

**EXPLORING THE AWARENESS AND OPPORTUNITIES FOR THE  
IMPLEMENTATION OF GREEN PROCUREMENT IN NEW MUNICIPALITIES IN  
KUMASI**

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## ABSTRACT

Though sustainable procurement incorporates more than considerations of the environment, environmental or green procurement deals specifically with any issue connected solely to their impacts to the environment. However, in Ghana there are no specific principles or guidelines for sustainable procurement of goods and services, not to talk of green procurement. Based on this was this study conducted to explore the awareness and opportunities for the implementation of Green Procurement in the new municipalities in Kumasi. To attain this goal, four (4) objectives were realized: to find the level of awareness of green procurement practices, to identify the benefits of implementing green procurement, to identify the challenges in the implementation of green procurement and to suggest ways to mitigate the challenges faced in the implementation of green procurement in the new municipalities in Kumasi. The study made use of physical, scientific and social science tools. In order to explore the awareness and opportunities of Green Procurement, structured questionnaires were distributed, targeting the procurement offices, particularly the procurement officers at post in the new municipalities carved out of Kumasi Metropolitan Assembly namely: Oforikrom, Asokwa, Suame, Tafo and Kwadaso Municipal Assembly in Kumasi. Since the target population of the procurement officers was ten (10), the sampling technique of census was employed and as such every procurement staff was handed a questionnaire of which 9 were received and analysed using descriptive statistical tools like Mean and Relative Important Index (RII). Statistical Package for Social Sciences (SPSS) was used for the analysis of the data collected. From the research survey, it was revealed that the municipal assemblies had no awareness when it comes to green procurement and its practices, even though sustainable procurement has been captured in the Amendment Act 914, but there is no exact law governing environmental procurement practices. As such, the municipal assemblies have little or no knowledge about green procurement and its practices, making the procurement process devoid of practices that are environmentally friendly. Green Procurement has ranges of benefits like reducing environmental impacts, financial savings, demonstrates public sector's commitment to environmental protection and to sustainable consumption and production, raises awareness of environmental issues and sets example to private consumers with its purchases. For the municipal assemblies to tap into these ranges of advantages, there is first the need for a green procurement law to be enacted and aid the government's goal to protect the environment through its purchasing.

**KEYWORDS:** Sustainable Procurement, Green Procurement, Municipal Assemblies.

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## LIST OF ABBREVIATIONS

CFC	Chlorofluorocarbon
DACF	District Assembly Common Fund
EMAS	Eco-Management Audit Scheme
EMS	Environmental Management System
EPA	Environmental Protection Agency
GNP	Green Purchasing Network
GPP	Green Public Procurement
ISO	International Organizations for Standardization
LCA	Life-Cycle Analysis
MMDA's	Metropolitan, Municipal and District Assemblies
MSE's	Micro and Small Enterprises
OECD	Organisation for Economic Co-operation and Development
PPA	Public Procurement Authority
SPP	Sustainable Public Procurement
UNDP	United Nations Development Plan
UNOPS	United Nations Office for Project Services
RII	Relative Important Index

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## **DEDICATION**

This work is specifically dedicated to the Almighty Father, Antoinette Angela Yawson, my siblings Jason Anthony Asamanin Barnie and Jasmine Bernadette Asamanin Barnie, my father Mr. Jonas Asamanin Barnie of blessed memory, and to Yaa Adwubi Gyimah and her family whose encouragement, love, spiritual and moral support has brought me this far in my educational pursuit.

## **CHAPTER ONE**

### **GENERAL INTRODUCTION**

#### **1.1 BACKGROUND OF THE STUDY**

Governments' sole aim is to provide for its citizenry varieties of public goods and services towards national development. In providing the said services, governments interrelate and collaborate with its citizens through its local government institutions and decentralized agencies, the civil society and private sector as well.

In most developing countries, governments spend 20% to 70% of state revenue on public procurement (UNDP, 2006). In Ghana over 80% of state funds go into procurement. Public procurement covers the purchase of goods, works and services which constitutes 14% of Ghana's Gross Domestic Product (GDP) and 24% of total imports PPA report, (2018). Considering the quantum of the portion of state revenue used in procuring for goods, works and services, governments around the globe often flout due diligence in procurement processes which in the long run lead to social, economic and hash environmental impacts, and inefficiencies among others. These issues altogether with the irregularities result in loss of value and hinders national development.

The extent of international rules and regulations allowing for a broader view of public procurement has become a major concern. However, if countries are extra mindful of how environmental, economic and social criteria may be employed into public procurement practices without affecting the integrity of the procurement process, the pursuance of sustainable procurement will be justified. Sustainability is widely becoming a global concern and as such addressing sustainability issues are critical to the developmental agenda of nations. Shifting the main focus of the public

procurement system from economic advantages to sustainable public procurement systems and segregate to green procurement systems where optimum attention would be given to the concerns of the impact on the environment.

Green or Environmental Procurement which is a subset of Sustainable procurement's main priority is to protect the environment and the globe at large, by purchasing "green products" and services from environmentally conscious suppliers and contractors. Furthermore, green procurement is selecting products and services that mainly minimize environmental impacts. Being environmentally considerate include among others, reduction of pollution, reduction of waste, toxic and hazardous materials, improving energy and resource efficiency (Low carbon green growth roadmap for Asia and the Pacific, 2012).

Green procurement is the most effective way to pursue environmental goals. With the aim of creating demand for green products (goods, works and services), environmental procurement has the tendency to increase public authorities' credibility, predominantly when encouraging consumers and industries to change their consumption and production patterns. However, in the African context, sustainable development is challenged by factors like poverty, lack of appropriate policy and the lack of awareness. These factors greatly affect the implementation of sustainability practices (Economic Commission for Africa, 2012). This in one way or the other resulted in giving low priority to sustainable procurement system practice in Africa. Instead, priority is given to attaining value for money and value supply chain management.

## **1.2 PROBLEM STATEMENT**

Public Sector procurement is a critical instrument of government policy and serves as a push for wider environmental, economic and social change (OECD, 2007). Nevertheless, in Ghana there

are no specific principles or guidelines for sustainable procurement of goods, works and services, not to talk of green procurement. For the nation's status to be able to transition to full middle-income status, our main focus is to separate environmental procurement from sustainable procurement and tackle issues under them separately but simultaneously.

Public as well as private institutions procure for goods, works and services without being cognizant about the impact of such products or services have on the environment. There are no specific legislative framework or guidelines for practicing sustainable procurement in Ghana, making the implementation of Sustainable Procurement and Green Procurement cumbersome. The only policy frameworks on procurement, the Public Procurement Act (663 and 914) both left out how to deal with sustainability when procuring to ensure green procurement. This has led to acquiring goods, works or services without having any major concerns about the impacts they'll have on the environment. Both public and private organizations remain ignorant and particularly unperturbed about sustainable procurement practices, since the governing act doesn't talk about it, serving as a loophole for organizations to remain unconcerned. Economic use of resources and waste management are challenges we face as a country and sustainable procurement (green procurement as well) will help address those issues, as reported in March 2013 Edition of Ghana Business News by the Chief Executive Officer of PPA, Mr. Sallas-Mensah. Even though the PPA Act 663 and 914 are very important and crucial to procurement practices in Ghana, it fails to ensure its effectiveness when it comes to caring for the environment. For instance, PART EIGHT of Act 663 reprinted, it talks about the Disposal of Stores, Vehicles, Plant and Equipment. In section 84 (d) there are no clear cut instructions or guidelines on how to properly destroy, dump or buying obsolete equipment, which not executed properly will have an adverse effect on the environment. This study therefore seeks to ascertain the awareness level and the benefits of implementing green

procurement by the local government institutions. This study is targeted to the five (5) newly carved out municipalities from Kumasi Metropolis, to check their awareness level and also the benefits and challenges they face in implementing green procurement. The five new municipalities assemblies are; Oforikrom, Suame, Tafo, Kwadaso and Asokwa.

## **1.2 RESEARCH QUESTIONS**

The following are the research questions of the study:

1. What is the local government institution staff understanding of Green Procurement?
2. What criteria about Green Procurement is used during purchasing of goods, works and services?
3. What are the stimuluses to implement and maintain Green Procurement?
4. What are the reasons preventing the local government institutions from implementing Green Procurement?

## **1.3 AIM OF THE STUDY**

The overall aim of this study is to explore the awareness and opportunities for the implementation of green procurement in the new municipalities in Kumasi.

## **1.4 RESEARCH OBJECTIVES**

The following are the specific objectives in order to achieve the goal of this study:

1. To identify the level of awareness of green procurement practices in the new municipalities in Kumasi;
2. To identify the benefits of implementing green procurement;
3. To evaluate the challenges in the implementation of green procurement; and

4. To suggest ways to mitigate the challenges faced in the implementation of green procurement.

## **1.6 SCOPE OF THE STUDY**

The Public sector of Ghana is a broad area which makes it almost impossible for an individual researcher to cover single handedly. Therefore, the research is limited to newly carved district assemblies in Kumasi. The study will also span through some social, economic and most importantly environmental aspects of green procurement.

## **1.7 ORGANISATION OF THE STUDY**

This research report will consist of five chapters:

The Chapter One comprises of background of the study, problem statement, aim of the study, research objectives, research questions, scope of the study and organization of the study. The Chapter Two entails literature review on empirical and theoretical relevance to the understudied topic which includes sustainable procurement practices, impacts of sustainable procurement practices, environmental or green procurement, implementing environmental procurement, drivers of green procurement, awareness of green procurement at the district assemblies, challenges of awareness creation of green procurement practices at the district assemblies, and challenges in adopting green procurement.

The Chapter Three encompasses the research methodology which presents research design, population, sample and sampling technique and research instrument. The Chapter Four covers the research findings which includes general information. Finally, the Chapter Five consists of the

conclusions and recommendations which includes summary of findings, conclusion, recommendations, limitations of the study and suggestions for further research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

This chapter brings to light the previous works done and theories propagated towards sustainable procurement and green procurement practices. This includes impacts of sustainable procurement practices (i.e. the economic, social and environmental impacts), the environmental or green procurement concept, government public procurement, implementation of green procurement, drivers of green procurement and challenges faced in the adoption of green procurement practices. Telgen et al. (2007b) define procurement as everything and anything connected with incoming invoice, which is mostly goods, works and services. Procurement according to the Public Procurement Act 663, is the act or process of purchasing goods, works and services backed by the procurement law. Procurement usually makes up a considerable part of a firm/organisation's budget. In the public sector, procurement accounts for 29% of government expenditure and 12% of GDP by most member countries of the Organisation for Economic Co-operation and Development (OECD). Procurement without a doubt plays an integral part when it comes to developing the economy and a country at large.

#### **2.2 SUSTAINABLE PROCUREMENT PRACTICES**

Sustainability is defined as the “fundamental aim of sustainable development is to secure the future. We have seen how actions in the past have made life more difficult for us today. Developing sustainability means ensuring our actions today do not reduce our quality of life in the future” (Scottish definition). Brundtland defined sustainability as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

The Brundtland has guiding principles for sustainability. The following are the five guiding principles of the Brundtland Commission:

1. Living within environmental limits.
2. Ensuring a strong, healthy and just society.
3. Achieving a sustainable economy.
4. Promoting good governance.
5. Using sound science responsibly.

The purchasing decision of organisations do not only affect the organization but also affect the environment, economy and the society in a whole (ISO 20400).

However, the concept of sustainable procurement was introduced at the UN world summit dubbed Sustainable Development in 2002 in Johannesburg. Sustainable procurement is termed as a “process whereby organisations meet their needs for goods, works, services and utilities in a way that achieves value for money on a whole-life basis in terms of generating benefits not only to the organization, but also to society and the economy, while minimizing damage to the environment.” Sustainable Procurement is therefore improving the efficiency and effectiveness of public procurement using the power of the public market to induce major social and environmental benefits locally and globally.

UN world conference on sustainable development recognized that Sustainable Public Procurement (SPP) can be a major contributing factor to achieve sustainable development goals, would encourage implementation of public procurement practices that serve as a stimulant for development and dissemination of environmentally sound products and services. There exist considerable differences with public sector institutions when sustainable procurement practices

are at stake (Stephen and Walker, 2007). It was proposed that Local government authorities are predominantly resilient from buying products and services from small and local suppliers as compared to buying from other sectors and foreign suppliers.

Sustainable procurement practices are entrenched in various approaches like the Product lifecycle concept, where the cycle starts just at the designing stage of a product. Srivastara (2007) asserted that, concepts and literature concerning green design lay more emphasis on both conscious designing and life cycle analysis. When a product is being designed, the design team makes sure the raw materials used are toxic-free hence environmentally friendly. Actually, some terminologies are relatable to green designing like Eco Design or design for the environment.

## **2.3 IMPACTS OF SUSTAINABLE PROCUREMENT PRACTICES**

### **2.3.1 Economic Impact of Sustainable Procurement**

Sustainable procurement contributes directly to the finances of an organization or a country in a whole by cost savings. This research suggests procuring for goods, works and services in a more efficient and effective way to reduce operating costs. Capital procurement aids in achieving reduced whole-life cost (Life-cycle cost) through reducing annual maintenance and operating costs, re-considering requirements and challenging demand at the source to avoid the buying above the actual needs (Queensland Government Chief Procurement Office, 2012).

Since global warming has become a major concern of most humans, consumer's awareness on such environmental hazards in some way influences their consumption with consumer's considerations on the impact of their purchases on the environment. Centuries ago all industries and manufacturers were judged based on the quality level of their products, level of responsiveness to consumers and the level of fairness. However, today manufacturers/suppliers/contractors are assessed by how environmentally conscious they are (Kotler, 2004).

Lemmet (2012) presented several economic impacts and they include: support given to small-scale businesses in Scotland, economic savings by São Paulo and Costa Rica's support to local industries. Indirect impacts were also recorded where tax benefits were directly derived from the employment of the disabled.

### 2.3.2 Social Impacts of Sustainable Procurement

Goswami, A., Diljun, G., M., & Srivastava N., (2013) debate that “public buying has been used as a medium to achieve various social objectives, like, reducing unemployment, providing employment to disabled individuals, and to backward regions in the country, promoting gender and ethnic equality, etc.” The focus however has basically been on the social aspects of sustainability. They forged on that, presently there is no public procurement law available at the national level in India, and that inclination for particular varieties of goods and services requested for in the procurement process has consequently been presented through the policy measures and guidelines that are predominantly department-led, and the focus put on promoting procurement from the micro and small enterprises (MSEs), or give predilection to local procurement in the defense sector. There has been provision with the aim to earmark some shares of the annual purchases made from the MSE's owned by the entrepreneurs of SC/ST.

Lemmet (2012) exploring on social impacts of sustainable procurement agrees that, “although the social component of sustainable development has often been considered as the most neglected one, the eight case studies she carried out indicated that a strong commitment from public purchasers to tackle social issues exist and that employment and social inclusiveness issues are considered essential by the public entities”. Further arguments revealed that most of the social impacts are unswervingly directed to the tenders, such as, contribution of companies engaging disabled persons. Queensland Government Chief Procurement Office (2012) debated that, the “social

impact by the fair trade and the ethical sourcing practices; ensuring purchases are ethical and support fair trade and supply chains do not harm labour standards; promoting the workforce welfare (e.g. health and safety, trade union membership); creation of employment and training opportunities (principally among disadvantaged groups, mostly people with disability or mental illness, migrants, Indigenous); social inclusion, ensuring marginalized groups are included and have opportunities to participate in local community and economy; diversity and equality in the supplier market, encouraging a diverse base of suppliers (e.g. minority or under-represented suppliers) and local sustainability, building and maintaining healthy, strong communities, support social inclusion and enhancing wellbeing of local residents by generating local employment”.

