formal competitive process can be used to bid government projects against private sector firms. It is the responsibility of clients to determine what goods and services are needed for a particular project. The client also declares the time of delivery of the goods, in what standard and the type of purchasing and contracting procedure to be used for project.

2.3 PROCUREMENT PROCESSES

The procurement procedures include all the steps from the development of the need to the assessment and evaluation of the procured good, service and work. The procurement model developed by Weele (2005) is extensively accepted to describe the procurement process of goods, services and works. This model involves six phases for the procurement process which includes:

- Specification
- Selection
- Contracting
- Ordering
- Monitor
- after-care.

Heijboer (2003) highlighted that the front-end of the procurement model is extended including the preparation phase. The model put more emphasis on the most significant phases which includes; the preparation phase, the specification phase, the selecting phase and the contracting phase. The preparation phase is considered as the strategic phase in the procurement process (Heijboer, 2003). Harink, (1999) also indicated that the specification phase, the selection phase and the contracting phase are considered as the tactical phases. Harink (1999) further indicated ordering, monitoring and after-care as the operational phases of the procurement process. The extent to which the specifications of the final products are influenced declines in every step from the preparation phase onwards. Together with this declining effect also the influence on sustainability and innovation declines in every step from the preparation phase onwards.

2.3.1 Preparation Phase

Rolfstam (2009) highlighted that in the preparation phase the questions about what should be procured and how the goods, services or works will be procured are answered. Buyer supplier collaboration strongly impacts on what will be procured. Furthermore, a clear knowledge in the technical capabilities and the market set the basis for adopting a particular tendering procedure. Within the tendering procedures, the use of criteria plays an important role. The choice of a specific tendering procedure also directly influences which criteria can be used. The criteria to be applied have a significant influence on the steerability of the sustainability and innovativeness of the products to be procured (Rolfstam, 2009).

2.3.2 Specification Phase

In the specification phase the requirements for both the tenderer and the tender are drawn up. During the preparation phase what and how to procure is decided and this is the main intention of specification. The preparation phase is achieved by designing requirement for a product in such a way that all specifications are included for the final product to meet requirement. Telgan (2007) on the other hand indicated that specification is done by selecting the most appropriate tendering procedure. However during the specification stage the criteria for awarding contract should be decided.

2.4 PROCUREMENT PROCEDURES

In relation to public contracts, Public Procurement Entities (PPE) are supposed to apply the tendering procedures stated in the Public Procurement Act 2003 (Act 663) as Amended.

The procedures have been established in the law as follows:

- Open Procedure
- Restricted Procedure
- Two Stage Procedure
- Single Source Procedure
- Request for Quotations (RFQ) Procedure

2.4.1 Open Procedure

Open Procedure can be used for all government contracts. According to the Public Procurement 2003 (Act 663) as Amended Part V section 44 and 45, open procedure can take the form of International or National competitive tendering. All tenderers who meet

the necessary requirement as stated in the tender document and notices can submit their tender. It is a mandate for officials to prepare and publish contract notices which describes all necessary requirement and characteristics of the contract in at least two local newspapers with adequate circulation in Ghana and on the Public Procurement Authority website. As explained in Public Procurement Manual (2007), the tender document gives details on the content of the contract and also indicates the terms and conditions attached to the contract. Moreover, when using open procedure, companies/contractors who have interest to tender for the contract can submit a tender. The only condition here is that the tender to be submitted must conform to all necessary requirement stated in the published tender document Public Procurement 2003 (Act 663) as Amended. Any tender with alteration in the standard application document such as terms and conditions would be rejected, since this can make it almost impossible to compare offers. The Procurement Entities calling for tenders thus set out the terms and condition exclusively irrespective of the company participating in the tender and any violation to this automatically disqualify the tenderers (Public Procurement Act, 2003 (Act 663) .

2.4.1.1 Recommended Steps for Open Procedure

Public Procurement Manual (2007) presented the under listed as the recommended steps to be adopted in an open procedure:

- Preparation of tender document and contract notices
- Publishing contract notices which describes all necessary requirement and characteristics of the contract in at least two nationwide newspapers and on the Public Procurement Authority website (Section 54(5) (2) (b) of Public Procurement Act 2003 (Act 663) as Amended.

- Receiving tender responses
- Sending the prepared tender document to tenderers
- Submission of tenders by tenderers
- Creating a Tender Evaluation Panel
- Evaluating submitted tenders
- Submit evaluation Report to Entity Tender committee
- Contract Notification of Award Notice issued and successful Tenderer informed in writing.

2.4.2 Restricted Procedure

The restricted procedure provides that only three to six contractors or suppliers are short listed and requested to submit their proposal (Public Procurement Manual, 2007). These companies are often selected by conducting a preliminary participation contest where qualify companies in the contest are selected to participate in the contract. Spangenberg (2005) stated that during the preliminary contest companies are expected to make a statement on their performance capabilities and reliability as well as their special know-how which can be used to judge their eligibility in the second phase. Restricted tendering is explained as a process where shortlisted pre-registered contractors are invited to partake in a tender. However, these pre-registered contractors are subjected to approval by the Public Procurement Board (Public Procurement Manual 2007, Section 4.2.2). Restricted tendering is only appropriate where;

- 1) the stated requirement is of specialized nature such as national security or public safety which will be inappropriate for open tender

- 2) there is an emergency
- 3) the companies producing that kind of good or product are limited
- 4) Open tender failed to bring an award of contract

Only contractors who were selected during the preliminary contest qualify to take part in the tendering process as far as restricted tendering is concerned. A contract notice is published in the public procurement bulletin indicating the scope of work and the criteria to be used for selection. Only the selected tenderers will receive the tender document and will be permitted to submit their tender. The minimum number of tenderers recommended under the restricted tendering is not less than six, provided there are enough tenderers who satisfy the stated criteria Public Procurement 2003 (Act 663) as Amended.

2.4.3 Two-Stage Procedure

The Two-Stage tendering is hardly used among all the tendering procedures Public Procurement 2003 (Act 663) as Amended Section 36). Two-Stage tendering is where tenderers are invited to take part in the commencement phase to contribute to the specification of work. The detail specification is then subjected to review and consultation, after the review and consultation a new specification is drawn and tenderers who were able to pass through the initial stage are invited to take part in the tendering. According to the Public Procurement Act 2003 (Act 663), Two-Stage tendering procedure is used when it is not feasible to set out specification for works, to identify the characters of the work in a define manner and also where there is rapid technological advance and where the entity seeks to enter into a contract for research, experiment, study or development, except where

the contract includes the production of goods in sufficient quantities to establish their commercial viability or to recover research and development costs.

2.4.4 Single Source Procedure

Single source procedure is normally considered as direct procurement where there is no competition for tendering Public Procurement 2003 (Act 663) as Amended Section 40. This type of tendering is subjected to approval using specific guidelines set by Public Procurement Board. “The following are the conditions necessary for single sourcing:

- Where there is an urgent need for the good or product and this has restricted the minimum requirement in order to meet the urgent need until an appropriate method can be used.
- Where there is only one source for the good or service to be procured as a result of policies, technology or physical abilities which make it impossible to get the good or service from another source.
- Where owing to a catastrophic event, there is an urgent need for the goods, works or technical services, making it impractical to use other methods of procurement because of the time involved in using those methods;
- Where a procurement entity having procured goods, equipment, technology or services from a supplier, contractor or consultant, determines that additional supplies must be procured from the supplier, contractor or consultant because of standardized or compatibility with existing goods, equipment, technology or services taking into account

- i. the effectiveness of the original procurement in meeting the needs of the procurement entity,
- ii. the limited size of the proposal procurement in relation to the original procurement
- iii. the reasonableness of the price and
- iv. the unsuitability of alternatives to the goods or services in question”.

