AN ASSESSMENT OF GREEN PROCUREMENT PRACTICES IN SOUTH AFRICAN METROPOLITAN MUNICIPALITIES

By

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Declaration

I, the undersigned ADELAIDE OWUSU AGYEPONG student number 35192712 hereby declare that this thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references. This thesis has not been previously submitted to any other university and will not be presented at any other university for similar or other degree award.

Signature:……..

AO AGYEPONG

Date: ……...

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Dedication

To my dear husband Mr. D O Agyepong. You are a pillar in my life!!

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List of Acronyms

B-BBEE:	Broad-Based Black Economic Empowerment
BCMM:	Buffalo City Metropolitan Municipality
BEA:	Berlin Energy Agency
BRT:	Bus Rapid Transport
CFC:	Chlorofluorocarbons
$CH_{4:}$	Methane
$CO_{2:}$	Carbon Dioxide
CoCT:	City of Cape Town
CoJ:	City of Johannesburg
CoT:	City of Tshwane
CPM:	Capital Projects Meeting
CSIR:	Council for Scientific and Industrial Research
DEA:	Department of Environmental Affairs
DEAT:	Department of Environmental Affairs and Tourism
DEFRA:	Department of Environment, Food and Rural Affairs
DPLG:	Department of Provincial and Local Government
DSW:	Department of Solid Waste
EDD:	Economic Development Department
EMF:	Environmental Management Framework
EMM:	Ekurhuleni Metropolitan Municipality
EPC:	Environmental Policy Committee
ESCO:	Energy Service Company
ESP:	Energy Savings Partnership
FET:	Fuel Efficient Taxi
GEA:	Green Economy Accord
GHG:	Greenhouse gases
GPP:	Green Procurement Policy
HDI:	Historically Disadvantaged Individuals
ICLEI:	International Council for Local Environmental Initiatives
IDP:	Integrated Development Plan
IISD:	International Institute for Sustainable Development
IMEP:	Integrated Metropolitan Environmental Policy

IPCC:	Intergovernmental Panel on Climate Change
IWMP:	Integrated Waste Management Policy
LED:	Light-Emitting Diode
MDB:	Municipal Demarcation Board
N_2O:	Nitrous Oxide
NCCRP:	National Climate Change Response Policy
NEMA:	National Environmental Management Act
NMBM:	Nelson Mandela Bay Metropolitan Municipality
$O_{3:}$	Tropospheric Ozone
OECD:	Organisation of Economic Co-operation and Development
PFMA:	Public Finance Management Act
PPPFA:	Preferential Procurement Policy Framework
RSA:	Republic of South Africa
SACR:	South Africa Country Report
SAGI:	South African Government Information
SCM:	Supply Chain Management
SEMCo:	Swedish Environmental Management Council
SFMTA:	San Francisco Municipal Transport Agency
SSL:	Solar Street Light
TIEP:	Tshwane Integrated Environmental Policy
TRT:	Tshwane Rapid Transit
UNCFCCC:	United Nations Framework Convention on Climate Change
UNCHS:	United Nations Centre for Human Settlements
UNCSD:	United Nations Commission on Sustainable Development
UN DESA:	United Nations Department of Economic and Social Affairs
UNDP:	United Nations Development Programme
UNEP:	United Nations Environmental Programme
WCED:	World Commission on Environment and Development
WHO:	World Health Organisation
WSSD:	World Summit on Sustainable Development
WTO:	The World Trade Organisation

Abstract

Environmental degradation is a global challenge that affects all. One of the most prominent impacts of environmental degradation is the climate change phenomenon. The adverse impacts of climate change have given rise to responses aimed at retarding, halting and learning to live with the already present effects of climate change. These responses to climate change fall into two broad categories: mitigation and adaptation. Mitigation addresses the climate change challenge through seeking a reduction or elimination of anthropogenic generated greenhouse gas emissions into the atmosphere. Adaptation on the other hand addresses climate change through reducing the adverse impacts of climate change as well as exploiting economic and social opportunities presented by climate change. Green procurement has been identified as one of the climate change intervention measures. This is because research shows that procurement policies and practices of both the public and private sectors have the potential to influence environmentally friendly modes of production and the provision of 'greener' goods and services that include infrastructure. In many developing countries the big spending power of the public sector, particularly municipalities, makes them influential players in the nature of goods and services production and provision.

Against this background, this study investigates the role of South African metropolitan municipalities in addressing environmental decay through green procurement. Specifically, the study aims to assess the levels of green procurement practices of goods and services within South Africa metropolitan municipalities. This is achieved through; (i) determining the level of understanding of sustainable development, and (ii) determining the extent to which green procurement is practiced in South African metropolitan municipalities, and identifying policy and legislative requirements (if any) that support green procurement practices. Given the complexity of means, policy and practices around the green procurement drive; the study employed a mixed method approach. The mixed method approach employed three methods namely: document analysis, interviews and the use of a questionnaire. Analysis of data included content analysis, inductive thematic analysis and basic numerical analysis of the questionnaire, using MS Excel.