### 2.2.1 Environmental Impact of Sustainable Procurement

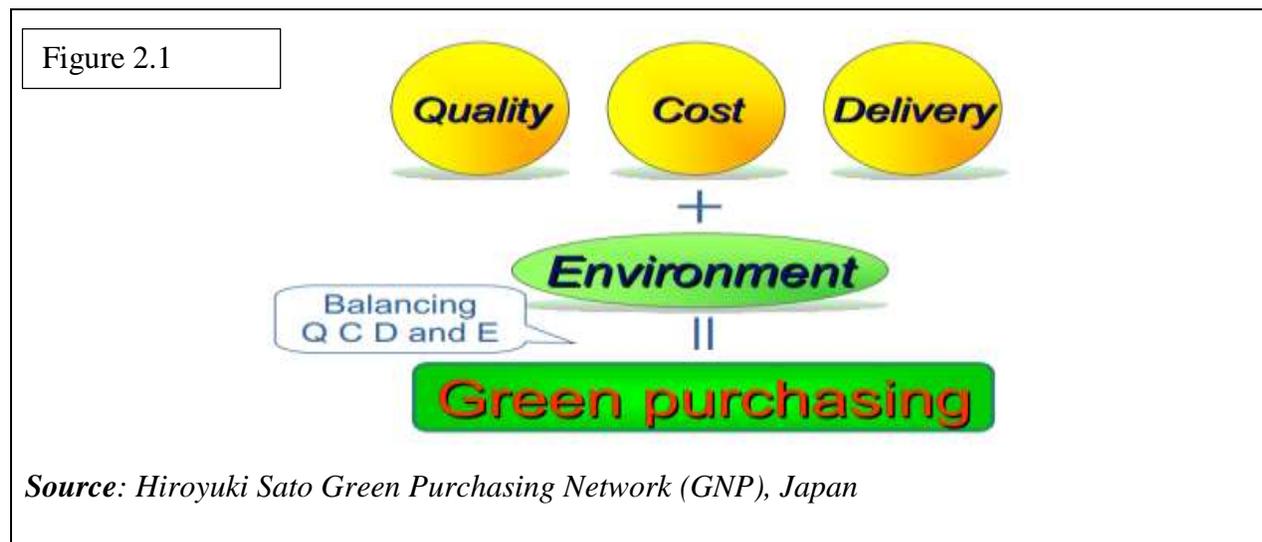
Lemmet (2012) study revealed that, “a diversity of environmental impacts at various stages of products” life cycle”. The French Ministry of Education’s decision and action on purchasing remanufactured ink cartridges has significantly resulted to a predominantly decrease in the volume of waste generated during the manufacturing stage. Construction companies (especially in Yorkshire and Humber Region, UK, and Oregon, USA) have demonstrated substantial impacts interrelated to reducing CO<sub>2</sub> emissions, water consumption and waste production The Ferrara study (in Italy) and the recycled paper case (at São Paulo, Brazil) show progressive positive environmental impacts disseminated throughout the product life cycle.

Abbie and Vincent (2011) anticipated that, “sustainable procurement practices require the appropriate order in the quest of procurement activities matching policies and best practices as to first adapt with and exceed all pertinent legislation and regulatory requirements including social, environmental, health and safety policies”. Furthermore, to minimize environmental impacts while maximizing economic and social advantage basically through imbedding appropriate

sustainability standards into procurement practices. Moreover, come about with sustainable procurement skills and awareness amid all stakeholders and supplementary shape a stronger policy and strategy base understanding while encouraging sustainability in market places, concerning current and upcoming suppliers on best practice in sustainability alongside the supply chain. “Through ensuring sustainability, the criteria in all phases of procurement come up through the integration of social, environmental and economic aspects in procuring goods, works and services. Additionally, assess the growth of sustainable procurement with positive progress and collaborate with other organizations and to come up with the best practice” (Abbie and Vincent, 2011).

## 2.4 ENVIRONMENTAL OR GREEN PROCUREMENT

Though sustainable procurement incorporates more than considerations of the environment, environmental or green procurement deals specifically with any issue connected solely to their impacts on the environment. Environmental or Green procurement is well-defined as the buying of goods, works and services which in one way or the other have a lesser impact to human health and especially the environment and with alternatively competing for products or services serving the same purpose.



The comparison considers the source of raw materials, production, manufacturing, packaging, distribution and has the potential for the 3R's (reduce, reuse, and recycling), operation, maintenance or the disposal of the product (UNDP Practice Guide, 2008). These include:

- Recycled green organics and recycled plastic products.
- Energy-efficient greenhouse friendly products
- Products which use lesser resources or in additional ways create reduced environmental impacts throughout their life cycle.
- Products that are water efficient and reduce water use.
- Products that are manufactured from recycled materials such as recycled road construction materials
- Less toxic products to reduce health effects; and
- Products using less packaging or with a provision for packaging take-back.

Environmental demands in green procurement can be related to purchased goods, works and services, or to potential suppliers and their competences and environmental management systems (Preuss, 2007).

## **2.5 IMPLEMENTING ENVIRONMENTAL PROCUREMENT**

Incorporating environmental criteria into a procurement process can be cumbersome, since there are several ways and processes proposed by several different sources about green procurement. The European Commission (2011), recommends an organization or institution should not be too eager to start implementing all the processes of green procurement but to start small and gradually but in an increasing manner. For instance, if an organization wants to buy office papers, the organization should start with buying paper containing 10% content and with subsequent

purchases increase the percentage in 10% to 20% till the organization reaches the final goal of 100% recycled content.

The idea of determining the right environmental criteria to use in the procurement process is to go through the process without discriminating against potential bidders/suppliers. For instance, if suppliers/bidders are required to have an environmental certificate before being allowed to bid when the environmental certificate is hardly used and sometimes region-specific resulting in refusing other potential international suppliers to bid (Palmujokki et al, 2010).

It is always very important to make sure purchased goods are of optimal value (i.e. there should always be value for money). With that, the criteria to employ during the procurement process is the life-cycle cost (LCC) or total ownership cost. LCC involves the total costs of all stages in the life cycle of the product, that is, from the cost of production to the end of life cost. Throughout the procurement process, the buying price, forthcoming additional cost (i.e. shipment and installation costs), operational cost, maintenance cost (which includes; energy or fuel consumption and maintenance cost), and end of life costs all account for the life cycle cost of a product (EPTA, 2007). However, most procurement officers focus simply on the price of the product. With this mode of purchase, these procurement managers think they are on the right course of acquiring value for money, when in actual sense they settle for products with less quality and extra cost for maintenance and disposal. This is the critical state where environmental issues conduce to be difficult to measure. (New et l., 2000).

For the inclusion of environmental aspects in a contract, the contents of the contract and the nature of work to be executed needs to be assessed. For instance, in a service contract, procurement officers are supposed to ensure that the service rendered is to be environmentally sound, and none of the activities or service rendered should negatively impact or disturb the environment.

Authorities are to ensure that public vehicles have fewer gas emissions (Barth & Fischer, 2003). In European Union member countries, there are clearly defined environmental criteria where tender documents are to be filled and evaluated during the procurement cycle. The sections are; subject of the contract, technical specifications, selection of suppliers, criteria for contract award and performance clause of the contract (Clement et al., 2007 p.21);

Clement et al, (2007) suggest that any environmental criteria is to be employed then the subject of the contract must contain the criteria to be used in the procurement process. The technical specifications however will contain the environmental specifications as well but embedding the environmental requirements in the subject guarantees transparency and makes it clear to potential bidders the intention of the buying authority to purchase “green” products. The buying organization can always state in their contracts about requesting for “energy-efficient computers” or request for the supply of recycled paper for printing (Clement et al., 2007 p.22).

For the successful inclusion of green procurement practices into the procurement process, the technical specifications should involve Eco-labeling and environmental technical standards. In the case of European countries, there exist a number of national technical standards to serve as references unlike other parts of the world. (Clement et al., 2007). Africa for instance, Tunisia is the only country to have a national eco-labeling scheme, and South Africa has theirs in the development stage. However, there are quite several energy-efficient labeling application schemes in other parts of Africa which can be very useful in the successful implementation of green procurement (Janisch, 2007). Even though tender documents may make references to environmental technical standards, tender documents should also contain “equivalent clauses” with the goal of not to discriminate against potential suppliers who can equally provide goods, works and services that meet the standards stated without ecolabels.

Contracting authorities can always request for “variants” when they are not certain of the quality or price of the goods, works or services, or whether the products are readily available on the market. Using variants allows a purchasing organization to still use the same evaluation criteria to compare products meeting diverse technical specifications, if the award criteria used is to create economic advantage (i.e. criteria for an award other than price but includes life cycle cost). Setting the minimum nonenvironmental requirements for goods, works or services to be procured shows the usage of variants.

Therefore, bids meeting the set minimum requirements will be selected and after bid opening, the buying organization can then go ahead to compare environmental friendly bids based on the award criteria set (Clement et al., 2007). The winning bids are mostly assessed by the lowest price submitted. It is however not necessary to insist on the usage of environmental criteria when the purchasing decision is just based on price (Nissinen & Ekroos, 2006).

Performance clauses are the most suitable way to include additional environmental requirements in the contract. In the contract, the purchasing organization can specify how the purchased products can be supplied (for instance, the type of packaging used must be recyclable), mode and method of transport to be used (European Commission, 2004). The contract clauses should not be abused and used to only determine the winning bid but serve as an evaluation criterion for all bidders to follow (Palmujoki et al., 2010).

It is possible for the successful implementation of green or environmental procurement by a country without giving environmental training to ever purchaser. This can be achieved by simplification, cooperation and information sharing. Cooperation is termed as a network between green buyers. In public procurement, cooperation can always happen on a wider scale (either regional or national). Simplification refers to all environmental products that make a difference on

large scales and not including and embedding every environmental product choice into every procurement process. Hence, there is a need to set guidelines to aid in focusing on the “key criterion”. Information on environmental criterion should be readily available and easily accessible by anyone (purchases and suppliers alike) (Erdmenger, 2003).

### 2.5.1 Ecolabels

Procurement Managers and Environmental experts have different roles to play when it comes to the environment, spenders are not environmental specialists and the environmental experts have no knowledge of the procurement process. There have been several tools invented to seal the gap between environment expertise and procurement, and the environmental label is one of such tools. People most often use Environmental label and Ecolabel interchangeably, but UNOPS (2009), argues that there is a difference between the two. For environmental performance, several labels have been introduced and those entire labels are called “environmental labels”. Ecolabel is a subset of environmental labels and ecolabels are responsible for independence, comprehensiveness and reliability UNOPD, 2009 p.6).

Figure 2.2 Relationship of the environmental label and ecolabel (UNOPS, 2009)



*Source: UNOPS, 2009*

Ecolabel defined by Barth & Fischer (2003) as certification to serve as an indication of a suppliers' product meeting certain environmental requirements with regards to its production process or raw materials of how economically sound they are. Ecolabels help consumers of products know exactly what decision to make when purchasing such products or products in a whole. Ecolabel therefore is a form of a label embedded on the packaging of products to serve as an indication that the product has met the set environmental requirements. A company's products need to be verified, assessed and certified by a third party company or organization before using a particular eco-label on its products (Salzman, 1998; European Commission, 2011). Producers/Manufacturers adopt the usage of ecolabels to help them gain an advantage over their competitors (ISO, 2012).

International Standards Organisation (ISO) has created 14020 standard series which is seen as a reference point for manufacturers and businesses alike over the globe to serve as international benchmarks where they can generate their own environmental labels (ISO, 2012). ISO has classified environmental labels into three categories; Type I, Type II and Type III (UNOPS, 2009). The Type I (with the standard name as ISO 14024: 1999), which is the identity tag specified to "classic" ecolabelling schemes (ISO, 2012), where these ecolabels factor into account product life cycle impacts (UNOPS, 2009). Type II is defined as "self-declared environmental claims" (with the standard name as ISO 14021: 1999), made by businesses and manufacturers. These entitlements are voluntary, however they are placed on products as labels (they include other types of environmental claims too) but are made as tourism (in the advertisement, on the internet and or services). Type III is dubbed "environmental declarations" (with the standard name as ISO 14025: 2006) and they are termed as quantified environmental data. Quantified environmental data for the product that has parameters with the ISO 14040 standards as a reference, and these ISO standards provide the framework and principle for life-cycle assessment (ISO, 2010).

Salzman (1998) states that there exist three (3) basic types of eco-labels; single issue voluntary label, single-issue mandatory label and third party voluntary label. The first type is the “single-issue voluntary label”, and they are the largest class of all ecolabels. Instances comprise ‘recyclable’ and ‘chlorofluorocarbon(CFC) free’. Products with said labels face lesser legal constraints especially when the labels are accurate and verifiable. The second type “single issue mandatory label” is required by law by several national and sub-national governments. Examples are; “eco-toxic” and “flammable”. Lastly the third basic type “third party voluntary label” looks at the overall quality (environmentally sound) in a whole. With these labels, products are seen to be superior (environmentally) to their competitors. The third party voluntary seal approval is specifically given to products with proven superiority by their life cycle, that is, bringing into account the environmental impact of the products life-cycle.

The goal of eco-labeling is providing the final consumer precise evidence with respect to the environmental qualities of a particular product and also provide information about the product’s life cycle. The following are examples of ecolabels; Blue Angel (in Germany), Nordic Swan (in Scandinavia) and Green Seal (in the USA). These eco-labeling programs are either mostly sponsored by governments or private institutions and are found in more than 25 countries over the globe. Committees are set up from these programs to check and verify that products meet the set criteria. As such, producers/manufacturers submit their products for assessment and consideration. If the submitted goods meet the required specifications, then the producer/manufacturers are given the green light for licensure to put the label on the products (European Commission, 2011; Salzman, 1998).

## **2.6 DRIVERS OF GREEN PROCUREMENT**

Previous studies have identified several drivers that influence organisations/firms to adopt green procurement. For example, Preuss (2001) specified that social responsibility, regulations and expected business benefits are very crucial drivers when green procurement is at stake. Rao (2006), indicated that the two most influential factors of Green Procurement are expected business benefits and customer pressure. regulations, social responsibility, customer pressure and expected business benefits have a substantial effect on green procurement (Forman and Jorgensen, 2004). A research study by Min and Galle (2001) showed that the most significant drivers of green procurement practices of most US firms are expected business benefits and regulations

A research interview conducted in Malaysia by Roman and Peir (2006) with ten medium and small-scaled enterprises showed that the actual drivers of corporate social responsibility are waste reuse, reduce and recycling, usage of biodegradable containers and paperless technology. Under corporate social responsibility, customer pressure (mostly suppliers to multinational corporations), professional code of ethics and conduct, owner's personal values and reputation, and projected financial returns (mostly from recycling) need to be addressed. A survey by Perry and Singh (2002) was conducted in Malaysia among 91 multinational corporations and discovered important determinants of intentional environmental actions are mostly pressure to adapt to corporate head offices on implemented environmental criteria, community NGO's, the media, consumers particularly located in the high-income communities, and increased workforce environmental awareness.'

These studies highlighted the four (4) main drivers influencing firms (business) to implement green procurement practices, they are; customer pressure, social responsibility, regulations and expected business benefit. Lee (2008) did a survey on the main drivers motivating medium-sized and small-

scale suppliers to adopt green supply chain practices showed that the buyer's support and environmental requirements were positively related to the willingness on the part of suppliers to partake in green supply chain practices. The study revealed further that, suppliers are more willing to engage in green supply chain when their organizational capabilities and resources are inadequate. A study by Walker et al., (2008) was done to delve into those factors that are the driving force or hindrances on the part of organisations, to implement green supply chain management practices.

A literature review highlighted the categories of both internal and external drivers of green supply-chain management processes, which includes regulations, organizational factors, competitors, customers and society. The study further revealed that the internal hindrances are lack of legitimacy and cost, whilst the external hindrances are poor supplier commitment, regulations and industry specific barriers. A study done by Emmett and Sood (2010) revealed that, there are major reasons why green procurement must be continued to be promoted in organisations and value chains. The reasons comprise of; the growing number of environmental friendly products and services; coming up with new products and service for the markets; the interest of the investment lenders and community; and opportunities for collaboration.

## **2.7 AWARENESS OF GREEN PROCUREMENT AT THE DISTRICT ASSEMBLIES.**

The practice of green or environmental procurement does not exist in Ghana's policies or even in the public procurement Act 663 or the recent Amendment Act 914, nevertheless other laws, policies, regulations exist acting in conformism with the aspects of green procurement. The Public Procurement Amendment Act 914 does contain the broad concept of sustainable procurement which incorporates green procurement, and the other social and economic aspects, because of its essential impact on sustainable development. The public procurement authority (PPA) however

has been piloting awareness programmes on the new policies enacted like the framework agreements and also some sustainable procurement ingenuities; and by establishing two zonal offices in Takoradi and Kumasi with the aim to offer advisory services to the government entities beyond the capital. By means of the overall society, the declination of the environment over decades has extremely enlarged the public's awareness on environmental issues. With the two decades of implementation, some accomplishments counting from the creation of two hundred and sixteen (216) local authorities, transfer of resources, authority and responsibilities from the central government level to the local level, raising awareness among the citizens, infrastructural development with significant support from District Assemblies Common Fund (DACF), the District Development Facility (DDF) and improved cooperation between local entities and the development partners.