2.4.5 Request for Quotations (RFQ)

Request for quotation is also considered as “shopping”, with this price quotations are compared from at least three sources to ensure competitive prices (Public Procurement Act 2003 (Act 663) as Amended Section 43. “Request for quotation is used when the following conditions exist:

- when the estimated value of the threshold specified in Schedule 3 of Public Procurement 2003 (Act 663) as Amended.
- for readily available goods, works or technical services that are not specially produced or provided to the particular specification of the entity.
- For goods where there is an established market if the estimated value of the procurement contract is less than the amount in Fifth Schedule of Public Procurement 2003 (Act 663) as Amended”.

2.5 THE CONCEPT OF SUSTAINABLE DEVELOPMENT

Sustainable development is simply explained as carrying out activities without having harmful impact. Again, sustainable development is development that meets the current

needs and aspirations without compromising on the abilities of the future generation to meet their own needs (Brundtland, 1987). By this, sustainability is the ability to continue a defined behavior indefinitely. Keitsch (2012) stated that the concept of sustainable development has become imperative due to its emphasis on moderate consumption vis-à-vis wastefulness, thus procurement professionals advocate for its adoption. Products designed and procured on the basis of moderate consumption become a real benefit to the people (Keitsch, 2012).

Sustainable development has become one of the major areas of concern in the co-operate world. The concept has become an area of timely research driven by global concern in areas such as depletion of fossil energy resource, climate change and emission of carbon gases. Carter and Fortune (2003) highlighted that to enhance the achievement of long term sustainable goals, it is essential that agreement is reached by all entities as to what sustainability means in procurement. For this reason a World summit on Environmental and Development was held in Rio 1992 where an action plan for sustainable development was drawn and this is properly known as the 'Agenda 21'. Again, Moran et al., (2007) indicated that the UN Millennium Development Goals (2000) called on all countries to incorporate sustainable development in their plans and policies. According to Adil, (2018) postulated that sustainable development came about in the quest of addressing causal effect of population growth, poverty and environmental degradation due to rapid resource depletion. The creation of the sustainable development concept has an extensive background. Since the industrial revolution, western countries have consumed large quantities of environmental wealth by every means--colonization, military, economy, religion and culture (Cuiying, 2013). The main purpose of sustainable development is

developing in such a way that benefits the widest possible range across borders and between generations. At the same time, the pursuit of economic growth and actions aimed at constant increase in consumption had a devastating impact on the global environment, the exploitation of natural resources without considering the consequences that this exploitation leaves in the environment, as well as the valuation of short-term financial gains in relation to the long-term the benefit of preserving some of the most prestigious and valuable ecosystems. Achieving results within the alliance of the concept of sustainable development requires the setting of a kind of contract, the parties of which are the government, society, and financial institutions can stimulate growth towards its sustainable development (Filipiak and Kosztowniak, 2018). Moran et al., (2007) also argue that sustainable development is the commitment to enhance human well-being by abiding to constrain that development needs to occur within the ecological limits of the biosphere. Sustainable development drive on the concept of net benefit, it makes sure that all cost of environmental degradation and resources are taking care of with emphasis on internalizing cost and benefit. Sarkar (2009) opine that the concept seeks to preserve the environment not for its own sake but for its contribution to perpetual human welfare.

2.6 SUSTAINABLE PROCUREMENT

According to Mohan (2010) procurement is considered as sustainable when it incorporate specifications, criteria and requirement that enhance the conservation and protection of the environment, which support economic development through efficiency, optimizing cost and improving the quality of goods and services. Drucker (2012) on the other hand explain Sustainable Procurement (SP) to be a method of purchasing goods and services that takes

into consideration environmental, social and economic impacts of an organization buying choices. This means that purchasing must not only be centered on the conventional criteria such as quality, price and type of service alone when making purchasing decisions. Sustainable procurement emphasis on the need to achieve value for money by considering social, economic and environmental impacts the goods and services being purchase have on the environment (Agyepong, 2012).

There are four aims to achieve when incorporating sustainability into procurement as stated by the British Standard (BS) 8903 they include: minimizing demand for resources that is minimizing any adverse impacts of goods, services and works throughout their life cycle; making sure that fair terms and prices for contracts are applied throughout the supply chain, meeting human rights, ethical and employment standard; and creating opportunities for small and medium scale enterprises to operate that is supporting jobs and developing skills through training. Islam et al., (2016) revealed the concept of Sustainable Procurement (SP) to include: the ability to produce eco-friendly product, reduce carbon emissions, promote labour rights, assessing the environmental impact of vendors and to reduce waste generation. Hence SP is regarded as the emerging approach that can be used to coordinate social, environmental and economic factors taking into consideration purchasing decisions thereby making the concept of SP more realistic and practical (Islam et al., 2016). Grandia (2015) also stated that the aim of sustainable procurement to achieve the goals of sustainability is not an end-state, but part of a process. Walker et al., (2009) opines that procurement practitioners are encouraged to pursue sustainable procurement with myriad objectives through the purchasing process, including value for money, competition is not diminished in the market and which support corporate performance

thereby incentivising them to act, and their performance needs managed and measured. Incorporating sustainability into procurement process makes 'Smart' as it help achieve value for money procurement which interns aid in achieving government objectives (Guidance, 2016). Guidance (2016) again reported that, Smart SP takes three dimensional life cycle approach as against the traditional one-dimesion approach.

2.6.1 Drivers of Sustainable Procurement

Drivers of sustainable procurement are forces which creates positive pressure for organization to develop and implement sustainable procurement policies by creating opportunities or threats which these organization must address (Chartered Institute of Purchasing and Supply, 2012). The drivers of sustainable public procurement must be able to create a favorable condition that allows smooth implementation and acceptance of procurement practices. Walker and Bammer (2009) reveal the three main drivers of sustainable procurement to be social, economic and environmental drivers. Social and environmental criteria incorporated into public procurement activities, are positively affected by both internal and external factors (Brammer and Walker, 2009; Walker and Phillips, 2009.). Bammer and Walker, (2009) reported that one of the reasons which made the implementation of sustainable public procurement (SPP) practice in the national policy context was due to the existence of SPP policy and legislation and that accounts to its extensive implementation.

Customers, stakeholders and NGOs are another driving force that can trigger the integration of SP into organisational procurement practices (Mont, and Leire, 2009). The media is more and more gaining importance as a driver for continuously creating the

attention for the inclusion of SP in the ongoing efforts of companies and organisations to improve the existing procurement practices. Berry (2011) stated that the idea of delivering total value across the lifetime of the goods, works or service lies at the core of the sustainable procurement agenda, and the requirements for institutions and agencies to deliver social, economic and environmental value is being driven by a lot of factors which has been categorized into the following factors; stakeholder expectations, corporate image and risk, efficiency gains, competitive strategy and marketing.

2.6.2 Engagement of Suppliers in Sustainable Procurement

The role played by suppliers in helping to achieve Sustainable Procurement (SP) objectives is critical. In Chartered Institute of Purchasing and Supply, (2012) has posited that by engaging suppliers in SP means that setting target for suppliers to meet at all cost in other to improve their sustainability performance in the course of delivering goods and services for an organization. The targets set can be achieved through the following; encouraging suppliers to work hand-in-hand with the organization to improve upon sustainability performance, identifying suppliers with negative SP impact by analyzing these suppliers using the established indicators and by ensuring that key performance indicators and targets associated with sustainable performance have been shared and that suppliers have accepted these indicators in other to improve upon sustainability performance in the organization.