The study made two broad findings; (i) there is generally a good understanding of the sustainable development discourse among South Africa's metropolitan officials; and (ii) policy response to green procurement shows that the older metropolitans that include the City of Cape Town, City of Johannesburg, City of Tshwane, Ekurhuleni, eThekwini and Nelson Mandela Bay have made greater progress making explicit reference to green procurement in different policies compared to the younger metropolitans such as Buffalo City and Mangaung. Despite the general understanding of the sustainable development discourse and evidence of explicit reference to green procurement in some metropolitan policy documents there is a general lack of comprehensive implementation of green procurement practices across all the metropolitan municipalities. The current implementation is sporadic and largely through a number of projects that are not always linked to give rise to effective synergies. The study concludes that there is limited implementation of green procurement policies and strategies in all metropolitans. This may be attributed to limited policy understanding and lack of education and training around green economy transition and green procurement issues. The study recommends the mainstreaming of the green procurement concept into already existing policies and to establish new policies where there are none. There is a need to translate the policies into legislation and regulations that carry incentive to reward and encourage the desired green procurement practices. There is further need to put in place sanctions to discourage and halt undesired procurement practices.

Key words: green procurement, metropolitans, South Africa, sustainable development, climate change

CHAPTER ONE: INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 INTRODUCTION

Green procurement can be defined as the “purchase of products and services which have less impact on the environment and human health compared with competing products or services that serve the same purpose” (United Nations Development Programme – UNDP, 2008:11). Green procurement is a term that is used interchangeably with other terms such as green purchasing; environmental preferable purchasing; environmentally friendly procurement; environment-oriented procurement and sustainable procurement (Bolton, 2008). Despite the diversity of terms, they all generally signify taking into consideration the impact a product or service has on the environment and human health and deciding to purchase a product or service with a lower impact on the environment as well as on human health. This study uses the term ‘green procurement’.

The United Nations Environmental Programme – UNEP (2002:3) states that “the environment is life, supporting people and other living things and is widely recognized as a ‘pillar’ of sustainable development which provides goods and services contributing to meeting basic human needs, and is essential to human development and quality of life”. This is further expounded to indicate that in as much as the environment is a pillar of sustainable development; it has also become a catchment of waste generated by human activities. Among such waste are greenhouse gases (GHGs) that lead to global warming and ultimately climate change. There is a drive to conserve and present the environment for aesthetic reasons and perhaps more critical and urgent, to mitigate climate change. This drive has seen a number of initiatives one of which is the green procurement drive. Green procurement has become the centre-piece of climate change discourse engaging the academia, the public sector and the private sector nationally and globally. Urban settlements such as towns and cities are important players in this discourse. This is because these settlements are inherently mass consumers of resources and emitters of pollutants some of which have deleterious environmental effects. Cities,

towns and metropolitans have the potential to address the negative aspects of their activities. One of the potential means of addressing this is by procuring and consuming goods and services that is 'friendly' to the environment. This is the essence of green procurement. This study investigates the readiness of South African metropolitan municipalities to engage the green procurement space` as seen in terms of processes "aligned to procedures and protocols" (Nhamo; 2013:116).

Since green procurement is mainly driven by the desire to address the challenges associated with climate change, it is important to clearly understand climate change before proceeding. Mcilveen (2010) describes climate changes as climatic variations lasting for a period of time. The Intergovernmental Panel on Climate Change (IPCC), defines climate change as "any change in climate over time, whether due to natural variability or as a result of human activity" (IPCC 2007: 21). This definition, however, differs from that of the United Nations Framework Convention on Climate Change (UNFCCC 1992), where climate change is indicated to be the result of human activities altering the atmospheric composition. Maunder (1992: 32) defines climate change as "any long term significant change in the 'average weather' that a given region experiences. Average weather may include average temperature, precipitation and wind patterns (Ibid). Climate change has subsequently been identified as one of "humanity's greatest challenges, affecting both current and future generations and without urgent and concerted action, it will damage fragile ecosystems, impede development efforts, increase risks to public health, frustrate poverty alleviation programs, and force large-scale migration from water or food-scarce regions" (Global Leadership for Climate Action, 2009: 10).

South Africa has accepted that addressing the climate change challenge is a national priority. More importantly, the government acknowledges that the challenge cuts across all spheres of government. The need for a national climate change response strategy was therefore identified and developed as an urgent requirement. Included in the areas of highest vulnerability in the strategy are the health sector, maize production, biodiversity, water resources and the rangelands (Department of Environmental Affairs and Tourism, DEAT, 2009). To this end, the country recognises the grave risks that climate change poses to human being, the environmental and economy (Mokwena, 2009). Mokwena (2009) posits that the risks

and challenges call for a coordinated action by the government at all levels. Similar to other governments in Africa, Europe, America and Asia, the South African government has come up with several plans to combat the climate change risks and challenges. The plans are articulated through a number of policies and other legislations (Driscoll *et al.,* 2010). Some of the policies aimed at addressing the climate change challenge and general environmental protection in South Africa are shown in Table 1.1.