With global awareness on sustainability (Bryde, 2011) “there are increasing pressures and anticipations on more efficient and value added delivery of products and services for their institutional needs (Grönroos, 2006; Walker & Brammer, 2011; Bryde & Meehan, 2010)”. “Whether districts, regions or national, all stakeholders from employees and shareholders to taxpayers and governmental bodies are requesting for quality and effective procurement practices and systems which are sustainable (Kalubanga, 2012)”. Ghana with awareness creation programs, public organizations, procurement professionals and boards from the national, regional and district levels necessitate a re-designing of the standard tender documents, political support and training practitioners of procurement on sustainable public procurement. Ghana government is advancing a step forward into the adoption wide-ranging policies and programs of sustainable initiatives, with the goal of achieving greater growth in achieving sustainable procurement (Alliance for Development, 2014). Blome et al. (2013) postulate that, “both top management support and the

company's market performance lead to the adoption of green procurement". From the district, municipal and metropolitan assembly level, awareness of sustainable procurement hence green procurement is very stumpy even though several efforts have been made by the government in creating awareness of sustainable and green procurement through public procurement act hence through public procurement practices.

Sustainable procurement (green procurement inclusive) play a vital role in diminishing any reputation risk of social manipulation in the supply chain process. As stated by UNDP Practice Series (2008), "green or environmental procurement seeks to incorporate a number of safeguards and checks in the procurement process that will assist in guarding against the inadvertent infringement of: labour rights, adverse environmental impacts, supporting local entrepreneurship, gender and the empowerment of women, poverty eradication and governance but traditional procurement mostly focuses on value-for-money considerations". The goal of sustainable procurement worldwide is to embed economic, social and environmental considerations into the public procurement process with the aim of reducing adversative impacts on social, health and environmental conditions, in so doing saving valued costs for organizations and communities at large, but in Ghana, the basic step is to acknowledge or provide awareness of sustainable procurement practices (green procurement inclusive). Sustainable procurement (economic, social and environmental aspects as well) forms a vital part of the quest for sustainable development.

## **2.8 AWARENESS CREATION CHALLENGES OF GREEN PROCUREMENT PRACTICES IN DISTRICT ASSEMBLIES**

In general, the awareness creation of green procurement has proven to be a difficult task for organisations and nations, and surprisingly for developed countries as well. Going by the aspects of green procurement adoption, a country/organization cannot underestimate the likelihood that

there are some corresponding aspects which in one way or the other intensely influence the creation of awareness of green procurement at any of the levels of development of a nation. With this specifically occurring in the public sector when public authorities try to pursue environmental excellence by employing different tools and solutions that are sturdily synergetic with (suggesting the adoption of) green procurement practices. With the procurement transaction, the supply side plays a critical role in the accessibility of sustainably produced products and services.

With some goods and services purchased by public sectors which are however highly dedicated, it is probable that ascertaining sustainable sources may be problematic in some contexts (Lysons & Farrington, 2012). “The possible barriers to implementing green procurement practices consist of; inadequate availability of environmental friendly goods; zero or expensive environmental substitutes; erroneous studies; lack of managerial support or willingness; and imprecise or unsupported environmental claims by suppliers and manufacturers in a whole”.

Organizational policies, legislature, instructions, environmental management systems (EMS) or multi-lateral contracts frequently require administrations to implement green procurement practices (Mather, 2010). Researchers also propose that financial resource of organizations can escalate their perceptibility among external stakeholders. Furthermore, financial resource is mostly measured as a source of administrative slack, in the form of surplus resources (Sharma, 2000; Bowen, 2000).

Consequently, a grander financial resource possibly will lead to perceptibility, in so doing lead to added compression from peripheral constituents. Exterior stakeholders may perhaps also recognize organizations with financial resources, to be in a locus to use the excess unrestricted slack resources to overawed the impulsiveness and risk in implementing the appropriate supply side environmental practices (Menguc et al., 2010). Acknowledgement of supplier confrontation or

approval is crucial for acquiescence with the procurement laws and rules in play. In order to avoid noncompliance, suppliers must be required to make available proof of their guarantee to protecting the environment.

However, taking the form of accounts on steps the suppliers employ to minimise their impacts on the environment, or on the other hand prove that they do not breach any constitutional requirements concerning to the environment (Saunders, 1997). Brammer & Walker (2009) specified that, the “main problem limiting the adoption of green public procurement is difficulty in engaging suppliers”. Some GPP practices were discovered to be fraught by the disinclination of manufacturers and suppliers as well to collaborate (Lysons & Farrington, 2012).

This reluctance might be owing to several number of reasons comprising apprehensions over sensitive facts, poor practices on the part of suppliers and manufacturers, and resource limitations. Bjorklund (2011) accordingly explains that, “the magnitude to which there is backing for green procurement at senior levels in organizations and the degree to which organizational processes and structures support impede the progress of sustainable procurement”.

High-level or top management backing is crucial to the accomplishment of sustainable procurement initiatives or in the other hand the failure of it. Bjorklund (2011), established that precedence among the topmost or the middle management are significant drivers in the environmental acquisition. Lacking high-level support or managerial support, employees are habitually reluctant or powerless in pursuant of green procurement (Ashenbaum, 2008). Additionally, Ashenbaum (2008) revealed that, “in most cases, sustainable procurement is not perceived as authentic or indispensable initiatives for upper management or administration to address as the necessary methods are often seen as an added cost with little immediate benefit to the organization”.

The extra aspect serving as a barrier to the awareness creation of green procurement practices may possibly be perceived from the lack of trained procurement staff to aid in the implementation of green procurement practices. Many practitioners, procurement policies and laws are not unequivocally clear and their interpretation however is subjective.

Thus, understanding the rules and regulations by manufacturers, suppliers and buyers can impact the casual that public procurement officers will conform with the set rules. This primes to the conception that, there exists a correlation between knowledge with the green procurement rules and regulations and compliance. Bouwer et al. (2006) revealed that, “operational and/or information tools are key in establishing environmental criteria in public procurement” while Walker & Brammer (2009) cited that, “lack of information about the real environmental impacts of the products, difficulty in the preparation of call for tenders and purchasing, and lack of guidelines”. Gattiker et al. (2008) similarly discovered that the deficiency of clear explanation and assessment principles for green procurement is also a major barrier.

Absence of the know-how of integrating environmental issues into purchasing: Cooper et al. (2000) emphasized that, mostly procurement officers are hesitant when it comes to how to integrate environmental issues in their purchases. In expressions of social responsible purchasing, it has been pragmatic that; “Even when they diagnose the significance of corporate social responsibility, many purchasing officers do not know how to concretely and analytically include social and environmental issues into their purchasing decisions. They have little to no experience with such demands (Maignan et al., 2002)”. Nevertheless, several writers have emerged with commendations and recommendations alike as to how to overcome the challenges of awareness creation when it comes to green procurement practices, among these authors are Bouwer et al. (2006) presenting that, “training and competency in environmental issues is crucial

to the successful awareness creation and implementation of green procurement in the public sector”.

Consequently, administrative researchers championing the organizational view of legitimacy (Sharma, 2000), recommend that, greater financial performance will stimulate basic supply side environmental practices like green procurement (Shittu & Bake, 2010). Furthermore, investments in development practices are far more indeterminate than investing in basic green procurement. Reducing cost of training has been suggested by many scholars as an operative remedy against environmental illiteracy (Carter & Dresner, 2001).

A study by Bouwer et al. (2006) pointed out that, the increasing cost of ‘green’ products in comparison with those not environmentally friendly as a major barrier to adoption. “In sum, there are a whole lot of challenges facing awareness creation on green procurement practice from the lack of expertise to lack of government support-reason being that government is responsible for taking the lead in sustainable development, however, little support is provided in the areas of finance, and legal structure to incorporate environmental sustainability issues into construction procurement” (Ayarkwa et al., 2010) and conversely the recent addition of sustainable procurement in the current Public Procurement Amended Act (Act 914) 2016, the severity of the challenges on creation of awareness on green procurement are calamitous considering the rate at which the environment is degrading in Ghana. These challenges are crucial in getting on board the creation of awareness of green procurement by means of the district assemblies.

## **2.9 CHALLENGES IN ADOPTING GREEN PROCUREMENT**

In implementing green procurement, it is vital to ascertain challenges or hindrances likely to be faced and regulate ways of overpowering them. For instance, with green public procurement, if an

assembly is able to detect the measures for patronizing environmentally friendly products, but authorities contracting refuse to use or accept them, then the products will be considered impractical (Günther, 2003). One of the most substantial component lacking in green procurement is a tool that would be used for quantifying or calculating the benefits of the environment. Having solid, tangible and sound records delivers decision makers with a much stronger argument for a nationwide arrangement and a massive commitment to green procurement (Ochoa et al., 2003). An additional major barrier to green procurement implementation is uncertainty and unawareness. Several purchasing officers and other procurement professionals have difficulties in defining the concept “environmentally friendly”, thus struggle integrating environmental characteristics in their decision making (Emmett & Sood, 2010). Additionally, there are barriers in trade when it comes to purchasing green products. For example, eco-labeling in previous years, have been seen as a potential “barrier of trade”, since demanding products that only have ecolabels all through the procurement process (predominantly in public procurement) may be inferred as restraining the number of suppliers capable of responding to the tender and would accordingly be viewed as a ‘restrictive or closed’ and not “open to all bidders” tender (Emmett & Sood, 2010). Frequently, information on how environmentally friendly products and/or services is not provided by the specifications requested for, or may not be sufficient during the procurement process.

“For many suppliers, this information is not readily available, therefore it is challenging for them to provide it to procurement officers, specifically during the preliminary stage of the procurement process where they need to meet the initial specifications requested for by the procurement professionals. Hence, including green aspects as part of the initial specifications may prove challenging” (Emmett & Sood, 2010).

Likewise, it is more problematic to define the exact ecological aspects to be considered (i.e. the most substantial ones), and the ones that should not. To address the issue at hand, Life Cycle Assessment (LCA) method was established, allowing the environmental impacts of products to be on an integrated basis to allow the assessment of two different products (Erdmenger, 2003b). LCA refers to “the assessment of the environmental impacts of a given product or service throughout its lifespan regarding the raw material production, manufacture, distribution, use and disposal including all intervening transportation steps” (EPTA, 2007 p. 1). It was developed in the United States of America (USA) at the later of the 1960s, where it was referred to as “Resource and Environmental Profile Analysis” (REPA). Since, the interest in and the use of LCA have speedily grown.

Nonetheless, until recently, only few LCA reports have been released and made readily accessible to the general public and it can then be challenging to recover one’s needs to one specific (Schmidt & Frydenal, 2003). “Green products are often apparent to be costlier, typically because the primary purchasing costs tend to be higher. This perception is often miscomprehended because the overall costs of green products (i.e. the life cycle costs) essentially tend to be less as there is compensation in operating, maintaining and disposing costs. Hence, it is often challenging to alter the behaviour of spending officers, for them to focus more on the life cycle costs and not the purchasing costs” (European Commission 2015c).

The European Commission (2015c) similarly “identifies lack of training as a challenge in implementing green procurement”. The responsibility for execution of the tasks during procurement processes may not ineludibly have the appropriate skills required, or may not have received proper training. Giving procurement officers the right training that particularly focus on life cycle costs concept, and technical and legal facets of green procurement is largely compulsory.

Moreover, it is correspondingly vital to train the end users on the know-how in using products sustainably.

In conclusion, all environmental criteria vary momentarily among suppliers that, some product groups are more motivated to have appropriate measures than others (Parikka-Alhola et al., 2006). According to a study by Kippo-Edlund et al. (2005), “environmental criteria were used most commonly with such supplier groups as food products and beverages, office equipment such as paper and computer machinery, repair services, maintenance services, installation services, and disposal services”. This indicates that, it would mostly be challenging to purchase goods that are outside these supplier groups which is centered on environmental criteria.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 INTRODUCTION**

This chapter brings to view the methodology leading to the attainment of objectives of this study. This chapter entails the research approach, research method, population, sample and sampling techniques, research instrument/data collection and data analysis method used in this study.

#### **3.2 RESEARCH DESIGN**

Research design defined by Creswell (2006) is the procedures employed in the collection, analyzing, interpreting and presenting data in a research study. Research Design therefore is the strategy or plan employed to solve a research problem at hand. The research approached to be used will be Quantitative Survey in this research study. The choice of research approach was influenced by a presupposed fact the study seeks to solicit the views and opinions of respondents, specifically procurement of the 5 new municipal assemblies in Kumasi on the aim and the objectives of the research survey.

Survey research is known as one of the most important measurement areas used in applied social research. It is therefore a data collection method which consists of asking questions of respondents to draw out information using either written or verbal question methods. Survey research serves as a fast, efficient, accurate and inexpensive way to assess information obtained from the population. With research survey, particular attention should be given to questions (oral or written) asked, since any inefficiency or any mistake made can disrupt the structure and analysis of the data acquired.

Construction and distribution of questionnaires which has pre-categorized answers are part of the structured method of research survey. However, the questionnaires can be self-administered, with respondents completing it themselves. These self-administered questionnaires are devoid of interviews and most of the time further explanations, thus aids in the elimination of any form of interviewer bias. With research survey, respondents have ample time to give more reliable and accurate answers since they are convinced their privacy would be protected.

### **3.3 POPULATION**

Population is referred to as the entire group of individuals, objects or events which have common characteristics. The population for the study comprises of all the key procurement staff of the five (5) new municipal assemblies in Kumasi of Ashanti Region; namely, Oforikrom, Suame, Tafo, Kwadaso, and Asokwa. From the preliminary survey done early on, it was observed that procurement staffs available in the five new municipalities are ten (10); Oforikrom (1), Suame (2), Kwadaso (3), Asokwa (2), and Tafo (2).

### **3.4 SAMPLE AND SAMPLING TECHNIQUE**

Sample refers to the group of units selected as part of a study unit. In this research study, census sampling was used since the entire population is small. The sample size was obtained from the key procurement staffs of the five (5) new municipal assemblies in Kumasi.

### **3.5 RESEARCH INSTRUMENT**

The research instrument used was questionnaires. Data for this research survey was derivative from the administration of questionnaires to the respondents. The questionnaire contained both open and closed-ended questions. The open-ended questions were used in order for the respondents to freely express their views and concerns, whilst the close-ended questions were to gear the

respondents to the desired responses. The questionnaire was designed in a way to obtain both general and specific information from the key procurement staffs of all five (5) new municipal assemblies in Kumasi.

### **3.6 DATA ANALYSIS**

After the data was collated from the respondents on the field, the data was scrutinized to check for any incompleteness and entered using its respective coding. The data therefore was cleaned to check errors before analysis was made. Descriptive statistics was used to analyse the demographic data with/in percentages. With the aim of determining the benefits, challenges, how challenges were addressed and drivers of the implementation of green procurement, mean scores and relative important index (RII) were used to analyse the data. The mean and RII scores show how important the benefits, challenges, how challenges were addressed and drivers of implementation of green procurement was to the assembly and to show what measures have been or have not been implemented.

## **CHAPTER FOUR**

### **RESEARCH FINDINGS**

#### **4.1 INTRODUCTION**

This chapter represents the data collated from the findings of the research. The contents of this work were analyzed directly based on the respondents' answers given to the questions in the questionnaire. However, analysis and interpretation done were aided by the secondary data collected with the aim of authenticating the findings. Both open-ended and closed-ended questionnaires were employed to cover the awareness, benefits, and challenges of the implementation of green procurement in the new municipalities, which are the main focus of this research study.

This made it possible to solicit answers from the key procurement staff on their concerns and observations about green procurement and its implementation in the municipal assemblies. Since the implementation of green procurement rests on the hands of the key procurement staff or they are the advocates of the implementation of environmental or green procurement, questionnaires were however distributed and collected from the procurement professionals available in the five (5) new municipalities carved out of Kumasi Metropolitan Assembly, and the analysis of some of the collated data were based on a weight of 1 to 5 ( 1 – not at all important, 2 – slightly important, 3 – important, 4 – fairly important and 5 – very important / 1 – not at all important, 2 – not important, 3 – not thinking about it, 4 – important and 5 – extremely important).