2.7 INTEGRATING SUSTAINABILITY INTO PUBLIC PROCUREMENT

The concept of sustainable public procurement was accepted to contribute to the attainment of sustainable development goals during the world summit which was held in

Johannesburg in the year 2002. In this summit plan of implementation for sustainable public procurement were outline to encourage sustainability in public procurement which they believe have the ability to invigorate development and help in mitigating impacts on the environment by ensuring proper coordination among the three aspects of sustainability which include environmental, social and economic aspect (Roos, 2013). Integrating sustainability means generating environmental values as part of the purchasing of goods, service and works. Zeppel (2014) suggested that the above can be achieved by incorporating requirements that benefit the environment in the clauses of the tender document. According to Williams et al., (2007) public sector organizations integrate sustainability by making sure that procurement officials are skilled in incorporating environmental, economic and social consideration in the procurement process. It is important to incorporate sustainability at the initial stage of procurement and making a vigorous effort to ensure that this run through-out the procurement process. There are numerous sustainability issues to be considered anytime an organization plan to procure goods, services or works. Appiagyei et al., (2016) revealed that one of this major issue to be considered to achieve sustainability is to avoid unnecessary purchasing by making sure that the good or service to be purchased is really needed and that there is no existing substitute that can be used.

In the quest to achieve sustainability eco-friendly product with minimal impact on the environment through-out its life-cycle as well as disposal are sort for. This product should also be able to serve the purpose it was intended for. Drucker (2012) opine that the disposal requirement must be factored in the production stage of product and must consider

the following disassemble and reuse, optimum choice for recycling and recovery of subsystems and resources whilst minimizing the use of hazardous materials

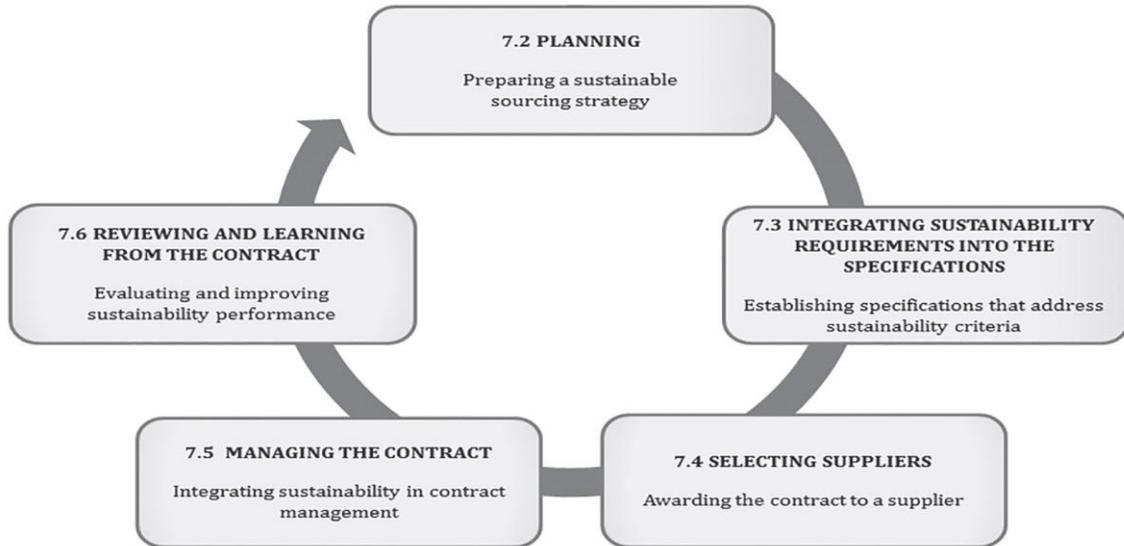


Figure 2.1: Integrating sustainability into the procurement process

Source: International Standards Organisation (ISO) 20400

2.8 ENVIRONMENTAL SUSTAINABLE PROCUREMENT IN PUBLIC INSTITUTIONS

Environmental sustainability is accelerated in the Europe 2020 strategy which reflects public institutions role and potentially contribute towards low carbon and efficient resource economy. The policies of sustainable public procurement asks these institutions to develop plans for resource efficiency, intensifying innovative activities, cooperation with ecological research centres, resource management systems and awareness training introduction for the staff and students (UNICA, 2011).

It is necessary for procurement organization to use public funds efficiently and transparently and these activities enable public entities to provide high quality procurement

(UNICA, 2011). Public institution functions due to the apparent contribution of procurement. For instance best product and services available are supplied to institutions to enable them provide services in a state of the art manner whilst additional funds available are budgeted to be used to increase quality and other activities of procurement.

Quayle and Quayle (2000) stated that in the United Kingdom public institutions like higher education and further educational institutions conduct procurement practice. Supplier selection and relationship management importance, assignment of value adding activity to procurement, respective procurement relationship functions are some of the points of departure their study recognizes. The need for whole life cycle, procurement staff training, greater priority given to procurement function awareness, value of procuring consortia, more accurate data, benchmarking were the results of the study (Quayle and Quayle 2000).

Another study on public institutions by Glock and Broens (2011) on how sixty-five universities across Germany organized purchasing function and the debate on the importance of emphasizing centralization/decentralization of procurement in the universities. Therefore public institutions like the universities hypothesise the procurement function as assisting accountability and transparency, relatively faced with greater scrutiny in the future. At play were the number of contextual factors demonstrating and determining the level of centralization, comprising university size, nature of purchases, experience and educational qualification of chief purchasing officers and lastly volume of purchasing. As indicated in both studies conducted, the importance of procurement function for many higher educational institutions and as compared to private sector place more structural and cultural value on the procurement function (Glock and Broens 2011; Quayle and Quayle, 2000).

2.9 ROLE OF PROCUREMENT PROFESSIONALS IN THE ATTAINMENT OF ENVIRONMENTAL SUSTAINABILITY

Bryde and Meehan, (2011) opine that procurement policies and strategies need to go beyond organizations boundaries as it play a key role in achieving environmental sustainability worldwide. According to Kalubanga (2012), procurement officials have the power of protecting the environment in their hands as the decisions they make today can have a positive or adverse impact on the environment, these decisions include; setting specifications for products, developing performance evaluation criteria, and supplier selection as well as evaluation which they may decide to incorporate environmental sustainability or not. Anonymous (2014) explained that procurement officials do incorporate sustainability at the early stage of procurement process since this is the phase where greater influence can be exerted and where the strongest opportunity for achieving sustainability could be achieve. These roles are fulfilled through the following stages:

2.9.1 Stage 1 - Identify the need

To achieve environmental sustainability in procurement the first most important thing is to consider the” need” for the good or product to be purchased. This therefore posed the question of whether the good to be purchased is really essential or could that good be substitute with another good which already exist. At this stage it is very important to work with suppliers to make sustainable decisions with regard to the packaging, sustainable mode of transport and more eco-friendly method for production.

2.9.2 Stage 2 – Specification

During the specification stage, attention must be given to the way goods or services are specified in the tender document. Here environmental requirement can be included, but this must apply to all tenders and effort must be made to ensure that these environmental specifications are relevant to the product or good in question. Moreover these specifications must not be anti-competitive.

2.9.3 Stage 3 - Choosing suppliers

As far choosing supplier for procurement is concern, it is required for procurement professionals to treat all potential suppliers equally and fairly without any bias. Only suppliers who fall short in the requirements and specifications of the tender or there is prove that they have been involved in grave professional misconduct or criminal offence may be rejected. Environmental matters must be considered in choosing suppliers. With regard to these potential suppliers must demonstrate their commitment to protect the environment in the systems and process they will adopt in supplying the good or service.

2.9.4 Stage 4 - Awarding the contract

The quality of product to be procured mostly depends on the tender evaluation process and hence it is relevant to pay critical attention to this at this stage. When considering other factors rather than price alone it is will be more desirable to use “the most economically advantageous” tender option. This facilitate the evaluation of bid using a wide range of criteria such as technical merit, cost, environmental attributes, quality, functional characteristics, aesthetic and the like. It is also important to consider the whole life cost for

the good or service when assessing bids. Another important aspect to consider at this stage is that effort must be made to ensure that the award criteria are relevant to the subject of the contract and also environmental requirement and specification must be integrated into the contract as early as possible.