Table 1.1: Existing national policies and legislation for climate change mitigation

Policy documents	**Year**
Constitution	1996
White Paper on Environmental Management Policy	1997
Ratification of the UNFCCC	1997
White Paper on Environmental Management Policy	1997
White Paper on Energy Policy of the Republic of South Africa	1998
National Environmental Management Act	1998
Ratification of the Kyoto Protocol	2002
National Climate Change Response Strategy	2004
Regulations for the Establishment of the Designated National Authority	2004
White Paper on the Promotion of Renewable Energy	2004
Energy Efficient Strategy for the Republic of south Africa	2005
Sustainable Development Criteria for clean Development Mechanism (CDM)	2005
National Framework for Sustainable Development	2006
New Environmental Impact Assessment Regulations	2006
Long-Term Mitigation Strategy passed	2007
Long Term Mitigation Scenarios	2008
National Energy Act	2008
Renewable Energy Feed-In Tariff (REFIT) Regulations	2009
National Climate Change Response Green Paper	2010
Draft Carbon Tax Option	2010
Industry Policy Action Plan II (IPAP II)	2010
National Climate Change Response White Paper	2011
Integrated Resources plan for Electricity 2010 – 2030	2011
National Climate Change Response Strategy White Paper	2011
National Statement during COP 17/CMP7	2011
Green Fund	2012
Carbon Tax Policy Paper: Reducing greenhouse gas emissions and facilitating the transition to a green economy	2013
National Development Plan	2011
Green Economy Accord	2011

Source: Based on Nhamo and Pophiwa (2014: 5)

Table 1.1 clearly articulates the progression of the climate change mitigation in South Africa from 1996 to date. From the policies given in Table 1.1, a number of strategies can be developed to mitigate climate change. Driscoll *et al.* (2010) argue that green procurement practice is one of the strategies that governments can implement to combat climate change. Observations made by Goldblatt and Middleton (2007) state that multi-level governance across an entire policy formulation process (from design through intervention to implementation) is needed for an effective climate change response to take place. This multi-level governance must include climate interventions at local government level. Local government is the third level of governance in South Africa. The first level is the national government followed by the provincial government. For this study, local government is referred to as municipality. The three different types of municipalities in South Africa are:

Metropolitan municipalities [Category A]: These are metropolitan municipalities that exist in the six biggest cities in South Africa. They have more than 500 000 voters and the metropolitan municipality co-ordinates the delivery of services to the whole area. There are eight metropolitan municipalities in South Africa. These metropolitans are Buffalo City, City of Cape Town, City of Johannesburg, City of Tshwane, Ekurhuleni, EThekwini, Mangaung and Nelson Mandela Bay. These municipalities are broken into wards. Half the councilors are elected through a proportional representation ballot, where voters vote for a party. The other half are elected as ward councilors by the residents in each ward. The key duties of a municipality are outlined in the South African Local Government Municipal Structures Act as to (Republic of South Africa, RSA, 1998a): -

1. structure and manage its administration and budgeting and planning processes to give priority to the basic needs of the community,
2. promote the social and economic development of the community; and
3. participate in national and provincial development programmes

Local municipalities [Category B]: Areas that fall outside of the six metropolitan municipal areas are divided into local municipalities. There are a total of 231 of these local municipalities and each municipality is broken into wards. The residents in each ward are represented by a ward councilor. [Only people who live in low population areas, like game parks, do not fall under local municipalities. The areas are called

District Management Areas and fall directly under the District Municipality. In local municipalities, half the councilors are elected through a proportional representation ballot, where voters vote for a party. The other half are elected as ward councilors by the residents in each ward.

District municipalities [Category C]: District municipalities are made up of a number of local municipalities that fall in one district. There are usually between 4 - 6 local municipalities that come together in a district council. Some district municipalities also include nature reserves and the areas where few people live - these are called district management areas. They fall directly under the district council and have no local council. The district municipality has to co-ordinate development and delivery in the whole district. It has its own administration [staff]. The district council is made up of two types of councilors:

1. Elected councilors - they are elected for the district council on a proportional representation ballot by all voters in the area. [40% of the district councilors]
2. Councilors who represent local municipalities in the area - they are local councilors sent by their council to represent it on the district council. [60% of the district councilors] (RSA, 1998a).

While metropolitan municipalities are responsible for all local services, development and delivery in the metropolitan area, local municipalities on the other hand share that responsibility with district municipalities. This is especially the case in very rural areas, where district municipalities have more responsibility for development and service delivery.