#### **4.2 GENERAL INFORMATION**

The data received from the target population of 10 key procurement professionals from Oforikrom, Asokwa, Suame, Tafo and Kwadaso Municipal Assemblies, were not without any specific order

and they were gathered according to the researcher's convenience. The questionnaires were distributed in collected according to their geographical ease of access.

Table 4.1 Frequency Data

Respondents	Target	Achieved
Oforikrom Municipal Assembly	1	1
Asokwa Municipal Assembly	2	2
Suame Municipal Assembly	2	2
Old Tafo Municipal Assembly	2	2
Kwadaso Municipal Assembly	3	3
<b>Total</b>	<b>10</b>	<b>10</b>

*Source: Field data, 2019*

#### 4.2.1 Demography

Table 4.2 Highest Level Of Education

Level of Education	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor's Degree (including Honours)	8	80.0	80.0	80.0
Postgraduate/MA/MPhil/PhD	2	20.0	20.0	100.0
<b>Total</b>	<b>10</b>	<b>100.0</b>	<b>100.0</b>	

*Source: Field data, 2019*

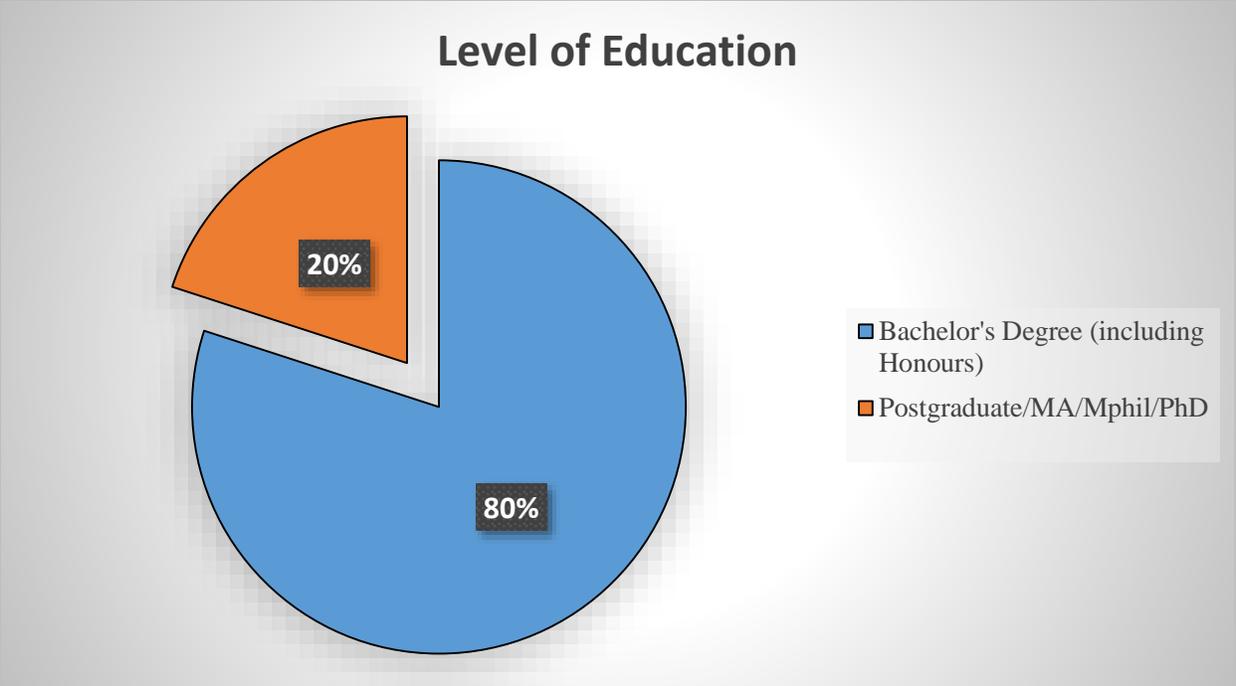


Figure 4.1 Level of Education  
 Source: Author’s Construct, 2019

From the data collected it is observed that the procurement staff at post are all professionals and well equipped with knowledge on procurement, and procurement practices since the procurement staff have attained either a bachelor’s degree (8 staff) and at most a postgraduate/MA/MPhil/Ph.D. (2 staff). Therefore, the respondents are highly qualified to be engaged in the research study to know the awareness, benefits, and challenges of implementing green procurement in the new municipalities in Kumasi. Hence, the the data provided by the respondents can be relied on.

Table 4.3 Rank/Position of Respondents

Rank/Position	Frequency	Percent	Valid Percent	Cumulative Percent
Assistant Procurement Officer	7	70.0	70.0	70.0
Procurement Officer	3	30.0	30.0	100.0
<b>Total</b>	<b>10</b>	<b>100.0</b>	<b>100.0</b>	

Source: Field data, 2019

From the field data collated, it is realized that all the respondents hold prominent positions in the assembly; where Assistant Procurement Officers available are seven (7) and the actual Procurement Officers are three (3) out of the ten (10) respondents of procurement staff at post. According to this data, the respondents are then seen as agents of change since they have major say and are highly able to influence the procurement process.

Table 4.4 Work Experience

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 5 years	7	70.0	70.0	70.0
5 to 10 years	3	30.0	30.0	100.0
<b>Total</b>	<b>10</b>	<b>100.0</b>	<b>100.0</b>	

Source: Field data, 2019

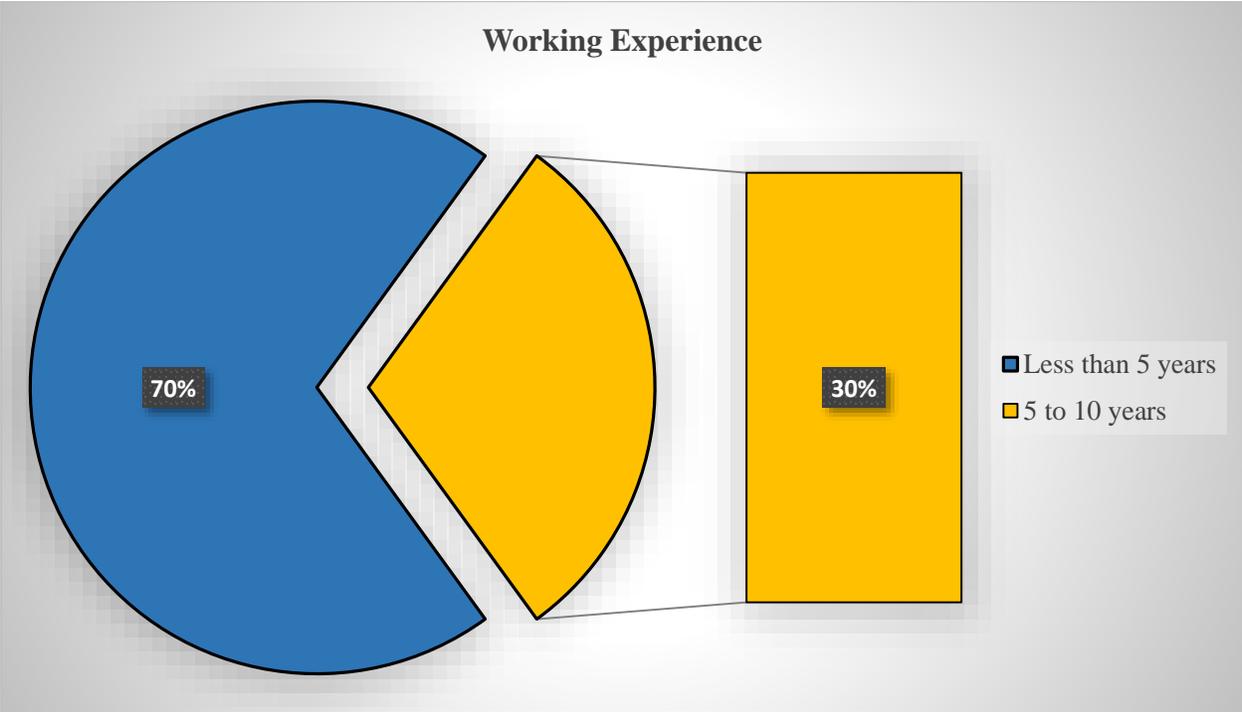


Figure 4.2 Working Experience  
 Source: Author’s Construct, 2019

Seven (7) out of the ten (10) respondents interviewed were newly placed staff with less than 5 years working experience whilst the remaining three (3) has been in post for 5 to 10 years. The newly posted staff were mainly the assistant procurement officers and the already instated are the

actual procurement officers. Asokwa (with 2 officers), Kwadaso (with 3 officers), Suame (with 2 officers) all had only assistant procurement officers at post who have less than 5 years of working experience. Leaving Oforikrom (with 1 officer) and Tafo (also with 1 officer and 1 assistant officer) with 5 to 10 years of working experience.

### 4.3 KNOWLEDGE OF GREEN PROCUREMENT

Table 4.5 Information Acquired On Green Procurement

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	3	30.0	30.0	30.0
No	7	70.0	70.0	100.0
<b>Total</b>	<b>10</b>	<b>100.0</b>	<b>100.0</b>	

Source: Field data, 2019

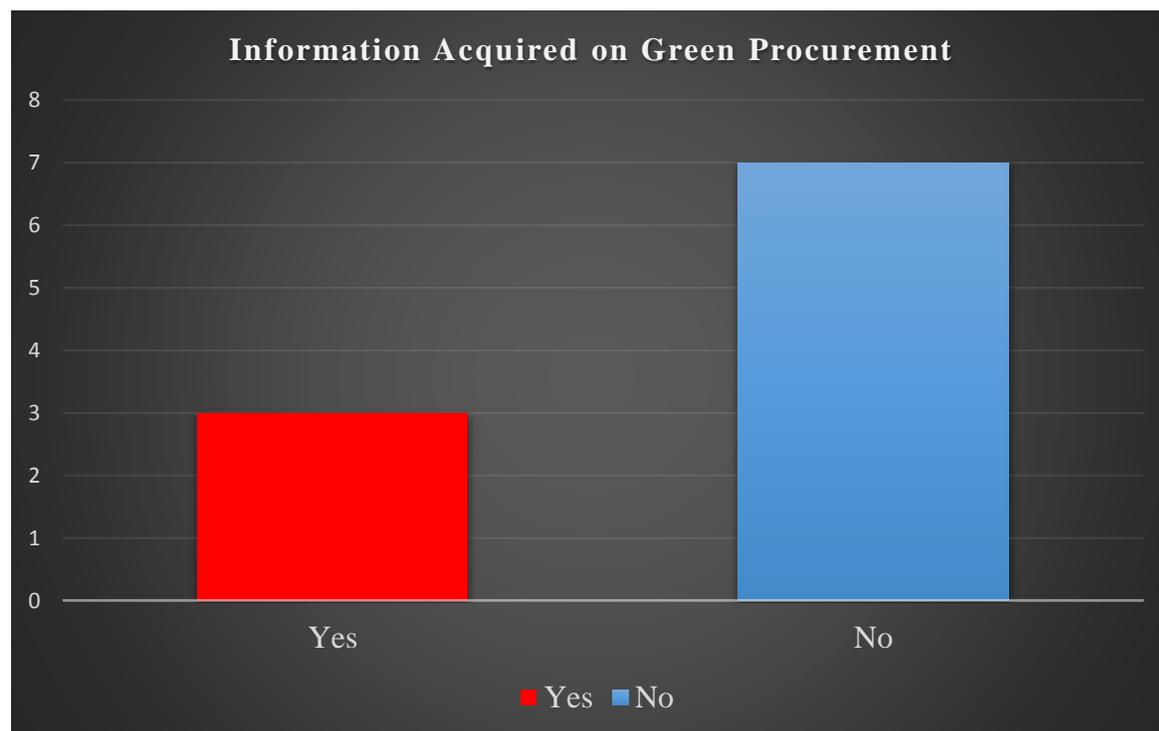


Figure 4.3 Information Acquired on Green Procurement

Source: Author's Construct, 2019

From the data collected most of the respondents (7 out of the 10) have little or no knowledge about what Green Procurement is. Therefore, the municipal purchase goods, works and services with not much consideration of how much the products procured have long-run impact on the environment.

Table 4.6 Where did you hear it from?

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
	7	70.0	70.0	70.0
PPA/PPA website	3	30.0	30.0	100.0
<b>Total</b>	<b>10</b>	<b>100.0</b>	<b>100.0</b>	

*Source: Field data, 2019*

#### **4.4 ADOPTION OF ENVIRONMENTAL MANAGEMENT SYSTEMS**

Respondents attested to the fact that the assembly has no policy or law governing green or environmental procurement. This however is in exact accordance to the secondary data collected on green procurement. Environmental Management System (EMS) is a set of practices and processes mainly to aid organizations in reducing the environmental impacts of goods, works or services procured. In addressing organizations regulatory demands, EMS becomes a systematic and cost-efficient approach or a to-go tool to be used. If an organization fails to adopt any of the EMS's (i.e. ISO 14001 and EMAS; Eco-Management & Audit Scheme), there is a high tendency that the organization cannot effectively analyze and evaluate suppliers on the impacts their supplies have on the environment.

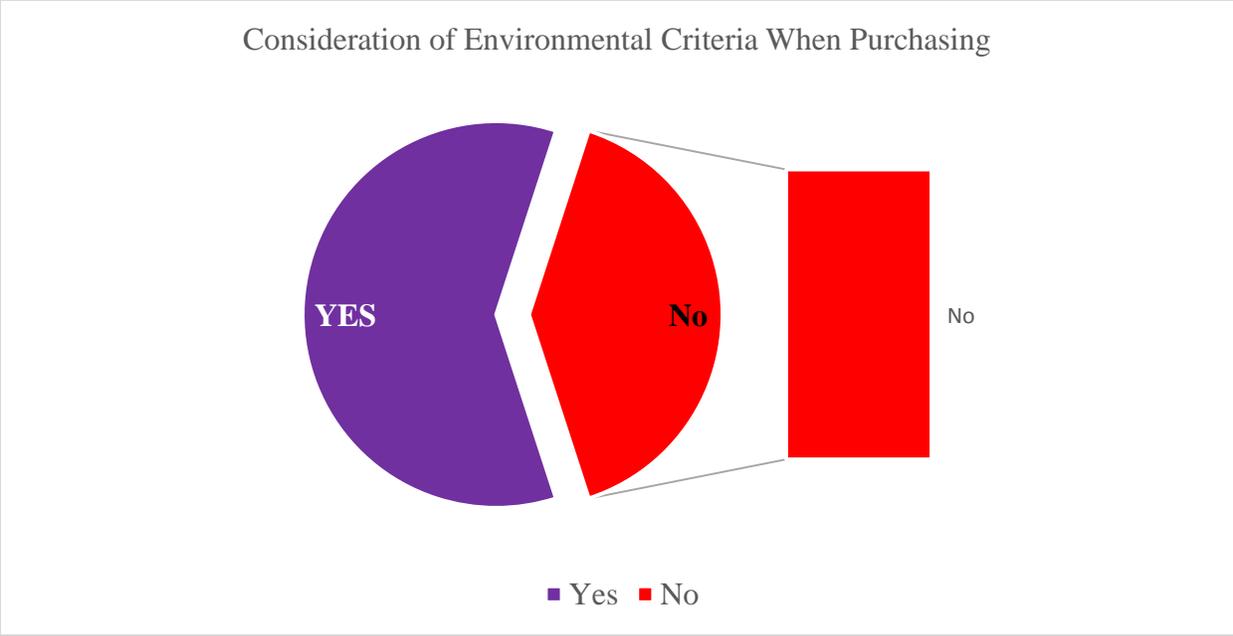


Figure 4.4 Consideration of Environmental Criteria when Purchasing

Source: Author’s Construct, 2019

Taking into consideration environmental criteria during the procurement process differs among different governmental institutions. Sometimes it is least prominent in the mmda’s but acknowledgment however is considered too. From the field data collated, it is noticed that 60 % of the respondents admitted to considering environmental criteria during purchases whilst 40% of the respondents didn’t consider environmental criteria because their idea is that goods and services purchased by the assembly basically do not have much effect on the environment.

Table 4.7 Are life-cycle costs taken into consideration during the procurement process?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	9	90.0	90.0	90.0
No	1	10.0	10.0	100.0
<b>Total</b>	<b>10</b>	<b>100.0</b>	<b>100.0</b>	

Source: Field data, 2019

According to the International Organization for Standardization, life cycle cost is taking into account all agreed projected and post the relevant cost of a product considering all costs (cost of maintenance and repair inclusive). For an organization to know the true cost (i.e. life-time cost), there is the need for the organization to undertake a life-cycle cost analysis to determine the overall cost of a product without much attention given to the actual cost of the product. However, from the research survey conducted, it is noticed that almost all the new municipals take products to be procured through a life cycle analysis. With the aim of trying to project further costs to be incurred after purchasing the good (with much concentration on repair and maintenance costs).