2.9.5 Stage 5-- Managing the contract

It is a mandate for officials to draw a formal contract document using the agree terms and conditions as stated in the Public Procurement 2003 (Act 663) and Amendment Act 2016 (914) and this formal contract document must be signed by both parties on the grounds that both parties are going to manage the contract.. The processes involve in managing the contract include monitoring the contract as against it laid down requirement and specifications and tracking performance. During this stage contract performance can be evaluated using the laid down environmental protection requirements and both parties can work together to improve upon the performance.

2.10 BENEFITS OF INCORPORATING ENVIRONMENTAL SUSTAINABILITY IN PUBLIC PROCUREMENT

Sustainable Public Procurement (SPP) has the ability to achieve different outcomes (Kaya, 2014). The first outcome reported by the European Commission (2008) indicates that effective SPP could aid in reducing environmental impacts of purchasing activities. Public procurement has a large share in procurements in developing countries, due to this SPP can help protecting the environment through recycling of waste , reduction in carbon emissions, ensuring sustainable water consumption, conservation of biodiversity and

decreasing the impact of environmental problems. SPP could also stimulate markets for sustainable goods and services which would add up to substantial improvements in the long term as compared to consumer demand. Erdmenger (2003) suggested public purchasing activities can help minimize environmental impacts and set as an example for the private sector to follow.

Again, SPP can cut down cost by eliminating any additional expenses. This help in ensuring value for money and promote more efficient use of public resources as well as protecting the environment (Oko-Institute and ICLEI, 2007). For instance, the European commission in 2009 reported that some of the cost incurred from the production of goods and service through to it save disposal include: cost of purchase and installation , cost during the use phase of the product, cost of electricity, gas, fuel, training, maintenance and disposal. SPP can therefore be used to cut down these cost if these cost are comprehensively evaluated.

Moreover, SPP have the potentials to stimulate innovation. This can achieved by developing green technologies which enhance the production of goods and service but lessen environmental pollution this can create a new form of industrial competition which automatically triggers innovation. This is in line with the European Commission Strategy of calling on industries to employ innovative ways of maximizing production and minimizing adverse impact on the environment. Indeed such step has the ability of increasing global market shares in the field of eco-innovations and environmental technologies (European Commission, 2006).

Market diversity is another outcome of the SPP. A key barrier for implementing SPP that can emerge is supply constraints (Haselmayer et al., 2011), this is because in most instance

industries needs special training and upgrading before SP policies can be implemented. Arrowsmith (2009) opine that specific standards for procurement can be set for public authorities to stimulate the growth of new markets. For example the private sector can invest in certain products not for profit sake but for the sake of ensuring sustainable environment. Moreover, procurement officials in the public sector can promote mass production of sustainable goods by the private sector.

2.11 SPECIFIC MEASURES ADOPTED BY THE PROCUREMENT ENTITIES IN ACHIEVING ENVIRONMENTAL SUSTAINABILITY

Reilly (2007) has suggested that critical attention must be paid to local governments since they decide who get what from government. The local government is considered as the most responsive form of government since they are closet to the citizens. Various literatures have postulated the following as some of the measures organization may adopt in order to achieve environmental sustainability.

2.11.1 Government Legislation

Government legislation is considered as having the greatest impact in sustainable related issues of organizations (Berns et al., 2009). According to Section 2 of Public Procurement Act, 2003 (Act 663) as Amended, the Board is to ensure that all procurement are carried out in socially sustainable and environmental friendly manner which necessitate compulsion on government institutions, agencies and departments purchasers and service, goods and works providers to comply and act within the tenets of the Act.

2.11.2 Involvement of Top Management

This is one of the measures through which organizations may adopt in order to achieve environmental sustainability. According to Gelderman et al.(2017) it is the responsibilities of top managements to set goals and policies on sustainable procurement for purchasing department within the organization to implement it. Top managements are to organize the procurement function in such a way that sustainability could be achieved and also the management techniques used must clearly be stated for implementation and improvement. This therefore indicates the relevance of management's involvement in procurement. At the local government level, top managements are the policy makers and hence they help integrate sustainable goals through a wide range of diversity using a specific policy approach. It is therefore noted that top management commitment is to be integrated at the highest level of the procurement function in other to achieve a successful sustainable procurement. Rajakangas (2018) is of the view that when integrating sustainability in the procurement process, effort must be made on how sustainability can be incorporated in the existing procurement process. Moreover, Anderson and Bateman, (2000) indicated that top managements are very instrumental in encouraging firms to adopt sustainable procurement since they are responsible for the firm's environmental management leadership.

2.11.3 Tendering process

One of the key functions used to define the requirement of every public purchase is tendering. The process used in tendering must set out all environmental characteristics before calling out for tenders. According to Palmujoki et al., (2010) the contracting

authorities are required to the state criteria e.g. ‘the most economically advantageous’ which is being used in the contract document. Kaye and Worrel (2012) are of the view that in evaluating the procurement choices, sustainability values can be integrated into bid preferences where extra points are given to contractors on specific sustainability criteria.

Parikka and Nissinen, (2012) continued that environmental sustainability criteria can be included in the specifications of tenders and when this happens criteria becomes mandatory requirement that tenderers must fulfill before they could qualify to take part in the tendering. Here the concept of the ‘most economical advantageous tender’ as a framework to set out the environmental requirement which could be included in the criteria for selection. Parikka-Ahola (2008) emphasis that the criterion which has been set in the contract document must strictly be used for the selection.

2.11.4 Building Capacity/ Training within the entity

According to Osei-Tutu et al. (2011), training of procurement professionals in public entities should be on top of sustainability policy agenda and ensuring that there is compliance and creation of awareness within the entity.

Procurement staff needs essential and appropriate training that is providing them with legal, financial and environmental knowledge. This is necessary in order to help make better judgment on whether environmental considerations are suitably balanced compared to other considerations, as well as to be able to appreciate environmental information in respect of the products available in the market (Wickenberg, 2004). On the other hand, building the capacity of practitioners in policy and process development that consider sustainability is essential and should be factored in all the stages of the procurement

processes (Mohan, 2010). Both the top management and procurement professionals within the entity must have specific skills and knowledge about sustainability. Geldeman et al., (2017) argue that procurement professional have the power to influence sustainable initiative but they must be very subtle in doing so.

2.11.5 Sustainability Initiatives

The entity in its desire to achieve environmental sustainability has to develop feasible initiatives. According to Gelderman, *et al.*, (2017) the concept of organizational sustainability means to convey the powerful and effective sustainability initiatives. The organizational strategy must be linked to the sustainability initiatives instead of individual programmes and several independent projects that are controlled by each other. The writer further argues that to become part of the organization, the whole organization develops the needs of sustainability.

2.11.6 Stakeholders Engagement

Stakeholders are persons or group of people who might directly or indirectly affected by the procurement action including those who particularly benefit from the public procurement outcomes (Lynch, 2013).

The contribution of stakeholders to the attainment of environmental sustainability is critical to the provision of various services, goods and works to the procurement entity. The impact of stakeholders on the implementation and success of sustainability is revealed by stakeholder analysis. Contractors, buyers and suppliers are the set of stakeholders. Also when celebrating successful initiatives about sustainability it makes educated employees

more concern. Processes improvement, ensuring co-operation, encouraging wider vendor base to compete for public contract and therefore transparency provides and connects both internal and external stakeholders (Gelderman, *et al.*, 2017).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

In the quest of finding solutions to environmental issues through public procurement in Ghana, it has become relevant to uncover the appropriate data to help provide in-depth analysis to set out a meaningful recommendation and conclusion. The chapter therefore seeks to provide detailed explanations on the methodology employed for the research. The adoption of strategies by the researcher bothers on key philosophical issues which the study has explicitly discussed.

Again, the target population, sample size and survey instrument used have been explained in this chapter. The chapter also presents the analytical tool used for data analysis as well as the mode of presentation of findings.