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1.2 RESEARCH PROBLEM

In February 2007, the IPCC (2007) identified the following as key climate change-related challenges likely to confront Africa in the period 2020 to 2050:

i. It predicted that between 75 and 250 million people will experience greater water stress by 2020.
ii. It projects that rain-fed agricultural yields could be reduced by 50% by 2020 in some countries.

iii. It predicts that there could be a 10 to 30% reduction in average river run-off and water availability by mid-century.
iv. Drought-affected areas will increase in extent.
v. Flood risk in high rainfall areas will increase.
vi. Ecosystem structures will change and there will be a loss of biodiversity if temperatures increase more than 1, 5 to 2, 5°C.
vii. Human health challenges will arise, e.g. possible changes in malaria transmission potential.

Against a background of a link between human economic, social activities and climate change, it is thus logical to posit that altering some of these activities addresses the climate change challenge. The Swedish Environmental Management Council - SEMCo (2006) argues that the purchase of goods and services by individuals, companies and public procurement has a potential to change the future of development of products and services and could be altered to ensure that it plays a critical role in limiting environmental degradation.

The rules and regulation governing procurement within South Africa's organs of state are outlined in Section 217 of the Constitution of South Africa (RSA, 1997). Section 217 of the Constitution of the Republic of South Africa Act 108 of 1996 states that:

(1) When an organ of state at either the national, provincial or local sphere of government, or any other institution identified in national legislation, contracts for goods or services, it must do so in accordance with a system which is fair, equitable, transparent, competitive and cost-effective.

(2) Subsection (1) does not prevent the organs of state or institutions referred to in that subsection from implementing a procurement policy providing for

(a) Categories of preference in the allocation of contracts; and

(b) The protection or advancement of persons, or categories of persons, disadvantaged by unfair discriminations

(3) National legislation must prescribe a framework within which the policy referred to in subsection (2) must be implemented.

Section 24 of the South African constitution further states that: everyone has the right (1) to an environment that is not harmful to their health or well-being; and (2) to have the environment protected, for the benefit of present and future generations,

through reasonable legislative and other measures that (i) prevent pollution and ecological degradation, (ii) promote conservation and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. Section 24 of the constitution encourages environmental considerations in all developments and activities that directly affect communities.

Flowing from the Constitution, the Public Finance Management Act (PFMA) was enacted in 1999. The PFMA is the framework governing procurement practices of national and provincial governments. The main aim of the 1999 PFMA is to achieve good financial management to maximize service delivery through effective and efficient use of limited resources (RSA, 2000). The objectives through which the aim of the PFMA is to be achieved are: (1) to modernise the system of financial management in the public sector; enable public sector managers to manage, but at the same time be held more accountable; (2) to ensure the timely provision of quality information; and (3) to eliminate the waste and corruption in the use of public assets. After the PFMA, the Preferential Procurement Policy Framework, PPPFA (Act 5 of 2000) was enacted in 2000. The Act also guides procurement within organs of state by providing a framework to give effect to section 217(2) of the constitution. The section 2 (1) of this Act state that all organs of state must have a preferential procurement policy and the implementation of the policy among others must include the following:

> "(d) (i) contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender or disability;
>
> (ii) Implementing the programmes of the Reconstruction and Development Programme as published in *Government Gazette* No 16085 dated 23 November 1994" (RSA, 2000).

Although the PFMA (1999) and the PPPFA (2000) are both the overarching framework for procurement in national and provincial governments, the Acts does not make any provision for the inclusion of environmental considerations in either national or provincial procurement. Deductions from the stated legislation deliberated upon above implicitly suggest that organs of state can incorporate environmental considerations in their procurement policies so as to "protect the environment"

(Bolton 2008:1). Bolton further observes that there is a link between section 217 and 24 of the Constitution which “has not been sufficiently explored” as presently “organs of state are not authorised by legislation to take account of environmental factors in the award of contracts” (Ibid: 3). This means that the metropolitan municipalities have yet to explore the link between section 217 and 24 of the constitution to fully incorporate environmental considerations into their respective procurement policies. Metropolitan municipalities in South Africa have started grappling with the notion of green procurement, mainly emerging from their environmental policies. As what emerged from this study, green procurement guidelines, policies and strategies are now available in some of the metropolitans although these are relatively new, having been prompted by the desire to address climate change following government’s Long Term Mitigation Scenarios of 2008 highlighted earlier.

Climate change threatens environmental sustainability because it causes fundamental alterations in ecosystem relationships, change the quality and quantity of available natural resources and reduce ecosystem productivity. Research has established that the population of a nation depend on these resources for their day-to-day survival and livelihoods in many parts of the developing world. From the National Climate Change Response Policy (NCCRP) (DEA, 2011) there is now more confidence that global climate change is a threat to sustainable development, especially in developing countries. This could undermine global poverty alleviation efforts and have severe implications for food security, clean water, energy supply, environmental health and human settlements. To this end, climate change response should be mainstreamed into all national, provincial and local planning regimes. This is due to the fact that it has been recognized that most of the Nation’s climate adaptation and much of the mitigation efforts takes place at provincial and municipal levels and are integrated into provincial development and spatial plans and into Integrated Development Plans at municipal level.