Table 4.8 Do you have any environmental policy?

	Frequency	Percent	Valid Percent	Cumulative Percent
No	10	100.0	100.0	100.0

*Source: Field data, 2019*

For successful implementation of environmental procurement, there is the need to have a policy or a law (i.e. one that targets the impact of purchases on the environment) to serve as a guideline and as a to-go manual for institutions. This environmental law on purchases that impact the environment adversely or positively will serve as checks to make sure the environment is protected at all cost. In order to attain the 12<sup>th</sup> goal of the Sustainable Development Goals (Responsible consumption and production), resource efficiency, clean water, climate change and biodiversity, there is the need for every nation to at least have an environmental purchasing policy, in addition to all other environmental laws.

However, this is not the case when it comes to the research study area. From the research survey, not one but all of the five (5) municipals did not have any environmental policy for their purchases of goods, works and services. With the reason that PPA has not come out with any green

procurement manuals to aid them to use green procurement practices in their procurement processes. Since they cannot enact their own laws with the certification of the PPA, they are then waiting on the PPA to come out with those environmental policies for purchases. Even though the PPA made provisions for sustainability in Act 914, sustainability was not much addressed and given a through definition and walkthrough for government institutions to use as a manual guiding their purchases with the aim of safeguarding the environment.

Table 4.9 Do you evaluate suppliers before purchasing from them?

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Yes	10	100.0	100.0	100.0

*Source: Field data, 2019*

Evaluating suppliers to select the least evaluated bidder is a standard embedded in the procurement process. Suppliers' bids undergo several checks to make sure the suppliers are much qualified to undertake any specified tasks requested by the buyer (in this case, the municipal assembly). This is mostly done to avoid suppliers/contractors from backing out of projects with the case of going insolvent or any other unforeseen circumstances. Due diligence is undertaken making sure suppliers/contractors/consultants are capable of undertaking the project at hand. This is exactly what is done at the municipals since the respondents attested to the fact they take suppliers through evaluation to make sure the suppliers are capable of undertaking the project.

Table 4.10 Do Local Suppliers provide green products?

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Yes	4	40.0	40.0	40.0
No	6	60.0	60.0	100.0
<b>Total</b>	<b>10</b>	<b>100.0</b>	<b>100.0</b>	

*Source: Field data, 2019*

In order for the successful start and completion of the procurement process, there is a need for suppliers to be first willing to undergo the procurement process. Suppliers are however made up of both foreign and local suppliers. Since most foreign suppliers are already into producing and supplying ‘green’ products, the onus lies on the local suppliers who seem to be not too well-informed when it comes to production and supply of ‘green’ products. From the survey it was noticed that, local suppliers do have the tendency to provide ‘green’ products but since it is not specifically requested for in the specifications given by the municipalities, the suppliers do not exactly provide the ‘green’ products.

Table 4.11 Strong Influence on local suppliers providing green products

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Yes	10	100.0	100.0	100.0

*Source: Field data, 2019*

For green procurement to be successfully implemented, there is the need for all stakeholders involved in the procurement processes to be readily available to play their parts actively. Procurers should incite suppliers to provide green products any way possible they can. Because suppliers always provide whatever products in accordance with the specifications given by the procurer/buyers. So procurers play a very important and crucial part when it comes to the successful implementation of green procurement, by safeguarding the environment with purchases. From the survey, all the respondent agreed that they play an active role in what manufactures procure and supply.

#### **4.5 PERCEIVED BENEFITS OF IMPLEMENTATION OF GREEN PROCUREMENT**

The research study’s aim was to find out the benefits of the implementation of green procurement in the assembly. The respondents were employed to rank the benefits derived from the

implementation of green procurement to the scale 1 to 5 where; 1 – not at all important, 2 – slightly important, 3 – important, 4 – fairly important and 5 – very important. The benefits of implementation dimensions applied in the research study include; reduce environmental impact, enlarge eco-products, green supply chain, financial savings, improved quality of life, social benefits, energy efficiency and resource use, aids in establishing high environmental performance standards for products and services, demonstrate public sector’s commitment to environmental protection and to sustainable consumption and production, raises awareness of environmental issues and setting example to private consumers.

*Table 4.12 Respondents opinion on the benefits of implementation of Green Procurement*

S/ no	Benefits of implementation of Green Procurement	RATING					Total	$\sum W$	Mean	RII	Rank
		1	2	3	4	5					
1	<i>Reduce environmental impact</i>	-	-	-	4	6	10	46	4.6	0.92	2 <sup>nd</sup>
2	<i>Enlarge eco-products</i>	-	-	4	1	5	10	41	4.1	0.82	7 <sup>th</sup>
3	<i>Green supply chain</i>	-	-	2	7	1	10	39	3.9	0.78	10 <sup>th</sup>
4	<i>Financial savings</i>	-	-	2	2	6	10	44	4.4	0.88	4 <sup>th</sup>
5	<i>Improved quality of life</i>	-	-	4	-	6	10	42	4.2	0.84	6 <sup>th</sup>
6	<i>Social Benefits</i>	-	-	4	6	-	10	36	3.6	0.72	11 <sup>th</sup>
7	<i>Energy efficiency and resource use</i>	-	-	-	7	3	10	43	4.3	0.86	5 <sup>th</sup>
8	<i>Aids in establishing high environmental performance standards for products and services</i>	-	-	-	-	10	10	50	5.0	1.00	1 <sup>st</sup>
9	<i>Demonstrate public sector’s commitment to environmental protection and to sustainable consumption and production</i>	-	-	-	10	-	10	40	4.0	0.80	8 <sup>th</sup>
10	<i>Raises awareness of environmental issues</i>	-	-	-	5	5	10	45	4.5	0.90	3 <sup>rd</sup>

11	Setting example to private consumers	-	-	-	10	-	10	40	4.0	0.80	9 <sup>th</sup>
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Source: Field data, 2019

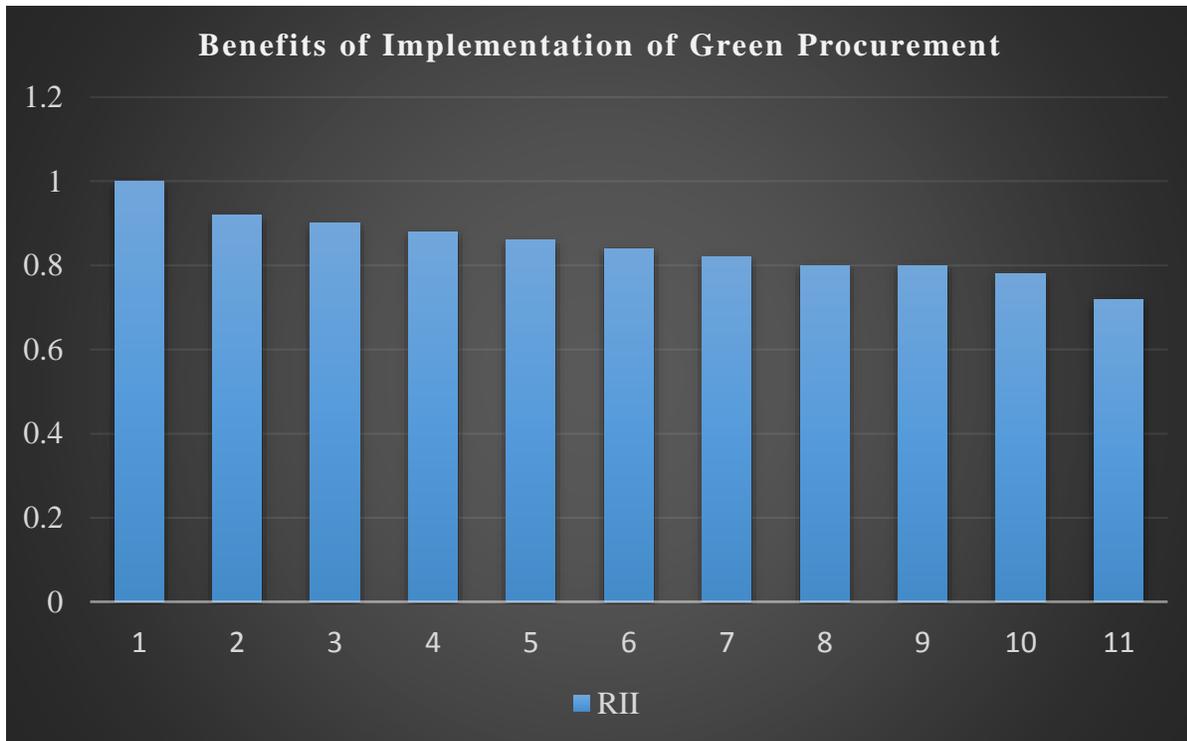


Figure 4.5 Relative Important Index (RII) of Benefits of Implementation of Green Procurement  
Source: Author's Construct, 2019

From Table 4.12 represented with Figure 4.5 depicts a descriptive statistics of the research survey findings on the benefits of implementation of green procurement. The mean values given by the respondents from the research study ranges from 3.6 to 5.0. The relative important index of the mean ranges from 0.72 to 1.00; indicating that the estimated mean has no significant difference and the identified variables impact on the environment through procurement practices. With the relative important index of 1.00, the variables, aids in establishing high environmental performance standards for products and services ranked 1<sup>st</sup>, reduce environmental impact ranked 2<sup>nd</sup>, raises awareness of environmental issues ranked 3<sup>rd</sup>, financial savings ranked 4<sup>th</sup>, energy efficiency and resource use ranked 5<sup>th</sup>, improved quality of life ranked 6<sup>th</sup>, enlarge eco-products

ranked 7<sup>th</sup>, demonstrate public sector’s commitment to environmental protection and to sustainable production and consumption ranked 8<sup>th</sup>, setting example to private consumers ranked 9<sup>th</sup> and green supply chain ranked 10<sup>th</sup> respectively encourages the continuation of implementation of green procurement in the municipalities.

#### 4.6 SUPPOSED CHALLENGES OF IMPLEMENTATION OF GREEN PROCUREMENT

With the research study’s aim to find the challenges faced in the implementation of green procurement in the assembly, the respondents were engaged to rank the challenges encountered in the implementation of green procurement.

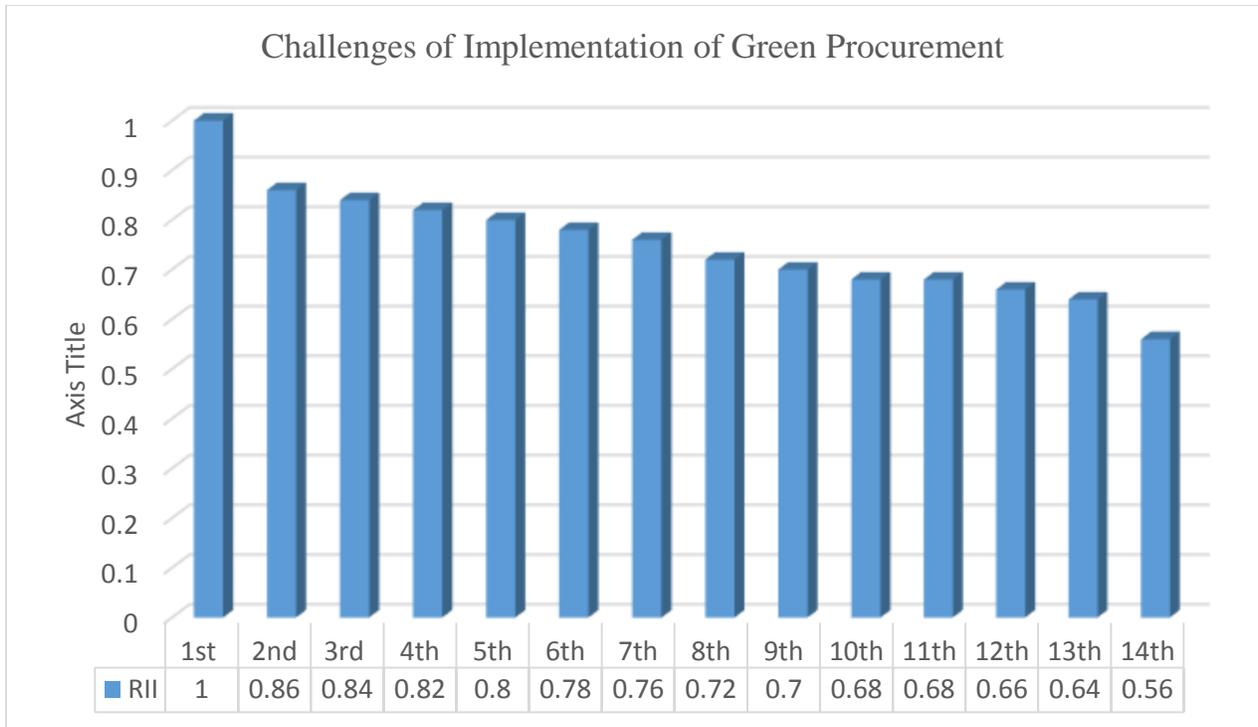
The respondents however were to rank the challenges from the scale 1 to 5 where; 1 – not at all important, 2 – slightly important, 3 – important, 4 – fairly important and 5 – very important. The dimensions applied to derive the challenges in the implementation of green procurement include; lack of knowledge, lack of financial resources, insufficient policies and regulation promoting green procurement, lack of (green) supplies or good quality of supplies, high costs of implementation, lack of training for procurement officers, insufficient qualified staff to handle green procurement, lack of enforcement by government to implement green procurement, lack of awareness on the procurement concept, lack of top management commitment (including money and time), lack of proper guideline in implementing green procurement, lack of practical tools and information, poor market demand for recyclable material and lack of information.

*Table 4.13 Respondents opinion on challenges encountered in the implementation of Green Procurement*

S/ no	Challenges of implementation of Green Procurement	RATING					Total	ΣW	Mean	RII	Rank
		1	2	3	4	5					
1	Lack of knowledge	-	-	-	-	10	10	50	5.0	1.00	1 <sup>st</sup>
2	Lack of financial resources	-	6	-	4	-	10	28	2.8	0.56	14 <sup>th</sup>

3	<i>Insufficient policies and regulation promoting green procurement</i>	-	-	-	7	3	10	43	4.3	0.86	2 <sup>nd</sup>
4	<i>Lack of (green) supplies or good quality of supplies</i>	-	-	8	-	2	10	34	3.4	0.68	10 <sup>th</sup>
5	<i>High costs of implementation</i>	-	-	5	5	-	10	35	3.5	0.70	9 <sup>th</sup>
6	<i>Lack of training for procurement officers</i>	-	-	1	9	-	10	39	3.9	0.78	6 <sup>th</sup>
7	<i>Insufficient qualified staff to handle green procurement</i>	-	2	4	4	-	10	32	3.2	0.64	13 <sup>th</sup>
8	<i>Lack of enforcement by government to implement green procurement</i>	-	2	3	5	-	10	33	3.3	0.66	12 <sup>th</sup>
9	<i>Lack of awareness on green procurement concept</i>	-	-	4	4	2	10	38	3.8	0.76	7 <sup>th</sup>
10	<i>Lack of top management commitment (including money and time)</i>	-	-	4	-	6	10	42	4.2	0.84	3 <sup>rd</sup>
11	<i>Lack of proper guideline in implementing green procurement</i>	-	-	-	10	-	10	40	4.0	0.80	5 <sup>th</sup>
12	<i>Lack of practical tools and information</i>	-	-	-	9	1	10	41	4.1	0.82	4 <sup>th</sup>
13	<i>Poor market demand for recyclable material</i>	-	-	4	6	-	10	36	3.6	0.72	8 <sup>th</sup>
14	<i>Lack of information</i>	-	-	6	4	-	10	34	3.4	0.68	11 <sup>th</sup>

**Source: Field data, 2019**



**Figure 4.6** Relative Important Index (RII) of Challenges of Implementation of Green Procurement  
**Source: Author’s Construct**

Table 4.13 presents the descriptive statistics of the research survey findings on the challenges encountered in the implementation of green procurement. The mean values from the responses given from the research survey ranges from 2.8 to 5.0. The relative important index of the mean ranges from 0.56 to 1.00; indicating that the estimated mean has no momentous difference and the variables identified impact on the environment through procurement practices.