3.2 RESEARCH DESIGN

This is defined as the way in which the objectives of the research are questioned. Research design has two main types of designs. These include qualitative and quantitative research. In a study conducted by Neuman (2003), it was found that qualitative and quantitative differs from one another yet they complement each other. Depending on what the researcher is seeking to achieve will enable him/her decide what type of research design to use considering the availability of information (Naoum, 2002). Quantitative design strategy was therefore adopted by the study. Both design strategies have been comprehensively explained below. Qualitative type of research strategy is inductive in terms of theory and with approach. Collection and analysis of data when qualitative

strategy is used focuses on words instead of quantification. It is subjective in nature. This type also involves attitudinal and exploratory and often adopted depending on critical or social science. They create non- linear path. The languages of qualitative are context and cases. These cases often use small numbers which are normally non-representative. Respondents are required to fill certain requirements of the study. Written documents, open ended questionnaires and observations are data collection instruments in qualitative approach.

The study adopted quantitative survey approach and is in relation to sampling and design measurements. Establishing the linkages and relationship helps the use of mathematical and statistical tools during the design process (Aliaga and Gunderson, 2000). It underpins positivism and it views social reality as external and objective reality. The research comprises of theories and variables which are objective in nature. The data collected is normally hard and is associated with the use of large samples representatively. The samples which are small are able to replicate into large populations and therefore the results will reflect limits of error. Quantitative approach is associated with sophisticated statistical tools. The accuracy and validity of the results obtain is dependent on the instrument of measurement.

3.3 RESEARCH STRATEGY

- Research strategy is simply the approach to adopt in answering research questions (Saunders et al., 2007). The approach that can be used in answering the research questionnaires are as follows: Experiment: this is a classical form of research that uses scientific means in answering research questions. It is often used in natural

science and social science specifically in psychology. Experimental research is also considered as casual research where an independent variable is manipulated to determine the effect this will have on the dependent variable. The dependent variables are controlled to ascertain the extent of the effect (Malhotra and Peterson, 2006).

- Survey: According to Peterson and Malhotra (2006) survey is simply using structured questionnaires to solicit information from respondents. Generally survey is considered as an economical way of gathering information from a sizable respondents and this method is often used in business research.
- Case Study: Schindler and Cooper (2003) explained case study method pay critical attention to some specific events to establish their interrelations. Yin (1994) added that case study method is distinct from the other methods because it helps in answering ‘how’ and ‘why’ questions on contemporary events which the researcher has no control over.

The study would employ survey in getting answers to the research questions set.

3.4 SOURCES OF DATA

The research used primary and secondary sources of information which are the two main sources of data. Secondary source of data was obtained by means of reviewing literature which is significant and connected to the topic. Secondary data is the existence of already known information. The collection of data is undertaken by a third party rather than the researcher. In secondary data; articles, reports, books, internet source, published journals and manuals are some of the source of information that the researcher gathers from and are

in relation to the subject. Also sources of primary data can be grouped into two forms. One form of data is based on the originality of work done by a person from his/ her own idea and thoughts can be consider as a source of data. Secondly, primary data is considered as the one that has been gathered at first hand and presentation made by the person who organized such data. Questionnaires are used as collection tool for primary source of data.

3.5 RESEARCH INSTRUMENT

Frazer and Lawley (2000) explained questionnaire to be a formal assemble of questions with the purpose of gathering information from respondents. It is made up of instructions, alternatives, and means of making records responses where necessary. On the other hand a survey is simply using structured questionnaires to solicit information from respondents.

The kind of information to be gathered depends on respondents or organization's beliefs, attitudes, knowledge and choice of preferences. Questionnaires were used for data collection. Well-structured Questionnaires are best known for gathering accurate data. According to Oppenheim (1996) the standardized and sampling techniques used in distributing questionnaire improve uniformity in information given.

3.6 TARGET POPULATION

Schindler and Cooper (2003) explained that population consist of all individuals or groups from whom measurement is taken. The study population would include management professionals involved in procurement in the Kumasi Metropolitan Assembly, Ejisu Municipal Assembly and Asokore Mampong Municipal Assembly such as procurement officers, engineers, planning officers, finance officers, store managers etc.

3.7 SAMPLING TECHNIQUE AND SAMPLE SIZE

The limitation of time and resources makes it quite difficult, almost impossible for the survey to consider the entire population especially with very large population size. Parasuraman (2004) described sampling as the process of selecting a fraction of the total population as a representation of the whole population. Saunders et al., (2007) added that the selected population can be studied and conclusion can be drawn to get answers to the research questions.

Participants who are potential samples can represent the population the researcher has targeted with the sample frame comprising the population in which the sample is drawn (Neuman, 2003). The functions of the sampling frame are to inform gleam inferences from research data. The sampling frame gives clarification on population which is included and those excluded. The study adopted purposive sampling for the survey. Patton (1990) indicated that purposive sampling gives rich information which can be used for in-depth analyses. Berg (2001) also added that purposive sampling makes it possible for some particular group with specific characters to be included in the study. A sample size of 50 Procurement professionals working within Kumasi Metropolitan Assembly, Ejisu Municipal Assembly and Asokore Mampong Municipal Assembly were identified using purposive sampling.

3.8 DATA ANALYSIS AND STATISTICAL TOOLS

The administered questionnaires once obtained from respondents will undergo aggregation which will help in analyzing the data in a large unit. The researcher adopted the use of Statistical Packages for Social Sciences (SPSS version 17) and Microsoft Office Excel

2018 as the two statistical software for the analysis. The presentation of the results deduced from analyzing the data would take the form of charts, series of numbers and tables.

Descriptive statistics would first be used to analyze the background information on the data collected on the management professionals involved in procurement in the Kumasi Metropolitan Assembly, Ejisu Municipal Assembly and Asokore Mampong Municipal Assembly. The existing literature relating to the addressing environmental sustainability through public procurement in Ghana shows a lot of surface complexity and therefore will apply the use of relative importance index (RII) apart from descriptive statistics and thus necessitates better and deeper understanding of the pattern of correlations (covariances) between measures.

$$\text{Relative Importance Index (RII)} = \frac{\Sigma W}{A \times N},$$

Where;

W = the cumulative sum of weight, ranging from 1 to 5,

A = the highest weight (i.e. 5 in the study)

N = the total number of respondents

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter of the research details the analysis and the discussion of the results obtained after the administration of the research instruments; the survey questionnaire which agitated data to provide the basis for this chapter. This chapter is divided into two sections. The first section deals with the background profile of the respondents. This section of the study took into consideration detailed analysis of the outline objectives. Utilizing the structured questionnaire, information on the various procurement procedures used on project, benefits of incorporating environmental sustainability in public procurement, and specific measures adopted by the procurement entities in achieving environmental sustainability were sought. The crucial nature of the information to be analysed will enhance the research reliability and validity. Analysis and discussion of the results were then conducted. This includes Relative Importance Index rankings of data obtained in the field survey. This analysis forms the basis of the conclusion made in this study and helps to identify areas relating to this study which may be the focus of future research. A total of fifty (50) questionnaires were designed and administered to procurement professionals working with the Kumasi Metropolitan Assembly, Ejisu Municipal Assembly and Asokore Mampong Municipal Assembly in the Ashanti Region of Ghana. Out of this, thirty (30) questionnaires were administered to Management professionals involved in procurement working within Kumasi Metropolitan Assembly, ten (10) questionnaires were given to the selected procurement professionals working within Ejisu Municipal Assembly and ten (10) questionnaires administered to the procurement professionals identified within the Asokore

Municipal Assembly respectively. Forty-five (45) questionnaires were retrieved and were adequate for analysis representing a 90% response rate. Richardson (2005) stated that a response rate of 60% or more is deemed adequate for a scientific research. Against this background, the response rate of 90% obtained for this study was deemed adequate for analysis.