Given that green procurement is relatively new in South Africa and that there is no national policy explicitly talking of green procurement, this work tries to assess how metropolitan municipalities have set to address this desire, which opens up a research gap. Apart from the desire to be good environmental stewards, metropolitan municipalities globally are now pressed to do the right thing as the

global consumers now demand greener products that lead to low organisational and product carbon footprints (Nhamo, 2009). Although the public procurement laws in South Africa are rather silent on green procurement, global trends aimed at addressing the challenges arising from general environmental decay and climate change in particular, present a number of risk for metropolitans that are not embracing the green agenda fast. As discussed, metropolitans and other municipalities are huge consumers of dirty, carbon intensive goods and services that contribute to degraded environments and climate change. To this end, physical, reputational, regulatory and financial risks associated with, especially climate change resulting in proactive metropolitan municipalities doing something about procuring green. The problem to be investigated therefore is the seemingly slow progress in embracing the green procurement agenda by South African metropolitan municipalities and this is done from a dip stick point of view. Supported by the emerging findings from this work and as is discussed in depth in the findings chapter, the current tender and bid evaluation criteria is silent on green procurement with the main emphasis being on pricing and addressing the business needs of previously disadvantaged groups.

1.3 RATIONALE OF THE STUDY

The reason for undertaking this study is that research has established that South African metropolitan municipalities are heavy consumers of resources as well as heavy emitters (Department of Environmental Affairs and Tourism – DEAT, 2005 and Mkhize, 2004). This is due to the fact that 60% of the South African population lives in the urban areas where the metropolitan municipalities are located. Some of these metropolitans have been identified as being badly affected by air pollution because of the presence of “heavy industries, refineries, a power station, motor cars, and more than 14,000 households burning coal for heat and cooking” (DEAT, 2005:17). Since municipalities are directly linked to communities, they have considerable power to change consumer behavior. With increasing awareness of climate change and global warming, environmental issues should become an important component of tasks of management in organizations. This presents the need to assess and encourage metropolitan municipalities to buy green as buying green has the potential to help preserve the environment for future generations.

This study therefore assesses the procurement practices of all the eight metropolitan municipalities in South Africa. The assessment of the procurement practices of the metropolitan municipalities established the nature of green their procurement practices given that these metropolitans can use their purchasing power to opt for goods and services that take the environment into consideration thereby contributing towards sustainable development (European Commission, 2004). Assessing green procurement strategies in metropolitan municipalities and developing an implementation plan for effective procurement in principle has the likelihood to contribute significantly to integrating environmental considerations into all stages of the purchasing process in metropolitan municipalities within South Africa. Such an action has a ripple effect in the reduction of environmental risks and in turn risks to climate change. Through having metropolitan municipalities purchasing wisely, materials and energy could be saved, waste and pollution reduced, and sustainable patterns of behavior encouraged.

1.4 AIM AND OBJECTIVES

The aim of this study is to assess the levels of green procurement practices of goods and services within South Africa metropolitan municipalities. This study has the potential to assist South Africa to fulfil its national and global responsibilities of embracing sustainable development, addressing climate change, reducing poverty, creating green jobs and improving the quality of life of its citizens. Leading from the aim the study seeks to meet two objectives:

i. To determine the level of understanding of sustainable development, especially, the need to address climate change in South African metropolitan municipalities.

ii. To determine the extent to which green procurement is practiced in South African metropolitan municipalities, identifying policy and legislative requirements (if any).

Drawing from the aim and objectives of the study, the research questions are hereby outlined.

1.5 RESEARCH QUESTIONS

Given the foregone, the main research question therefore is: To what extent do procurement policies in South African metropolitan municipalities incorporate environmental considerations into their procurement practices? From this main research question, twin specific research questions are raised in this study:

1. What is the level of understanding of sustainable development, especially the need to address climate change in South African metropolitan municipalities?
2. To what extent do procurement policies in South African metropolitan municipalities incorporate environmental considerations, particularly the need to reduce greenhouse gas emissions into their procurement practices?