With the relative important index of 1.00, the variables, lack of knowledge on green procurement practices ranked 1<sup>st</sup>, insufficient policies and regulation promoting green procurement ranked 2<sup>nd</sup>, lack of top management commitment (including money and time) ranked 3<sup>rd</sup>, lack of practical tools and information ranked 4<sup>th</sup>, lack of proper guideline in implementing green procurement ranked 5<sup>th</sup>, lack of training for procurement officers ranked 6<sup>th</sup>, lack of awareness on green procurement concept ranked 7<sup>th</sup>, poor market demand for recyclable material ranked 8<sup>th</sup>, high costs of

implementation ranked 9<sup>th</sup>, lack of (green) supplies or good quality of supplies ranked 10<sup>th</sup>, lack of information on green procurement ranked 11<sup>th</sup> and lack of enforcement by government to implement green procurement ranked 12<sup>th</sup> respectively affect the implementation of green procurement in the municipalities.

#### 4.7 HOW CHALLENGES CAN BE ADDRESSED

The research study's aim is to find ways in which the challenges met can be mitigated. The respondents however were employed once again to rank the solutions to the challenges of the implementation of green procurement met from the scale 1 to 5 where; 1 – not at all important, 2 – slightly important, 3 – important, 4 – fairly important and 5 – very important. The dimensions applied include; Awareness (training of procurement staff and mass education), Policy (Adoption of new policies and inculcating green procurement into the procurement law), Green Products (Advocating for local suppliers to get involved, mass education and tender documents can only be accessed by certified green product suppliers), High cost of implementation (Foreign aid and finding innovative ways of implementing green procurement), Lack of training (training and retraining of procurement staff and sensitization of procurement staff), Unqualified staff (Employment of qualified staff and retraining of employed staff), Law enforcement (inculcating green procurement into the procurement law and sensitization of staff on green procurement), Top management (employment of professional procurement staff and enforcement of the law), Tools & information (provision of tools and information, training and retraining of procurement staff), and Demand (mass education the essence of buying green products).

*Table 4.14 Respondents opinion on addressing the challenges encountered in the implementation of Green Procurement*

S/n o	How challenges can be addressed	RATING					Total	ΣW	Mean	RII	Rank
		1	2	3	4	5					

1	<i>Training and retraining of procurement staff</i>	-	-	-	-	10	10	50	5.0	1.00	1 <sup>st</sup>
2	<i>Educating procurement staff on green procurement</i>	-	-	-	4	6	10	46	4.6	0.92	3 <sup>rd</sup>
3	<i>Adoption of new environmental friendly assisted policies</i>	-	-	1	4	5	10	44	4.4	0.88	5 <sup>th</sup>
4	<i>Inculcating green procurement into the procurement law</i>	-	-	-	3	7	10	47	4.7	0.94	2 <sup>nd</sup>
5	<i>Advocating for local suppliers to get involved</i>	-	-	-	10	-	10	40	4.0	0.80	8 <sup>th</sup>
6	<i>Advocating for government institutions to consume only green products</i>	-	-	-	9	1	10	41	4.1	0.82	7 <sup>th</sup>
7	<i>Tender documents can only be accessed by certified green product suppliers</i>	-	-	10	-	-	10	30	3.0	0.62	16 <sup>th</sup>
8	<i>Foreign aid</i>	-	-	7	2	1	10	34	3.4	0.68	15 <sup>th</sup>
9	<i>Innovative ways of implementing green procurement</i>	-	-	4	6	-	10	36	3.6	0.72	10 <sup>th</sup>
10	<i>Retraining of employed staff</i>	-	-	2	8	-	10	38	3.8	0.76	9 <sup>th</sup>
11	<i>Sensitization of staff on green procurement</i>	-	-	6	4	-	10	34	3.4	0.68	14 <sup>th</sup>
12	<i>Employment of professional procurement staff</i>	-	-	4	6	-	10	36	3.6	0.72	11 <sup>th</sup>
13	<i>Enforcement of the procurement law</i>	-	-	6	3	1	10	35	3.5	0.70	12 <sup>th</sup>
14	<i>Developing green procurement guideline</i>	-	-	2	3	5	10	43	4.3	0.86	6 <sup>th</sup>
15	<i>Provision of tools and information</i>	-	-	5	5	-	10	35	3.5	0.70	13 <sup>th</sup>
16	<i>Mass education on the essence of buying green products</i>	-	-	-	4	6	10	46	4.6	0.92	4 <sup>th</sup>

*Source: Field data, 2019*

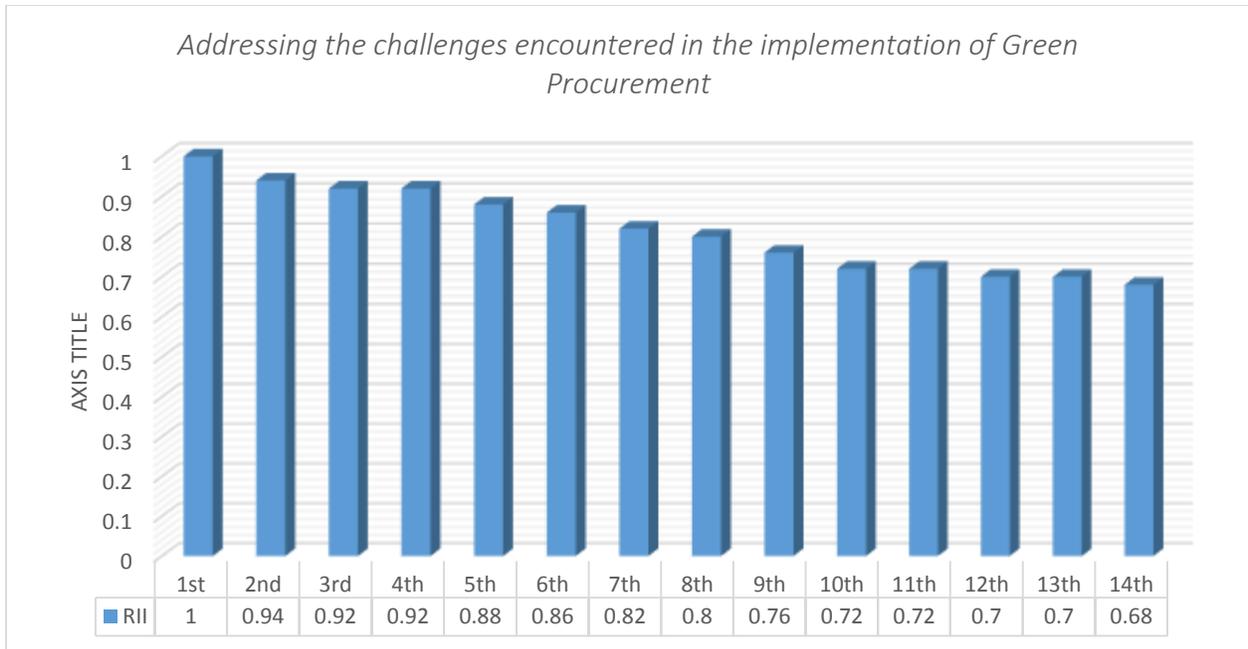


Figure 4.7 Relative Important Index (RII) of Addressing the challenges encountered in the implementation of GPP

**Source: Author’s Construct, 2019**

The table 4.14 presents the descriptive statistics of the research study findings on ways the challenges encountered in the implementation of environmental or green procurement can be addressed. The mean values from the responses given from the research survey ranges from 3.1 to 5.0. The relative important index of the mean ranges from 0.62 to 1.00; indicating the estimated mean has no significant difference and the variables identified ways to address challenges encountered in the implementation of green procurement.

With the relative important index of 1.00, the variables, training and retraining of procurement staff ranked 1<sup>st</sup>, inculcating green procurement into the procurement law ranked 2<sup>nd</sup>, educating procurement staff on green procurement ranked 3<sup>rd</sup>, mass education on the essence of buying green products ranked 4<sup>th</sup>, adoption of new environmental friendly assisted policies ranked 5<sup>th</sup>, developing green procurement guidelines ranked 6<sup>th</sup>, advocating for government institutions to consume green products only ranked 7<sup>th</sup>, advocating for local suppliers to get involved ranked 8<sup>th</sup>,

retraining of employed staff ranked 9<sup>th</sup>, innovative ways of implementing green procurement ranked 10<sup>th</sup>, employment of professional procurement staff ranked 11<sup>th</sup>, enforcement of the procurement law ranked 12<sup>th</sup>, provision of tools and information ranked 13<sup>th</sup>, sensitization of staff on green procurement ranked 14<sup>th</sup>, foreign aid ranked 15<sup>th</sup> and tender documents can only be accessed by certified by green product suppliers ranked 16<sup>th</sup> respectively are ways to address the challenges faced in the implementation of green procurement.

#### 4.8 DRIVERS FOR THE IMPLEMENTATION OF GREEN PROCUREMENT

The research study's aim is to find the main drivers of green procurement in the assembly. Taking a look at how important the variables for the drivers to influence the decision to implement green or environmental procurement practices in the assembly. The respondents however were employed again to rank the drivers of the implementation of green procurement practices from the scale 1 to 5 where; 1 – not at all important, 2 – not important, 3 – not thinking about it, 4 –important and 5 – extremely important.

Table 4.15 Respondents opinion on drivers of the implementation of Green Procurement practices

S/O no	Drivers	RATING					Total	ΣW	Mean	RII	Rank
		1	2	3	4	5					
1	Central governmental environmental regulations	-	-	4	-	6	10	42	4.2	0.84	5 <sup>th</sup>
2	Cost of environmentally friendly goods	-	-	4	6	-	10	36	3.6	0.72	10 <sup>th</sup>
3	Cost of disposal of hazardous materials	-	-	-	10	-	10	40	4.0	0.80	8 <sup>th</sup>
4	To reduce the health and safety risk associated with goods, services or operational practices	-	-	4	-	6	10	42	4.2	0.84	6 <sup>th</sup>
5	Influence of suppliers that provide goods and services	-	-	-	-	10	10	50	5.0	1.00	1 <sup>st</sup>
6	Regional environmental regulations	-	-	-	6	4	10	44	4.4	0.88	3 <sup>rd</sup>
7	Possible environmental legislation in the future	-	-	6	-	4	10	38	3.8	0.76	9 <sup>th</sup>

8	Cost of environmentally friendly packaging	-	-	-	-	10	10	50	5.0	1.00	2 <sup>nd</sup>
9	Environmental partnership with suppliers	-	-		6	4	10	44	4.4	0.88	4 <sup>th</sup>
10	Pressure from green action groups (such as Greenpeace or Friends of the Earth)	-	-	4	-	6	10	42	4.2	0.84	7 <sup>th</sup>

Source: Field data, 2019

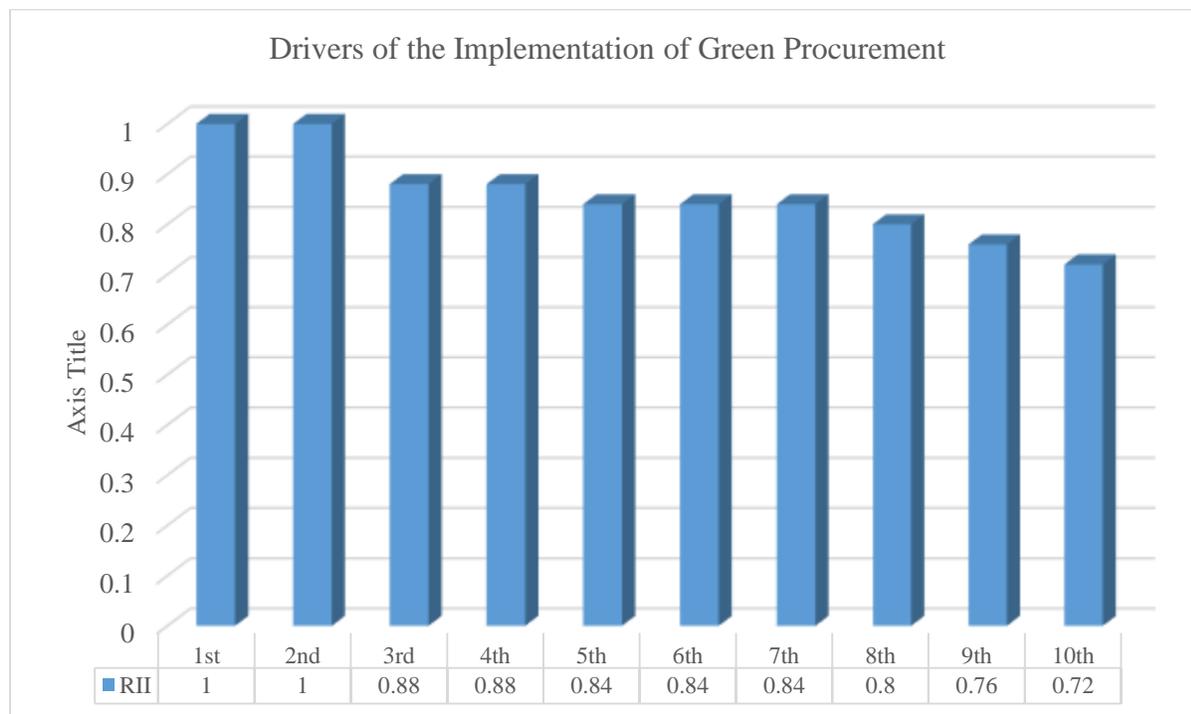


Figure 4.8 Relative Important Index (RII) of Drivers of Implementation of Green Procurement  
Source: Author's Construct, 2019

The table 4.15 presents the descriptive statistics of the research study findings on the drivers of the implementation of green procurement. The mean values from the responses given from the research survey ranges from 3.6 to 5.0. The relative important index of the mean ranges from 0.72 to 1.00; indicating the estimated mean has no significant difference and the variables identified drivers of the implementation of green procurement.

With the relative important index of 1.00, the variables, influence of suppliers that provide goods and services ranked 1<sup>st</sup>, cost of environmentally friendly packaging ranked 2<sup>nd</sup>, regional

environmental regulations ranked 3<sup>rd</sup>, environmental partnership with suppliers ranked 4<sup>th</sup>, central governmental environmental regulations ranked 5<sup>th</sup>, to reduce the health and safety risk associated with goods, services or operational practices ranked 6<sup>th</sup>, pressure from green action groups (such as Greenpeace or Friends of the earth) ranked 7<sup>th</sup>, cost of disposal of hazardous materials ranked 8<sup>th</sup>, possible environmental legislation in the future ranked 9<sup>th</sup> and cost of environmentally friendly goods ranked 10<sup>th</sup> respectively are the drivers of the implementation of green procurement practices in the assembly.

## **CHAPTER FIVE**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 INTRODUCTION**

The overall aim of the research study is to explore the awareness and opportunities for the implementation of Green Procurement in the new municipalities carved out of Kumasi Metropolitan Assembly; namely, Oforirkom, Asokwa, Suame, Kwadaso and Tafo Municipal Assemblies. To achieve this goal, a research survey was undertaken where questionnaires were presented to the procurement office of each five (5) municipalities. However, the respondents were the professional procurement officers at each of the five municipalities. This chapter introduces the summary of the findings after the survey, conclusions arrived at, recommendations and suggestions for further research.

#### **5.2 SUMMARY OF FINDINGS**

It was revealed that, the municipal assemblies have no awareness when it comes to green procurement and its practices, even though the title ‘sustainable procurement’ has been captured in the Amendment Act 914, there is no exact law governing environmental procurement practices. As such, the municipal assemblies have little or no knowledge about green procurement and its practices. Making the procurement process devoid of practices that are environmentally friendly and as such purchases are made without much attention given to the impact the purchases have on the environment.

On the opportunities and challenges of green procurement practices at the municipalities, the research study recognized total misunderstanding of the green procurement concept, and the concept was not even common among the respondents (who are professional procurement staff) at the municipal assemblies. Even though there are adequate trained staff involved in the

procurement processes (done by the municipalities), they do not seem to have little or no knowledge on and about green procurement and what it entails. With the government's vision to connect the sustainable development agenda to government's activities, the assemblies' day-to-day activities are backed by this vision. And as such, the government through PPA has taken a stance to support, promote and implement environmentally practice. But this has a long way to be completed since there is a lot of work to be done, like firstly inculcating green procurement in the procurement law to aid in the attainment and fulfillment of the set vision of the government. The Amendment Act 914 must further elaborate on the sustainable procurement aforementioned, and strategic practices must be adopted to aid government attain its goals.