4.2 RESPONDENTS PROFILE

Respondents' demographic information was analyzed by descriptive statistics which employed the IBM SPSS (International Business Machines Statistical Package for Social Sciences) statistics version 17. Table 4.1 shows the demographic profile of respondents. Procurement activities in the three Assemblies were dominated by Males (66.7). Melesse (2007) and Adjei Mensah and Owusu (2010) indicated that males are normally the main actors involved in procurement activities. BSc holders (57.8%) greatly outnumbered the other academic qualifications. MSc holders (26.7%) and HND (11.1%) had the second and third place respectively. PhD (4.4%) least dominated the study. The probable low figures for the postgraduate research degree could be that, most professionals would like to acquire more practical experience before seeking further studies. As this would aid identify the actual problems in the industry for further investigation rather than just gap in literatures. In terms of the position in the assembly, Engineers comprised 24.4% of the respondents, Management staff comprising 22.2% of the respondents, Finance Officers comprising 17.8%, Planning Officers comprising 13.3%, and Procurement Officers comprising 13.3% of the respondents. However, the remaining 8.9% of the respondents were Store Managers.

Most of the respondents have between 6-10 years of professional practice. Altogether, one-third (33.3%) of the respondents have between 1-5 years' experience. Looking at the management professionals who were involved in the study, a little over a quarter (26.7%) of the respondents indicated that they belong to the works department and 20.0% of the respondents indicated they each belong to the administration and finance departments. Notwithstanding, only a few of the respondents (13.3%) indicated that they belong to the procurement department. The demographic profile of respondents shown in Table 4.1 illustrates that survey respondents are relatively males who are BSc holders, often Engineer with between 6 to 10 years of professional practice experience who normally work in the works department of the Assembly. This could be as a result of the fact that most of the procurement activities in the Assemblies are works related.

Table 4.1: Demographic profile of respondents (N=45)

Characteristics	Frequency	Percentage
Sex		
Male	30	66.7
Female	15	33.3
Years in the Assembly		
1 – 5 years	15	33.3
6 – 10 years	19	42.2
11 – 15 years	6	13.3
More than 15 years	5	11.1
Academic Qualification		
PhD	2	4.4
MSc	12	26.7
BSc	26	57.8
HND	5	11.1
Position in Assembly		
Management Staff	10	22.2
Finance Officer	8	17.8
Planning Officer	6	13.3
Engineer	11	24.4
Procurement Officer	6	13.3
Stores Manager	4	8.9
Department of Respondents		
Administration	9	20.0
Finance	9	20.0
Planning	5	11.1
Works	12	26.7
Procurement	6	13.3
Stores	4	8.9

Source: Researcher’s survey (2018)

4.3 PROCUREMENT PROCEDURES

Descriptive statistics were conducted to establish the relevance of the items on the five-point Likert scale rating. Firstly, scale reliability is used to measure the internal consistencies and a normality test conducted. The respondents were therefore asked to indicate their views by ranking the factors items on a Likert scale of 1 to 5, where 1= Never, 2=Rarely, 3=Sometimes, 4=Very often, and 5=Always.

4.3.1 Reliability of data analysis

Analyses were executed to observe the reliability of the factors variables scales. Reliability is concerned with the degree to which scores on a scale can be replicated. Thus, internal consistency reliability measures the reciprocal relation of an item set. Cronbach's Alpha coefficient (α) was employed in this research to establish the reliability of the survey instrument. According to Hair et al. (2013), a ' α ' value of .70 or higher has largely been recognized by researchers as demonstrating a reliable measurement.

Table 4.2: Reliability statistics

Cronbach's Alpha	Number of Items
.702	9

As shown in Table 4.2, reliability coefficients of the study variables under investigation was .702, this reveals that the internal consistency of the measurements was satisfactory.

4.3.2 Analysis and discussion of the frequency of various procurement procedures used on projects

Preliminary descriptive analysis such as relative importance index of each of the procurement procedures variables led to aid in providing a vibrant depiction of the outcome of the survey; and the results are tabulated in Table 4.3. With the five-point Likert rating scale, a variable was randomly reflected critical if it had a mean value of 3.50 or more (Field, 2013). From Table 4.3, five of the variables have mean values above the accepted population mean of 3.5; it is therefore rational to deduce that they constitute the most frequently used procurement procedures on projects in the assemblies. The highest responsive or frequently used procurement procedure variable from the table is: *open procedure*, followed by second ranked *restricted procedure* and the third highest variable is: *request for proposals*. Furthermore, the fourth highest variable is: *request for quotations* and the fifth highest variable is: *public private partnership*. The least responsive or frequently used procurement procedure variable is: *Negotiated procurement procedure*. This confirms the provision in the Public Procurement Act 2003 (Act 663) as amended Act 914 (2016), that open competitive procedure should be used for all public contracts and can take the form of National or International competitive tendering (Public Procurement Act, 2003 (Act 663). Thus, based on the descriptive statistics, it could be confidently concluded that the variables identified as the procurement procedure variables through literature review and the survey indicates the views of the respondents.

Table 4.3: Frequency of various procurement procedures used on projects

PROCUREMENT PROCEDURES	RATING					Total	ΣW	Mean	RII	Rank
	1	2	3	4	5					
Open Procedure	1	1	7	13	23	45	191	4.24	0.85	1st
Restricted Procedure	8	10	16	10	1	45	191	4.24	0.85	2nd
Request for proposals	2	2	4	21	16	45	182	4.04	0.81	3rd
Request for Quotations (RFQ)	0	2	12	18	13	45	177	3.93	0.79	4th
Public Private Partnership (PPP)	0	3	20	14	8	45	162	3.6	0.72	5th
Design and Build procurement approach	2	8	17	13	5	45	146	3.24	0.65	6th
Single Source Procedure	4	11	15	11	4	45	135	3	0.60	7th
Two-Stage Procedure	4	12	18	6	5	45	131	2.91	0.58	8th
Negotiated procurement procedure	4	14	15	8	4	45	129	2.87	0.57	9th

Source: Researcher's survey (2018)

4.4 BENEFITS OF INCORPORATING ENVIRONMENTAL SUSTAINABILITY IN PUBLIC PROCUREMENT

This section deals with the analysis and discussion on the benefits of incorporating environmental sustainability in public procurement. Firstly, scale reliability is used to measure the internal consistencies test conducted. Relative Importance Index (RII) is then used to rank the variables in order of importance.

4.4.1 Scale Reliability

As earlier discussed in section 4.3.1, Cronbach's Alpha is performed to establish the internal consistency of measurement items in this research study to measure the reliability. A low coefficient Alpha indicates that the scaled item is not consistent with the variable component. Thus, the Cronbach's Alpha of items in this study investigation was examined. In Table 4.4, the measured items are Reduce the environmental impact, Elimination of additional costs, Promotion of efficient use of public resources, Savings from the consumption of energy and water, Stimulation of innovation, Increases competition, Increase global market share, Market diversity, Minimizes maintenance and disposal costs, Promotion of waste recycling, Minimizes supply constraints, and Stimulates the rise of new markets. With such a high Cronbach's Alpha (.817), the data set for analysis in the section can be considered reliable.

Table 4.4: Reliability statistics

Cronbach's Alpha	Number of Items
.817	12

4.4.2 Analysis and discussion of benefits of incorporating environmental sustainability in public procurement

From Table 4.5, which represents the benefits of incorporating environmental sustainability in public procurement, Promotion of efficient use of public resources is the most ranked benefit according to respondents with an RII and mean values (0.85, 4.24) respectively whereas Increases competition is also the second ranked benefit with an RII

and mean values of (0.80, 3.98) respectively. This is an indication that promotion of efficient use of public resources and increase competition are the most significant benefits of incorporating environmental sustainability in public procurement. Kaya (2014) indicated that sustainable public procurement has the ability to achieve different outcomes. Furthermore, such outcomes promote more efficient use of public resources as much as the protection of the environment (Öko-Institute and ICLEI, 2007). The other variables were also ranked as follows; reduce the environmental impact (3rd), elimination of additional costs (4th), stimulates the rise of new markets (5th), minimizes maintenance and disposal costs (6th), promotion of waste recycling (7th), savings from the consumption of energy and water (8th), minimizes supply constraints (9th), stimulation of innovation (10th), market diversity (11th), and increase global market share (12th). The most significant benefits of incorporating environmental sustainability in public procurement as indicated by respondents confirm the studies by Haselmayer et al. (2011) and Arrowsmith (2009).