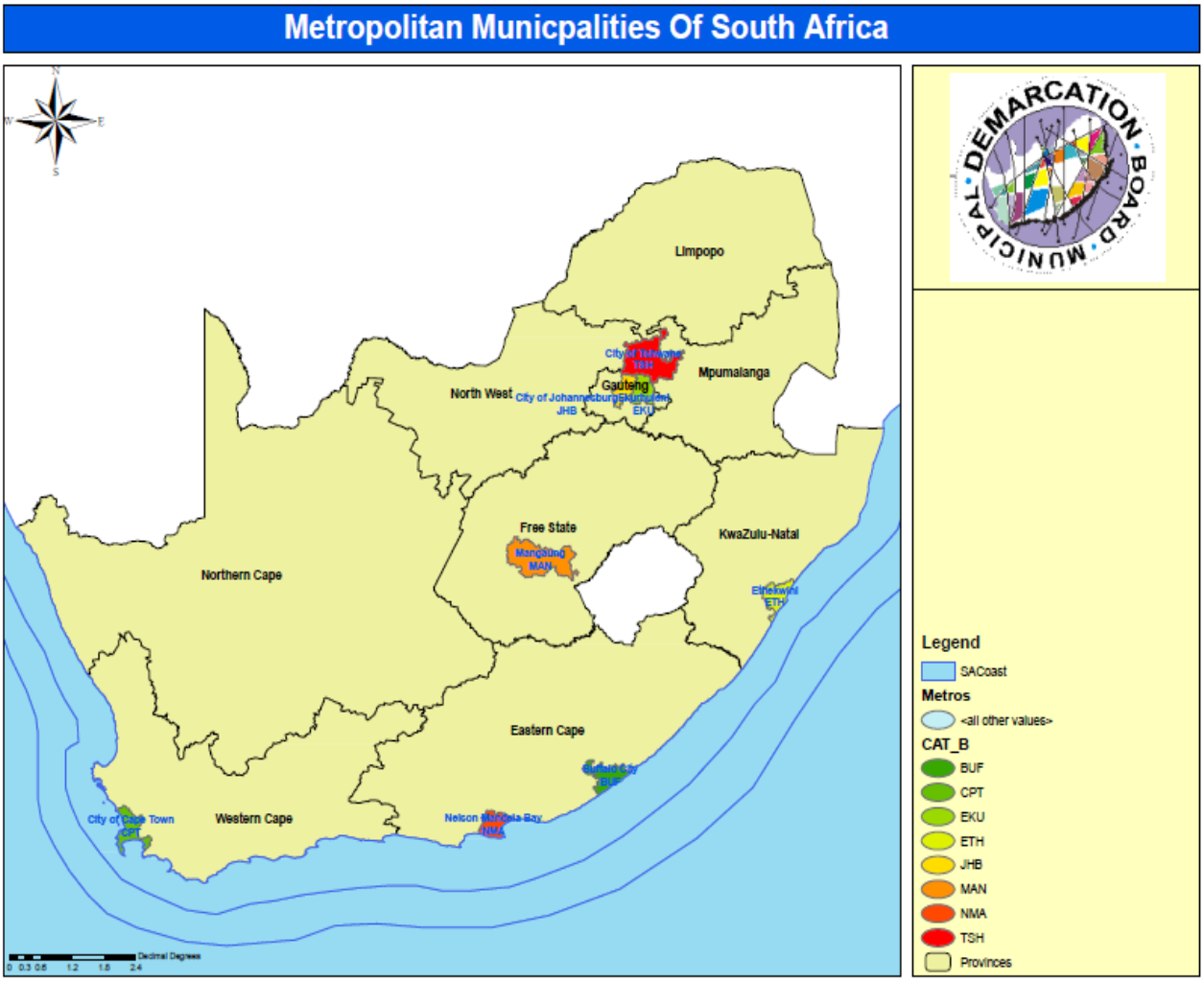
1.6 STUDY AREA

The study area consists of all the eight metropolitan municipalities in South Africa, distributed across five of the nine provinces in the country. Each province has its own legislature, premier and executive council, population and economy. The nine provinces are: Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West and Western Cape. The five provinces hosting metropolitan municipalities are:

1. The Eastern Cape – two metropolitan municipalities; Nelson Mandela Bay and Buffalo City
2. The Western Cape – one metropolitan municipality; City of Cape Town
3. Gauteng – three metropolitan municipalities; City of Johannesburg, Tshwane and Ekurhuleni
4. KwaZulu-Natal – one metropolitan municipality; eThekwini
5. The Free State – one metropolitan municipality, Mangaung. (Municipal Demarcation Board - MDB, 2011 and Department of Communications, 2011).

Figure 1.1 depicts all the eight metropolitan municipalities in South Africa that this study used.

Figure 1.1 Geographical locations of the study areas



Key: BUF = Buffalo city CPT = City of Cape Town
EKU = Ekurhuleni ETH = EThekwini
JHB = Johannesburg MAN = Mangaung
NMB = Nelson Mandela Bay TSH = Tshwane

Source: Municipal Demarcation Board, 2011(Map obtained personally at MDB)

1.7 RESEARCH METHODOLOGY

Research methodology is the step by step way of how the research is to be carried out. Research methodology is described by Polit and Hungler (2004; 233) as ways of "obtaining, organizing and analyzing data". This study used the mixed methods

research design. The mixed methods research design employs both quantitative and qualitative data (Driscoll *et al.,* 2007 & Johnson *et al*., 2007). The mixed method approach sought to gather data through three main methods that included:

1. Document analysis: The research analyses a number reports, and government policy documents to gain insight and understanding of the key issues pertaining to green procurement policies and purchasing practices of metropolitan municipalities.
2. Interviews: Semi-structured interviews were conducted with key procurement officers, environmental specialists, town planning specialists and other relevant experts in the various metropolitan municipalities to understand how goods and services are procured.
3. Questionnaire: A questionnaire was used to gather empirical data on general and green procurement practices.