### **5.3 CONCLUSION**

The main aim of this research study is to know the awareness and opportunities for the implementation of green procurement in new municipalities carved out of Kumasi Metropolitan Assembly. This study determines that green procurement practices are least deliberated or considered in the municipalities in Kumasi. Even though Green Procurement has ranges of benefits like reducing environmental impacts, financial savings, leads to improved quality of life, energy efficiency and resource use, aids in forming high ecological performance standards for goods and services, demonstrates public sector's vow to environmental protection and to sustainable production and consumption, raises awareness of environmental issues and sets example to private consumers with its purchases, the municipal assemblies are not making any effort into taping into these range of advantages in the governments search to protect the environment through its purchasing. The further highlights the potential and perceived challenges to green procurement practices implementation in the municipalities of Kumasi, the research study concludes that even

though the municipalities have not implemented green procurement, they have perceived challenges that would hinder the successful implementation of green procurement.

The study further elaborates the essence of embedding green procurement guidelines or policy into the procurement act with the aim of exploiting the benefits of green procurement in order to protect the environment. Since there are already laws on the protection of the environment, the government can enact green procurement laws in accordance with the already existing environmental protection laws.

#### **5.4 RECOMMENDATIONS**

With the research study's findings and conclusion, the following recommendations are made by the researcher:

- I. Even though the Amendment Act 914, 2016 makes mention of sustainability, there are no further definition or guidelines or even walkthroughs for undertaking procurement in a way to achieve sustainability (also ignoring all 3 subsets of sustainability; social benefits, economic factors and environmental aspects), hence made no mention of environmental or green procurement practices. The researcher recommends that the Amendment Act 914, should further be amended to provide green procurement guidelines to aid the municipalities (mmda's in a whole) with the aim of forming a sustainable environment.
- II. The municipalities should team up with Environmental Protection Agency (EPA) to organize workshops and seminars to educate, sensitize the procurement staff with the aim of creating awareness on the benefits of greenery practices and the need to inculcate into the procurement process. Since already the EPA's policies, aims and objectives are to protect the environment, cooperating with the municipal staff will go a long way into

creating awareness on the extent the purchases of the assemblies' impact on the environment.

- III. To conclude, the municipal assemblies should make it a must to get all the stakeholders involved in making and taking decisions with the goal of efficient and effective creation of awareness of green procurement practices amongst procurement staff in the municipalities.

### **5.5 LIMITATIONS OF THE STUDY**

The inadequacy of the study had a number of contributing facets, scope noticeably being one of the aspects. The research study concentrated on public green procurement in just the municipalities in Kumasi with several other subdivisions whose attention could have been supplementary or would have provided an interesting or a unique perspective all in all to climax the case in the other sectors of government institutions.

### **5.5 SUGGESTIONS FOR FURTHER RESEARCH**

The researcher recommends further study into the level of awareness of green procurement in district assemblies of Ghana especially from the suppliers' angle with the aim of involving them and taking their meaningful contribution for the successful implementation of green procurement, that is, sustainable procurement in a whole

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**APPENDIX I  
QUESTIONNAIRE**

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI  
COLLEGE OF ART AND BUILT ENVIRONMENT  
DEPARTMENT OF BUILDING TECHNOLOGY**

**MSC PROCUREMENT MANAGEMENT**

**EXPLORING THE AWARENESS AND OPPORTUNITIES FOR THE  
IMPLEMENTATION OF GREEN PROCUREMENT IN NEW MUNICIPALITIES IN  
KUMASI.**

| As part of my MSC research thesis at Kwame Nkrumah University of Science & Technology, I am conducting a survey that “Explores the awareness and opportunities for the implementation of Green Procurement in the new municipalities in Kumasi”, namely: Oforikrom, Asokwa, Suame, Tafo and Kwadaso. Please note that all information provided by you will be kept strictly confidential and used for research purpose only. |

## **INTRODUCTION**

Though sustainable procurement incorporates more than considerations of the environment, environmental or green procurement deals specifically with any issue connected solely to their impacts to the environment. Environmental or Green procurement is defined as the buying of goods, works and services which in one way or the other have lesser impact to human health and especially the environment and with alternatively competing products or services serving the same purpose.

## **OBJECTIVES OF THE STUDY**

The following are the specific objectives in order to achieve the goal of this study:

5. To find the level of awareness of green procurement practices in the new municipalities in Kumasi;
6. To identify the benefits of implementing green procurement in the new municipalities in Kumasi;
7. To identify the challenges in the implementation of green procurement in the new municipalities in Kumasi; and
8. To suggest ways to mitigate the challenges faced in the implementation of green procurement in the new municipalities in Kumasi.

**DEMOGRAPHY**

1. Indicate your highest level of Education (*tick*)

Higher National Diploma (HND)  Bachelor’s Degree (Including Honours)

Postgraduate/MA/M Phil/PhD  Other (Specify).....

2. Please indicate your rank/position.....

3. How long have you been working as a procurement officer? (*tick*)

Less than 5 years  5 to 10 years  10 to 15 years  Above 15 years

**AWARENESS**

4. Have you heard about the concept Green Procurement? (*tick*)

YES  NO

If YES, please indicate where. (*tick*)

PPA/PPA website  Meeting  Newspaper

Assembly  Forum  Other (specify).....

5. What is your understanding of Green Procurement?.....

.....  
.....

6. Has the assembly adopted any environmental management systems? (*tick*)

YES  NO

If YES, which one? (*tick*)

ISO 14001  EMAS (Eco-Management & Audit Scheme)

Other (Specify).....

**IMPLEMENTATION OF GREEN PROCUREMENT**

7. Do you take into consideration any environmental criteria when purchasing? (*tick*)

YES  NO

If No, why?.....

.....  
.....

8. Are life-cycle costs taken into consideration during the procurement process? (*tick*)

YES  NO

If No, why?.....  
.....  
.....

**9. Do you have any environmental policy? (tick)**  
 YES  NO

If Yes, what is it?.....

If No, are there any plans of creating one? (tick)  YES  NO

If Yes, how soon?.....

If No, why not?.....  
.....  
.....

**10. Are there any aspects of the supply chain (excluding the procurement process) that are green? (tick)**  YES  NO

If YES, which ones? (tick)  Usage  Transportation  Recycling

If NO, why not?.....  
.....  
.....

**11. Do you evaluate suppliers before purchasing from them? (tick)**  YES  NO

If NO, why?.....  
.....  
.....

**12. Do local suppliers provide green products? (tick)**  YES  NO

If No, why not?.....  
.....  
.....

**13. Do you use any environmental criteria when evaluating your suppliers? (tick)**  
 YES  NO

If NO, have you ever considered it?.....  
.....  
.....

14. Do you think that you would have a strong influence on local suppliers providing green products or having internal environmental management systems if you implemented green procurement? (tick)  YES  NO

If NO, why?.....  
 .....  
 .....

**BENEFITS OF IMPLEMENTATION OF GREEN PROCUREMENT**

15. What benefits (if any) do you feel you are likely to gain from implementing green procurement?

Please rate on a scale of 1 to 5 in order of importance by ticking appropriately the following benefits of implementation of Green Procurement. (tick)

1 = Not at all important      2 = Slightly important    3 = Important    4 = Fairly important    5 = Very Important

<b>Benefits of implementation of Green Procurement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<i>Reduce environmental impact</i>					
<i>Enlarge eco-products</i>					
<i>Green supply chain</i>					
<i>Financial savings</i>					
<i>Improved quality of life</i>					
<i>Social Benefits</i>					
<i>Energy efficiency and resource use</i>					
<i>Aids in establishing high environmental performance standards for products and services</i>					
<i>Demonstrate public sector's commitment to environmental protection and to sustainable consumption and production</i>					
<i>Raises awareness of environmental issues</i>					
<i>Setting example to private consumers</i>					
<b>IF THERE ARE OTHERS NAME THEM &amp; RATE</b>					

## CHALLENGES OF IMPLEMENTATION OF GREEN PROCUREMENT

16. What do you feel would be the challenge(s) in implementing green procurement?

Please rate on a scale of 1 to 5 in order of importance by ticking appropriately the following likely challenges to be faced in the implementation of Green Procurement. Using the scale below:

1 = Not at all important      2 = Slightly important    3 = Important    4 = Fairly important    5 = Very Important

<b>Challenges of implementation of Green Procurement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<i>Lack of knowledge</i>					
<i>Lack of financial resources</i>					
<i>Insufficient policies and regulation promoting green procurement</i>					
<i>Lack of (green) supplies or good quality of supplies</i>					
<i>High costs of implementation</i>					
<i>Lack of training for procurement officers</i>					
<i>Insufficient qualified staff to handle green procurement</i>					
<i>Lack of enforcement by government to implement green procurement</i>					
<i>Lack of awareness on the procurement concept</i>					
<i>Lack of top management commitment (including money and time)</i>					
<i>Lack of proper guideline in implementing green procurement</i>					
<i>Lack of practical tools and information</i>					
<i>Poor market demand for recyclable material</i>					
<i>Lack of information</i>					
<b>IF THERE ARE OTHERS, PLEASE SPECIFY &amp; RATE</b>					

17. How do you think these challenges can be solved or addressed?

Please rate on a scale of 1 to 5 (with 1 being the least and 5 being the highest) in order of importance by ticking appropriately the following likely solutions to challenges to faced in the implementation of Green Procurement. (**tick**) Using the scale below:

1 = Not at all important  
Very Important

2 = Slightly important 3 = Important 4 = Fairly important 5 =

<i>Categories</i>	<i>How challenges can be addressed</i>	1	2	3	4	5
AWARENESS	<i>Training of procurement staff</i>					
	<i>Mass Education</i>					
POLICY	<i>Adoption of new policies</i>					
	<i>Inculcating green procurement into the procurement law</i>					
GREEN PRODUCTS	<i>Advocating for local suppliers to get involved</i>					
	<i>Mass education</i>					
	<i>Tender documents can only be accessed by certified green product suppliers</i>					
HIGH COST OF IMPLEMENTATION	<i>Foreign aid</i>					
	<i>Innovative ways of implementing green procurement</i>					
LACK OF TRAINING	<i>Training and retraining of procurement staff</i>					
	<i>Sensitization of procurement staff</i>					
UNQUALIFIED STAFF	<i>Employment of qualified staff</i>					
	<i>Retraining of employed staff</i>					
LAW ENFORCEMENT	<i>Inculcating green procurement into the procurement law</i>					
	<i>Sensitization of staff on green procurement</i>					
TOP MANAGEMENT	<i>Employment of professional procurement staff</i>					
	<i>Enforcement of the law</i>					
GREEN PROCUREMENT GUIDELINE	<i>Adoption of guidelines and its implementation</i>					
	<i>Developing green procurement guideline</i>					
TOOLS & INFORMATION	<i>Provision of tools and information</i>					
	<i>Training and retraining of procurement staff</i>					
DEMAND	<i>Mass education on the essence of buying green products</i>					

**18. What are the main drivers of green procurement in the assembly? (tick)**

How important do you consider the following factors as influencing your decision to implement green procurement practices in the assembly? Use the scale below:

(1 = not at all important, 2 = not important, 3 = not thinking about it, 4 = important, 5 = extremely important).

<i>Drivers</i>	1	2	3	4	5
<i>Central governmental environmental regulations</i>					
<i>Cost of environmentally friendly goods</i>					
<i>Cost of disposal of hazardous materials</i>					
In order to reduce the health and safety risk associated with our goods, services or operational practices					
Influence of your own suppliers that provide goods and services to your organisation					
Regional environmental regulations					
<i>Possible environmental legislation in the future</i>					
Possible environmental legislation in the future					
Cost of environmentally friendly packaging					
<i>Regional environmental regulations</i>					
Environmental partnership with suppliers					
Pressure from green action groups (such as Greenpeace or Friends of the Earth)					
<b>IF THERE ARE OTHERS, PLEASE SPECIFY &amp; RATE</b>					

**THANK YOU FOR YOUR PARTICIPATION**

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**APPENDIX II (A)**

**i.) FORMULA FOR CALCULATING  $\Sigma W$**

*Ratings multiplied by the no of ratings plus the next no of ratings*

*Ratings \* No of Ratings + Next No of Ratings*

**ii.) FORMULA FOR CALCULATING MEAN**

*$\Sigma W$  divided by Total*

*$\Sigma W / \text{Total}$*

**iii.) FORMULA FOR CALCULATING RELATIVE IMPORTANT INDEX (RII)**

*$\Sigma W$  divided by (the highest rank (5) multiplied by the Total)*

*$\Sigma W / (N * A)$*

**APPENDIX II (B): BENEFITS OF IMPLEMENTATION OF GREEN PROCUREMENT ( $\Sigma W$ ) & MEAN COMPONENTS EXPLAINED**

S/O no	Benefits of implementation of Green Procurement	RATING					Total	Calc of $\Sigma W$	$\Sigma W$	Calc of Mean	Mean
		1	2	3	4	5					
1	Reduce environmental impact	-	-	-	4	6	10	$(4 \times 4) + (6 \times 5) = 46$	46	$(46 \div 10) = 4.6$	4.6
2	Enlarge eco-products	-	-	4	1	5	10	$(4 \times 3) + (1 \times 4) + (5 \times 5) = 41$	41	$(41 \div 10) = 4.1$	4.1
3	Green supply chain	-	-	2	7	1	10	$(2 \times 3) + (7 \times 4) + (1 \times 5) = 39$	39	$(39 \div 10) = 3.9$	3.9
4	Financial savings	-	-	2	2	6	10	$(2 \times 3) + (2 \times 4) + (6 \times 5) = 44$	44	$(44 \div 10) = 4.4$	4.4
5	Improved quality of life	-	-	4	-	6	10	$(4 \times 3) + (6 \times 5) = 42$	42	$(42 \div 10) = 4.2$	4.2
6	Social Benefits	-	-	4	6	-	10	$(4 \times 3) + (6 \times 4) = 36$	36	$(36 \div 10) = 3.6$	3.6
7	Energy efficiency and resource use	-	-	-	7	3	10	$(7 \times 4) + (3 \times 5) = 43$	43	$(43 \div 10) = 4.3$	4.3
8	Aids in establishing high environmental performance standards for products and services	-	-	-	-	10	10	$(10 \times 5) = 50$	50	$(50 \div 10) = 5.0$	5.0
9	Demonstrate public sector's commitment to environmental protection and to sustainable consumption and production	-	-	-	10	-	10	$(10 \times 4) = 40$	40	$(40 \div 10) = 4.0$	4.0
10	Raises awareness of environmental issues	-	-	-	5	5	10	$(5 \times 4) + (5 \times 5) = 45$	45	$(45 \div 10) = 4.5$	4.5
11	Setting example to private consumers	-	-	-	10	-	10	$(10 \times 4) = 40$	40	$(40 \div 10) = 4.0$	4.0

**APPENDIX II (C): BENEFITS OF IMPLEMENTATION OF GREEN PROCUREMENT RELATIVE IMPORTANT INDEX (RII)  
COMPONENTS EXPLAINED**

Source: Author's Construct, September, 2019

S/O no	Benefits of implementation of Green Procurement	RATING					Total	Calc of $\sum W$	$\sum W$	Calc of RII	RII
		1	2	3	4	5					
1	Reduce environmental impact	-	-	-	4	6	10	$(4 \times 4) + (6 \times 5) = 46$	46	$\frac{46}{(5 \times 10)} = 0.92$	0.92
2	Enlarge eco-products	-	-	4	1	5	10	$(4 \times 3) + (1 \times 4) + (5 \times 5) = 41$	41	$\frac{41}{(5 \times 10)} = 0.82$	0.82
3	Green supply chain	-	-	2	7	1	10	$(2 \times 3) + (7 \times 4) + (1 \times 5) = 39$	39	$\frac{39}{(5 \times 10)} = 0.78$	0.78
4	Financial savings	-	-	2	2	6	10	$(2 \times 3) + (2 \times 4) + (6 \times 5) = 44$	44	$\frac{44}{(5 \times 10)} = 0.88$	0.88
5	Improved quality of life	-	-	4	-	6	10	$(4 \times 3) + (6 \times 5) = 42$	42	$\frac{42}{(5 \times 10)} = 0.84$	0.84
6	Social Benefits	-	-	4	6	-	10	$(4 \times 3) + (6 \times 4) = 36$	36	$\frac{36}{(5 \times 10)} = 0.72$	0.72
7	Energy efficiency and resource use	-	-	-	7	3	10	$(7 \times 4) + (3 \times 5) = 43$	43	$\frac{43}{(5 \times 10)} = 0.86$	0.86
8	Aids in establishing high environmental performance standards for products and services	-	-	-	-	10	10	$(10 \times 5) = 50$	50	$\frac{50}{(5 \times 10)} = 1.00$	1.00
9	Demonstrate public sector's commitment to environmental protection and to sustainable consumption and production	-	-	-	10	-	10	$(10 \times 4) = 40$	40	$\frac{40}{(5 \times 10)} = 0.80$	0.80
10	Raises awareness of environmental issues	-	-	-	5	5	10	$(5 \times 4) +$	45	$\frac{45}{(5 \times 10)} = 0.90$	0.90