Table 4.5: Benefits of incorporating environmental sustainability in public procurement

BENEFITS	RATING					Total	ΣW	Mean	RII	Rank
	1	2	3	4	5					
Promotion of efficient use of public resources	0	1	8	15	21	45	191	4.24	0.85	1st
Increases competition	1	0	13	16	15	45	179	3.98	0.80	2nd
Reduce the environmental impact	1	3	10	14	17	45	178	3.96	0.79	3rd
Elimination of additional costs	1	1	10	29	4	45	178	3.96	0.78	4th
Stimulates the rise of new markets	0	2	15	13	15	45	176	3.91	0.78	5th
Minimizes maintenance and disposal costs	0	2	9	26	8	45	175	3.89	0.78	6th
Promotion of waste recycling	0	5	12	16	12	45	170	3.78	0.76	7th
Savings from the consumption of energy and water	2	3	11	17	12	45	169	3.76	0.75	8th
Minimizes supply constraints	2	2	12	21	8	45	166	3.69	0.74	9th
Stimulation of innovation	0	3	19	13	10	45	165	3.67	0.73	10th
Market diversity	0	3	16	21	5	45	163	3.62	0.72	11th
Increase global market share	0	1	20	20	4	45	162	3.60	0.72	12th

Source: Researcher's survey (2018)

4.5 SPECIFIC MEASURES ADOPTED BY THE PROCUREMENT ENTITIES IN ACHIEVING ENVIRONMENTAL SUSTAINABILITY

Descriptive statistics were conducted to establish the specific measures items on the five-point Likert scale rating. Firstly, scale reliability is used to measure the internal consistencies and a normality test conducted. The respondents were therefore asked to indicate their views by ranking the measures items on a Likert scale of 1 to 5, where 1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree.

4.5.1 Reliability analysis

The reliability of a scale indicates how free it is from random error (Pallant, 2005). Prior to achieving this research objective, the internal consistency was deemed to be assessed. This is the degree to which the items that form the scale are all measuring the same underlying attribute, Pallant (2005) refers to this as the extent to which the items ‘hang together’. In this section the Cronbach’s coefficient alpha is employed to attain this purpose. This statistic provides an indication of the average correlation among all the items that make up the scale. Values range from 0 to 1, with higher values indicating greater reliability (Pallant, 2005). While diverse levels of reliability are required, depending on the nature and purpose of the scale, Nunnally (1978) recommends a minimum level of .7. As seen in Table 4.6, the coefficient of the Cronbach’s Alpha is .870, indicating that the items identified for the particular sample size are reliable for analysis.

Table 4.6: **Reliability statistics**

Cronbach's Alpha	Number of Items
.870	12

4.5.2 Analysis and discussion on specific measures adopted by the procurement entities in achieving environmental sustainability

The study in the quest to address environmental sustainability through public procurement in Ghana also sought to identify specific measures adopted by the procurement entities in achieving environmental sustainability. The literature review conducted provided a list of measures adopted by the procurement entities in achieving environmental sustainability. These measures were developed into the questionnaire where respondents were required to rate, on a scale of 1-5 their level of agreement to these measures. The results were analysed using the Relative Importance Index (RII) rankings. The five-point Likert scale, ranging from 1(Strongly Disagree) to 5 (Strongly Agree) was adopted for each variable as follows;

$$RII = \frac{\sum W}{A \times N}$$

W is the weight given to each guideline by the respondent and ranges from 1 to 5

A = the highest weight (5)

N= the total number of respondents (45)

The measures were analyzed and ranked as shown in Table 4.7. The variables were ranked based on the RII value obtained. Where two variables obtained the same RII values, the variable with the higher mean value was ranked higher. From the analysis, capacity

building was ranked first with an RII of 0.86 and a mean value of 4.31. Government legislation was ranked second, and Involvement of top management was also ranked third. The first three ranked measures adopted by the procurement entities in achieving environmental sustainability are discussed in the following sub sections.

4.5.2.1 Capacity Building

Capacity building is very essential in ensuring that environmental sustainability is achieved in public procurement. Osei-Tutu et al. (2011) stated that training of procurement professionals in public entities should be on top of the agenda in the bid to ensure compliance with the sustainable policy and also create awareness within the entity. The study revealed that for public entities to be able to adequately incorporate environmental sustainability in public procurement, capacity building is very important if procurement entities would be able to adequately perform.

4.5.2.2 Government Legislation

As indicated by Berns et al. (2009), government legislation is the sustainability-related issue with the greatest impact on businesses. The study revealed that the procurement entity must ensure that government regulations regarding procurement must always be adhered to so as to achieve environmental sustainability. Furthermore, Section 2 of Act 663 as amended 914 stated that the Board must ensure that public procurement is carried in environmentally sustainable manner.

4.5.2.3 Involvement of Top Management

Involvement of top management is essential to the achievement of environmental sustainability in public procurement. Gelderman et al.(2017) opined that top management

set the policy and goals for developing sustainability and the implementation is delegated to the purchasing department. Top management members are instrumental in encouraging institutions to evaluate their role in society and are responsible for the institution's environmental management leadership (Anderson and Bateman, 2000).

Table 4.7: Specific measures adopted by the procurement entities in achieving environmental sustainability

MEASURES	RATING					Total	ΣW	Mean	RII	Rank
	1	2	3	4	5					
Capacity building	0	1	7	14	23	45	194	4.31	0.86	1st
Government legislation	1	0	4	21	19	45	192	4.27	0.85	2nd
Involvement of top management	0	1	5	26	13	45	192	4.27	0.85	3rd
Stakeholder engagement	0	0	13	15	17	45	184	4.09	0.82	4th
Innovation	0	1	9	22	13	45	182	4.04	0.81	5th
Transparency	0	1	9	23	12	45	181	4.02	0.80	6th
Specifying environmentally sustainable products	0	1	11	20	13	45	180	4.00	0.80	7th
Integrating sustainability into the procurement process	0	1	13	16	15	45	180	4.00	0.80	8th
Sustainability initiatives	1	1	8	23	12	45	179	3.98	0.80	9th
Inclusion of environmental criteria	1	3	10	17	14	45	175	3.89	0.78	10th
Sustainability goals articulation	1	0	15	19	10	45	172	3.82	0.76	11th
Extra points score for sustainability criteria	0	2	16	17	10	45	170	3.78	0.76	12th

Source: Researcher's survey (2018)

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This study is aimed at addressing environmental sustainability through public procurement in Ghana. To achieve this aim, three objectives were set. To achieve the objectives, a critical literature review was conducted where the theoretical underpinnings of environmental sustainability in public procurement was employed leading to the development of a questionnaire to collect empirical data from respondents in the three public institutions. The analysis conducted with each of the objectives are presented in the following sub sections.

5.2 ACHIEVING THE RESEARCH OBJECTIVES

5.2.1 The First Objective; to identify the various procurement procedures

With the background knowledge on the various procurement procedures gained from literature, a questionnaire was designed to address the first objective, of which 9 variables were identified which was then tested on a number of procurement professionals working within the Kumasi Metropolitan Assembly, Ejisu Municipal Assembly and Asokore Mampong Municipal Assembly in the Ashanti Region of Ghana. The literature sources from which these procedures were identified included; Public Procurement Act 663 (2003), Public Procurement Manual (2007), Spangenberg (2005) among others. The questions highlighted on procedures such as Open Procedure, Restricted Procedure, Two-Stage Procedure, Single Source Procedure, Request for Quotations (RFQ), Negotiated

procurement procedure, Design and Build procurement approach, Public Private Partnership (PPP), and Request for proposals. It was realized that the variables (i.e. 9 procedures) could be measured using the same fundamental effect. Relative Importance Index (RII) was used to rank the regulations and then discussed.