Data analysis followed data collection. Three types of data analysis were used. The first was content analysis that was used to analyse documents. The second type of analysis was the use of inductive thematic data analysis of the interviews. Third, a basic numerical analysis was used to analyse the questionnaires. Integrated and synthesized research findings were then presented. A comprehensive justification of the research design, data collection and data analysis is undertaken in Chapter three.

1.8 THESIS OUTLINE

The thesis comes in five coherent chapters. Chapter one has provided the introduction and background to the study, the significance of the study, research questions as well as the aim and objectives of the study and the methodology that was used in the study.

Chapter two reviews theoretical and empirical literature related to the study. In this chapter, the link between sustainable development and green procurement is explored. Risks such as reputational, physical, regulatory and financial risks as a motivation to procuring green are discussed. The trend of green procurement flowing from the international, through national and specifically to the municipality level is reviewed. The use of case studies on green procurement at municipal level is

evidenced and this supplies a solid platform for analysing the emerging findings and discussions in Chapter four.

Chapter three presents the research methodology that was used to gather and analyse data for the study. The chapter outlines the mixed method research design that uses both qualitative and quantitative methods. Triangulation of data is discussed with ethical issues too. Lastly, constraints that were encountered during the data gathering period are outlined.

Chapter four presents data, analyses these data and discusses the results of the study. Several documents were assessed for links to green procurement. Their frequency percentages were determined. In addition, a few general policies found in all the metropolitans were analysed. The level of understanding of sustainable development as a gateway to the promotion of green procurement in the metropolitans was also teased out. This was also followed by assessing the level of green procurement practices in South African metropolitans.

Chapter five presents a summary of findings and conclusions of the study. In addition, suggestions are drawn from the findings and conclusions. Finally, suggestions for further studies are provided.

CHAPTER TWO: LITETRATURE REVIEW

2.1 INTRODUCTION

The aim of this chapter is to provide the theoretical and empirical framework that informs the study. The chapter explores the link between sustainable development and green procurement. This is achieved by discussing green procurement through historical lenses that start by exploring sustainable development and documenting the risks and opportunities that underpin the green procurement concept. The chapter concludes by deliberating on the trends of green procurement internationally and nationally with a particular focus on the regulatory framework guiding the green procurement drive at the local government level.

2.2 LINKING GREEN PROCUREMENT AND SUSTAINABLE DEVELOPMENT

Green procurement describes the practice of integrating environmental considerations into purchasing policies, programmes and actions (Stigson and Russell, 1989). The concept rests on two pillars namely: the general procurement pillar and the environment pillar. These two pillars have been previously viewed as independent and have consequently been theorized and conceptualized independently. However, the sustainable development discourse has brought the two together as outlined in this section. The procurement process involves identifying the goods and services to be procured, deciding on the procurement practices to be followed, soliciting and evaluating tender offers, awarding the contract and finally administering the contract and confirming that all the stated requirements are met (Watermeyer, 2011; Moeti *et al.,* 2007*)*. Procurement is a subset of the supply chain management (SCM) (Lambert *et al.,* 1998; Lambert and Cooper, 2000), which is the management of “activities involved in purchasing materials, transforming them into intermediate goods and final products and delivering the products or services” (Heizer and Render, 2008: 434).

The procurement process applies to both public and private organisations. Procurement by public (state) organisations is commonly referred to as public procurement and this distinguishes it from procurement by the private sector. Public procurement generally refers to the procurement of goods and services and the commissioning of infrastructure developments by governments (Audet, 2002). Public procurement can be divided into three main groups. These are: (i) the procurement of goods and supplies, (ii) the procurement of goods and services, and (iii) the contracting of works, infrastructure development (International Institute for Sustainable Development - IISD; 2008). Public procurement is important to private sector development because it accounts for approximately 15% of world output (Bajari and Lewis, 2009). In procuring to achieve value for money and transparency, government's procurement usually follow the tender process. A tender is an invite for the supply of goods and services at a fixed price (Woods, 2008). An accepted tender is binding to both the organ of state and the person or company who won the tender. During the execution of the tender, goods or services have to be provided in an agreed manner, at the price offered; and the state has to pay the tenderer the agreed price at the agreed time (Ibid). The production of goods and services has economic, social and environmental impacts. By addressing how these goods and services are supplied, concerns around the economic, social and of key concern to this research, environmental degradation (including among other aspects, climate change) are inevitably addressed.