								$(5 \times 5) = 45$			
11	<i>Setting example to private consumers</i>	-	-	-	1 0	-		$(10 \times 4) = 40$	40	$\frac{40}{(5 \times 10)} = 0.80$	0.80

*Source: Author's Construct, September, 2019*

**APPENDIX III (A): CHALLENGES ENCOUNTERED IN THE IMPLEMENTATION OF GREEN PROCUREMENT ( $\Sigma W$ ) & MEAN COMPONENTS EXPLAINED**

**( $\Sigma W$ ) & MEAN COMPONENTS EXPLAINED**

Sl. No	Challenges of Implementation of Green Procurement	RATING					f	$\Sigma W$	Σf	Mean	Component
		1	2	3	4	5					
1	Lack of knowledge	=	=	=	=	10	10	$(10 \times 3) = 30$	30	$\frac{30}{(5 \times 10)} = 0.60$	0.60
2	Lack of financial resources	-	6	-	4	-	10	$(6 \times 2) + (4 \times 4) = 28$	28	$\frac{28}{(5 \times 10)} = 0.56$	0.86
3	Insufficient policies and regulation promoting green procurement	-	-	-	7	3	10	$(7 \times 4) + (7 \times 5) = 43$	43	$\frac{43}{(5 \times 10)} = 0.86$	0.86
4	Lack of (green) supplies or good quality of supplies	-	-	8	-	2	10	$(8 \times 3) + (2 \times 5) = 34$	34	$\frac{34}{(5 \times 10)} = 0.68$	0.48
5	High costs of implementation	-	-	5	5	-	10	$(5 \times 3) + (5 \times 4) = 35$	35	$\frac{35}{(5 \times 10)} = 0.70$	0.50
6	Lack of training for procurement officers	-	-	1	9	-	10	$(1 \times 3) + (9 \times 4) = 39$	39	$\frac{39}{(5 \times 10)} = 0.78$	0.98
7	Insufficient qualified staff to handle green procurement	-	2	4	4	-	10	$(2 \times 2) + (4 \times 3) + (4 \times 4) = 32$	32	$\frac{32}{(5 \times 10)} = 0.64$	0.84
8	Lack of enforcement by government to implement green procurement	-	2	3	5	-	10	$(2 \times 2) + (3 \times 3) + (5 \times 4) = 33$	33	$\frac{33}{(5 \times 10)} = 0.66$	0.86
9	Lack of awareness on green procurement concept	-	-	4	4	2	10	$(4 \times 3) + (4 \times 4) + (2 \times 5) = 38$	38	$\frac{38}{(5 \times 10)} = 0.76$	0.86
10	Lack of top management commitment (including money and time)	-	-	4	-	6	10	$(4 \times 3) + (6 \times 5) = 42$	42	$\frac{42}{(5 \times 10)} = 0.84$	0.84
11	Lack of proper guideline in implementing green procurement	-	-	-	1	-	10	$(10 \times 4) = 40$	40	$\frac{40}{(5 \times 10)} = 0.80$	0.80
12	Lack of practical tools and information	-	-	-	9	1	10	$(9 \times 4) + (1 \times 5) = 41$	41	$\frac{41}{(5 \times 10)} = 0.82$	0.82

Source: Author's Construct, September, 2019

13	<i>Poor market demand for recyclable material</i>	-	-	4	6	-		(4×3) + (6×4) = <b>36</b>	36	<del>(36-10)</del> (5×10)	<del>0.72</del> <b>0.72</b>	<b>0.02</b>
14	<i>Lack of information</i>	-	-	6	4	-		(6×3) + (4×4) = <b>34</b>	34	<del>(34-10)</del> (5×10)	<del>0.68</del> <b>0.68</b>	<b>0.08</b>

**APPENDIX IV (A): ADDRESSING CHALLENGES ENCOUNTERED IN THE IMPLEMENTATION OF GREEN PROCUREMENT RELATIVE IMPORTANT INDEX (RII) COMPONENTS EXPLAINED**

S/n o	How challenges can be addressed	RATING					Total l	Calc of $\sum W$	$\sum W$	Calc of Mean	Mean
		1	2	3	4	5					
1	Training and retraining of procurement staff	-	-	-	-	10	10	$(10 \times 5) = 50$	50	$(50 \div 10) = 5.0$ <b>4.6</b>	5.0
2	Educating procurement staff on green procurement	-	-	-	4	6	10	$(6 \times 2) + (4 \times 4) = 28$	46	$(46 \div 10) = 4.6$ <b>4.6</b>	4.6
3	Adoption of new environmental friendly assisted policies	-	-	1	4	5	10	$(7 \times 4) + (7 \times 5) = 43$	44	$(44 \div 10) = 4.4$ <b>4.6</b>	4.4
4	Inculcating green procurement into the procurement law	-	-	-	3	7	10	$(8 \times 3) + (2 \times 5) = 34$	47	$(47 \div 10) = 4.7$ <b>4.6</b>	4.7
5	Advocating for local suppliers to get involved	-	-	-	10	-	10	$(5 \times 3) + (5 \times 4) = 35$	40	$(40 \div 10) = 4.0$ <b>4.6</b>	4.0
6	Advocating for government institutions to consume only green products	-	-	-	9	1	10	$(1 \times 3) + (9 \times 4) = 39$	41	$(41 \div 10) = 4.1$ <b>4.6</b>	4.1
7	Tender documents can only be accessed by certified green product suppliers	-	-	10	-	-	10	$(2 \times 2) + (4 \times 3) + (4 \times 4) = 32$	30	$(30 \div 10) = 3.0$ <b>4.6</b>	3.0
8	Foreign aid	-	-	7	2	1	10	$(2 \times 2) + (3 \times 3) + (5 \times 4) = 33$	34	$(34 \div 10) = 3.4$ <b>4.6</b>	3.4
9	Innovative ways of implementing green procurement	-	-	4	6	-	10	$(4 \times 3) + (4 \times 4) + (2 \times 5) = 38$	36	$(36 \div 10) = 3.6$ <b>4.6</b>	3.6
10	Retraining of employed staff	-	-	2	8	-	10	$(4 \times 3) + (6 \times 5) = 42$	38	$(38 \div 10) = 3.8$ <b>4.6</b>	3.8
11	Sensitization of staff on green procurement	-	-	6	4	-	10	$(10 \times 4) = 40$	34	$(34 \div 10) = 3.4$ <b>4.6</b>	3.4

Source: Author's Construct, September, 2019

12	<i>Employment of professional procurement staff</i>	-	-	4	6	-	10	$(9 \times 4) + (1 \times 5) = 41$	36	$(36 \div 10) = 3.6$	<b>4.6</b>
13	<i>Enforcement of the procurement law</i>	-	-	6	3	1	10	$(4 \times 3) + (6 \times 4) = 36$	35	$(35 \div 10) = 3.5$	<b>4.6</b>
14	<i>Developing green procurement guideline</i>	-	-	2	3	5	10	$(6 \times 3) + (4 \times 4) = 34$	43	$(43 \div 10) = 4.3$	<b>4.6</b>
15	<i>Provision of tools and information</i>	-	-	5	5	-	10	$(5 \times 3) + (5 \times 4) = 35$	35	$(35 \div 10) = 3.5$	<b>4.6</b>
16	<i>Mass education on the essence of buying green products</i>	-	-	-	4	6	10	$(4 \times 4) + (6 \times 5) = 46$	46	$(46 \div 10) = 4.6$	<b>4.6</b>

**APPENDIX IV (B): ADDRESSING CHALLENGES ENCOUNTERED IN THE IMPLEMENTATION OF GREEN PROCUREMENT RELATIVE IMPORTANT INDEX (RII) COMPONENTS EXPLAINED**

S/n o	How challenges can be addressed	RATING					Total	Calc of $\Sigma W$	$\Sigma W$	Calc of RII	RII
		1	2	3	4	5					
1	Training and retraining of procurement staff	-	-	-	-	10	10	$(10 \times 5) = 50$	50	$\frac{50}{(5 \times 10)} = 1.00$	1.00
2	Educating procurement staff on green procurement	-	-	-	4	6	10	$(6 \times 2) + (4 \times 4) = 28$	46	$\frac{46}{(5 \times 10)} = 0.92$	0.92
3	Adoption of new environmental friendly assisted policies	-	-	1	4	5	10	$(7 \times 4) + (7 \times 5) = 43$	44	$\frac{44}{(5 \times 10)} = 0.88$	0.88
4	Inculcating green procurement into the procurement law	-	-	-	3	7	10	$(8 \times 3) + (2 \times 5) = 34$	47	$\frac{47}{(5 \times 10)} = 0.94$	0.94
5	Advocating for local suppliers to get involved	-	-	-	1	0	10	$(5 \times 3) + (5 \times 4) = 35$	40	$\frac{40}{(5 \times 10)} = 0.80$	0.80
6	Advocating for government institutions to consume only green products	-	-	-	9	1	10	$(1 \times 3) + (9 \times 4) = 39$	41	$\frac{41}{(5 \times 10)} = 0.82$	0.82
7	Tender documents can only be accessed by certified green product suppliers	-	-	10	-	-	10	$(2 \times 2) + (4 \times 3) + (4 \times 4) = 32$	30	$\frac{30}{(5 \times 10)} = 0.62$	0.62
8	Foreign aid	-	-	7	2	1	10	$(2 \times 2) + (3 \times 3) + (5 \times 4) = 33$	34	$\frac{34}{(5 \times 10)} = 0.68$	0.68
9	Innovative ways of implementing green procurement	-	-	4	6	-	10	$(4 \times 3) + (4 \times 4) + (2 \times 5) = 38$	36	$\frac{36}{(5 \times 10)} = 0.72$	0.72
10	Retraining of employed staff	-	-	2	8	-	10	$(4 \times 3) + (6 \times 5) = 42$	38	$\frac{38}{(5 \times 10)} = 0.76$	0.76
11	Sensitization of staff on green procurement	-	-	6	4	-	10	$(10 \times 4) = 40$	34	$\frac{34}{(5 \times 10)} = 0.68$	0.68
12	Employment of professional procurement staff	-	-	4	6	-	10	$(9 \times 4) + (1 \times 5) = 41$	36	$\frac{36}{(5 \times 10)} = 0.72$	0.72

Source: Author's Construct, September, 2019

13	<i>Enforcement of the procurement law</i>	-	-	6	3	1	10	(4×3) + (6×4) = <b>36</b>	35	$\frac{35}{(5 \times 10)} = \mathbf{0.70}$	0.70
14	<i>Developing green procurement guideline</i>	-	-	2	3	5	10	(6×3) + (4×4) = <b>34</b>	43	$\frac{43}{(5 \times 10)} = \mathbf{0.86}$	0.86
15	<i>Provision of tools and information</i>	-	-	5	5	-	10	(5×3) + (5×4) = <b>35</b>	35	$\frac{35}{(5 \times 10)} = \mathbf{0.70}$	0.70
16	<i>Mass education on the essence of buying green products</i>	-	-	-	4	6	10	(4×4) + (6×5) = <b>46</b>	46	$\frac{46}{(5 \times 10)} = \mathbf{0.92}$	0.92

**APPENDIX V (A): DRIVERS FOR IMPLEMENTATION OF GREEN PROCUREMENT ( $\Sigma W$ ) & MEAN COMPONENTS EXPLAINED**

S/O no	Drivers	RATING					Total	Calc of $\Sigma W$	$\Sigma W$	Calc of Mean	Mean
		1	2	3	4	5					
1	Central governmental environmental regulations	-	-	4	-	6	10	$(4 \times 3) + (6 \times 5) = 42$	42	$(42 \div 10) = 4.2$	4.2
2	Cost of environmentally friendly goods	-	-	4	6	-	10	$(4 \times 3) + (6 \times 4) = 36$	36	$(36 \div 10) = 3.6$	3.6
3	Cost of disposal of hazardous materials	-	-	-	10	-	10	$(10 \times 4) = 40$	40	$(40 \div 10) = 4.0$	4.0
4	To reduce the health and safety risk associated with goods, services or operational practices	-	-	4	-	6	10	$(4 \times 3) + (6 \times 5) = 42$	42	$(42 \div 10) = 4.2$	4.2
5	Influence of suppliers that provide goods and services	-	-	-	-	10	10	$(10 \times 5) = 50$	50	$(50 \div 10) = 5.0$	5.0
6	Regional environmental regulations	-	-	-	6	4	10	$(6 \times 4) + (4 \times 5) = 44$	44	$(44 \div 10) = 4.4$	4.4
7	Possible environmental legislation in the future	-	-	6	-	4	10	$(6 \times 3) + (4 \times 5) = 38$	38	$(38 \div 10) = 3.8$	3.8
8	Cost of environmentally friendly packaging	-	-	-	-	10	10	$(10 \times 5) = 50$	50	$(50 \div 10) = 5.0$	5.0
9	Environmental partnership with suppliers	-	-	-	6	4	10	$(6 \times 4) + (4 \times 5) = 44$	44	$(44 \div 10) = 4.4$	4.4
10	Pressure from green action groups (such as Greenpeace or Friends of the Earth)	-	-	4	-	6	10	$(4 \times 3) + (6 \times 5) = 42$	42	$(42 \div 10) = 4.2$	4.2

Source: Author's Construct, September, 2019

**APPENDIX V (B): DRIVERS FOR IMPLEMENTATION OF GREEN PROCUREMENT RELATIVE IMPORTANT INDEX (RII)  
COMPONENTS EXPLAINED**

S/O no	Drivers	RATING					Total	Calc of $\Sigma W$	$\Sigma W$	Calc of RII	RII
		1	2	3	4	5					
1	Central governmental environmental regulations	-	-	4	-	6	10	$(4 \times 3) + (6 \times 5) = 42$	42	$\frac{42}{(5 \times 10)} = 0.84$	0.84
2	Cost of environmentally friendly goods	-	-	4	6	-	10	$(4 \times 3) + (6 \times 4) = 36$	36	$\frac{36}{(5 \times 10)} = 0.72$	0.72
3	Cost of disposal of hazardous materials	-	-	-	10	-	10	$(10 \times 4) = 40$	40	$\frac{40}{(5 \times 10)} = 0.80$	0.80
4	To reduce the health and safety risk associated with goods, services or operational practices	-	-	4	-	6	10	$(4 \times 3) + (6 \times 5) = 42$	42	$\frac{42}{(5 \times 10)} = 0.84$	0.84
5	Influence of suppliers that provide goods and services	-	-	-	-	10	10	$(10 \times 5) = 50$	50	$\frac{50}{(5 \times 10)} = 1.00$	1.00
6	Regional environmental regulations	-	-	-	6	4	10	$(6 \times 4) + (4 \times 5) = 44$	44	$\frac{44}{(5 \times 10)} = 0.88$	0.88
7	Possible environmental legislation in the future	-	-	6	-	4	10	$(6 \times 3) + (4 \times 5) = 38$	38	$\frac{38}{(5 \times 10)} = 0.76$	0.76
8	Cost of environmentally friendly packaging	-	-	-	-	10	10	$(10 \times 5) = 50$	50	$\frac{50}{(5 \times 10)} = 1.00$	1.00
9	Environmental partnership with suppliers	-	-	-	6	4	10	$(6 \times 4) + (4 \times 5) = 44$	44	$\frac{44}{(5 \times 10)} = 0.88$	0.88
10	Pressure from green action groups (such as Greenpeace or Friends of the Earth)	-	-	4	-	6	10	$(4 \times 3) + (6 \times 5) = 42$	42	$\frac{42}{(5 \times 10)} = 0.84$	0.84

Source: Author's Construct, September, 2019