5.2.2 The Second Objective; to determine the benefits of incorporating environmental sustainability in public procurement.

To achieve this objective, literature study was conducted to identify the benefits of incorporating environmental sustainability in public procurement as revealed by other researchers. The literature sources from which these effects were identified included; Kaya (2014), Haselmayer et al. (2011), Arrowsmith (2009), Erdmenger (2003), and Marron (2003) among others. In all, a total of 12 benefits were identified from the literature. The identified benefits were then included in the research questionnaire which was used to gather empirical data. The collected data was then analyzed using the Relative importance index. The main benefits which were highly agreed to according to respondents were identified to include promotion of efficient use of public resources, increases competition, and reduce the environmental impact. Increase global market share was however ranked as the least benefit of incorporating environmental sustainability in public procurement.

5.2.3 The Third Objective; to assess specific measures adopted by the procurement entities in achieving environmental sustainability

A similar approach of literature review was conducted to identify specific measures adopted by the procurement entities in achieving environmental sustainability. The

literature review led to the identification of twelve variables that were stated by other researchers as the measures adopted by the procurement entities in achieving environmental sustainability. The literature sources from which these measures were identified included; Gelderman et al.(2017), Kaye and Worrel (2012), Berns et al. (2009), Reilly (2007), Anderson and Bateman (2000) among others. The identified measures were then analyzed with the Relative Importance Index, principally ranking the variables based on the level of agreement of the respondents. Through the analysis it emerged the following top five were ranked as the most significant measures adopted by the procurement entities in achieving environmental sustainability:

- Capacity building
- Government legislation
- Involvement of top management
- Stakeholder engagement
- Innovation

5.3 CONCLUSION

Environmental sustainability has become an important area in the development of every economy. Therefore, incorporating environmental sustainability into procurement activities help to achieve a country's sustainable development. Furthermore, there are numerous benefits that are associated with the incorporation of environmental sustainability in public procurement which include promotion of efficient use of public resources and a general reduction in the impact of procurement activities on the environment. It is the desire of every nation to achieve sustainable development. There are therefore several specific

measures that could be adopted to aid in the achievement of environmental sustainability in public procurement.

5.4 RECOMMENDATIONS

The under listed are recommendations arising from the study to aid in addressing environmental sustainability through public procurement in Ghana:

- Management should ensure that capacity building exercises such as training of procurement staff on environmental sustainability are implemented.
- Top management must take interest in other to ensure sustainability issues are included.
- Procurement entities must ensure that government regulations that have to do with environmental sustainability issues are incorporated in their procurement activities.

5.5 LIMITATIONS OF THE RESEARCH

Like any other scientific study, this study also had some limitations which are listed below:

- The limitation of the survey to only three public institutions in the Ashanti region may affect the generalizations of the findings.
- The analytical tool used for the analysis may affect the generalization of the results of the study.

5.6 DIRECTIONS FOR FUTURE RESEARCH

The study focused in the Ashanti region of Ghana. A similar study could be conducted in other jurisdictions where data could be gathered to aid the extent of generalization of the findings.

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APPENDIX

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,

KUMASI

COLLEGE OF ART AND BUILT ENVIRONMENT

Department of Construction Technology and Management

(MSc. Procurement Management)

Survey Questionnaire

ADDRESSING ENVIRONMENTAL SUSTAINABILITY IN GHANA THROUGH PUBLIC PROCUREMENT

Dear Sir/Madam

This questionnaire forms part of an MSc. Research project which aims to **address environmental sustainability in Ghana through public procurement**. Environmentally sustainable procurement has become very relevant in the procurement activities of public entities. The results of this study will identify the various procurement procedures and the benefits of incorporating environmental sustainability in public procurement. The results will also determine specific measures adopted by the procurement entities in achieving environmental sustainability.

I would like to invite you to participate in the above project. Completion of the questionnaire is completely voluntary and returning the completed questionnaire will be considered as your consent to participate in the survey. The questionnaire will take you about 10 minutes to complete.

The data collected will be used purposely for this research and any solutions obtained will be shared for the benefit of entire public procurement entities.

I appreciate that you are already busy and that participating in this survey will be another task to add to your busy schedule, but by contributing you will be providing important information. **All data held are purely for academic purposes and would be treated as strictly confidential.**

In the event of questions or queries, please do not hesitate to contact me. Thank you for your time and valid contribution in advance.

Yours faithfully,

AMANKWAA ASIYEDU

MSc. Researcher

Email: kokmanfr@gmail.com

SECTION A: RESPONDENT'S PROFILE

Please, kindly respond to the questions by ticking (✓) in the appropriate box(s) for each item.

1. Sex

- Male
- Female

2. Please state the number of years you have been in the Assembly

- Less than 1 year
- 1 – 5 years
- 6 – 10 years
- 11 – 15 years
- More than 15 years

3. Please indicate highest qualifications (please do not tick (✓) **more than two boxes**)

- PhD
- MSc
- BSc
- HND
- Professional qualification.....(please indicate)
- Other.....(please indicate)

4. Please indicate your position in the Assembly.

- Management Staff
- Finance Officer
- Planning Officer
- Engineer
- Procurement officer
- Stores Manager/Keeper
- Other(please explain further)

5. Please indicate your Department in the Assembly.

- Administration
- Finance
- Planning
- Works
- Procurement Unit
- Stores Dept.
- Other(please explain further)

**SECTION B: FREQUENCY OF VARIOUS PROCUREMENT PROCEDURES
USED ON PROJECTS**

Please read the following and tick the box that best represents your level of agreement on the frequency of each of the procurement procedures identified.

Use the scale: 1 = Never 2 = Rarely 3 = Sometimes 4 = Very often 5 = Always

ITEM	PROCUREMENT PROCEDURES	1	2	3	4	5
1	Open Procedure					
2	Restricted Procedure					
3	Two-Stage Procedure					
4	Single Source Procedure					
5	Request for Quotations (RFQ)					
6	Negotiated procurement procedure					
7	Design and Build procurement approach					
8	Public Private Partnership (PPP)					
9	Request for proposals					

Please state below any relevant information which you deem necessary

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SECTION C: DETERMINE THE BENEFITS OF INCORPORATING ENVIRONMENTAL SUSTAINABILITY IN PUBLIC PROCUREMENT

Below are the benefits of incorporating environmental sustainability in public procurement. From your experience, express your opinion on the level of agreement to the following benefits. Use the scale: **1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree**

ITEM	BENEFITS	1	2	3	4	5
1	Reduce the environmental impact					
2	Elimination of additional costs					
3	Promotion of efficient use of public resources					
4	Savings from the consumption of energy and water					
5	Stimulation of innovation					
6	Increases competition					
7	Increase global market share					
8	Market diversity					
9	Minimizes maintenance and disposal costs					
10	Promotion of waste recycling					
11	Minimizes supply constraints					
12	Stimulates the rise of new markets					

Please state below any relevant information which you deem necessary

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**SECTION D: ASSESS SPECIFIC MEASURES ADOPTED BY THE
PROCUREMENT ENTITIES IN ACHIEVING ENVIRONMENTAL
SUSTAINABILITY**

Below are specific measures adopted in achieving environmental sustainability of public procurement activities. From your experience, express your opinion on your level of agreement to the following measures. **Use the scale: 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree**

ITEM	MEASURES	1	2	3	4	5
1	Government legislation					
2	Involvement of top management					
3	Specifying environmentally sustainable products					
4	Capacity building					
5	Sustainability initiatives					
6	Stakeholder engagement					
7	Transparency					
8	Innovation					
9	Sustainability goals articulation					
10	Integrating sustainability into the procurement process					
11	Extra points score for sustainability criteria					
12	Inclusion of environmental criteria					

Please state below any relevant information which you deem necessary

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Thank you.