Addressing environmental concerns together with concerns of economic development has given rise to the sustainable procurement concept which is lodged within the sustainable development discourse. The term sustainable development originated from the Brundtland report (1987) known as "Our Common Future" (World Commission on Environment and Development -WCED). In the report, sustainable development is defined as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987:8). Since the Brundtland report, several other definitions and descriptions of the term have emerged. Samples of some of the definitions and/or descriptions of sustainable development are given in Table 2.1

Table 2.1: Selected definitions and/or descriptions of sustainable development

Author	*Definition*
Goodland, R., and Ledec, G. (1987: 36).	"Sustainable development is defined as a pattern of social and structural economic transformations (i.e., 'development') which optimizes the economic and societal benefits available in the present, without jeopardizing the likely potential for similar benefits in the future".
Pearce, D.W. (1987: 13).	"The sustainability criterion requires that the conditions necessary for equal access to the resource base be met for each generation."
Rees, W.E. (1990: 22).	"Sustainable development emphasizes the opportunity for a return to community values, local control over resources, community-based development and other forms of decentralized government..."
Weiss, J. (2000: 2).	"Sustainability is a principle which states that economic growth (i.e., the generation of wealth) can and should be managed so that natural resources are used in such a way that the resource needs of future generations are assured".

Source: Author, based on identified authors

The various definitions and descriptions of sustainable development converge on three major concerns namely: social equity, economic development and environmental protection. However, this is not the case as sustainable development "is often compartmentalized as an environmental issue" (Drexhage and Murphy, 2010: 16). This quest is also referred to as the 'triple bottom line' (Elkington, 1998; 2004). Elkington coined the term to introduce social and environmental 'bottom lines' in addition to the traditional economic 'bottom line' found in accounting principles in business. These three concerns previously viewed as separate are now viewed as mutually inclusive and overlapping to form the sustainable development paradigm. For the purposes of this work, 'Our common future's' definition of sustainable development is used. The economic concerns of sustainable development pertain to the nature and extent of business transaction and their impacts on social equity and the environment.

The realization that procurement impacts sustainability has given rise to the development of the sustainable procurement concept that was introduced earlier. Several theories have been adopted to explore the sustainable procurement concept. These include transaction cost theory, resource dependency theory, population ecology theory, stakeholder theory and agency theory. Within the context of these and other theories, Walker *et. al.* (2012) argues that using the triple bottom line concept enhances a thorough exploration of the sustainable procurement

discourse. The sustainable procurement concept is thus described by Walker and Brammer (2009: 128) as procurement that ensures “a strong, healthy and just society, living within environmental limits and promoting good governance.” The United Kingdom Department of Environment, Food and Rural Affairs (DEFRA, 2006) defines sustainable procurement as a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimizing damage to the environment” (DEFRA, 2006:14). In addition to the definition of sustainable procurement, DEFRA (2006) posits that sustainable procurement “should consider the environmental, social and economic consequences of: design, non-renewable material use, manufacture and production methods, logistics, service delivery, operation, maintenance, reuse, recycling options, disposal and suppliers' capabilities to address these consequences throughout the supply chain” (Ibid: 10). Sustainable procurement just like procurement can be conducted both in the private and public sector spheres and local government; particularly metropolitan municipalities are big players in this equation. To this end, the development of the green procurement discourse is now viewed as an initiative promoting the general goals of sustainable development (McCrudden, 2004).

Linked to sustainable procurement is the concept of green procurement. Green procurement refers to basing all purchasing decisions and allocation of contracts on environmental criteria along with other criteria such as quality, price and delivery (The International Council for Local Environmental Initiatives – ICLEI, 2000). As highlighted earlier, the desire to address climate change is central to procuring green. Stigson and Russell (1998) indicate that procuring green should include a process of ensuring that suppliers meet the required environmental standards. ICLEI (2000) is of the opinion that apart from green procurement positively contributing to environmental protection at a local level; it also creates a powerful market demand for greening the production. This way, green procurement serves as a model to influence the behaviour of companies, private institutions and households. In the public sector, green procurement thus influences any procurement action that is aimed at reducing GHG emissions that result in global warming leading to address

climate change. For the purpose of this study, green procurement is considered to be the purchasing of goods and services that reduce negative impacts on the environment, with a special emphasis on the desire to address climate change. Whilst the discourses surrounding sustainable development, sustainable procurement and green procurement continue, a notable challenge globally as indicated earlier is climate change. Climate change comes about mainly as a result of GHG emissions generated by various human-induced activities (Klein *et al*., 2005). There are two main approaches of dealing with climate change and these are mitigation and adaptation (Harrison *et al.,* 2010; UN, 2013). The nexus between climate change mitigation, adaptation and green procurement is the focus of the next paragraphs.

Climate change mitigation is a response strategy that seeks the reduction the emission of GHGs in the atmosphere (Klein *et al*., 2005). The main GHGs that must be controlled include carbon dioxide (CO_2), methane (CH_4), chlorofluorocarbons (CFCs), nitrous oxide (N_2O) and tropospheric ozone (O_3) (IPCC,1990). The World Trade Organisation– United Nations Environmental Programme, WTO-UNEP (2009), projects a 25-90% rise in GHG emission between the year 2000 and 2030, if mitigation measures are not intensified. Commitments to reduce GHG emissions by countries were made under the first phase of the Kyoto Protocol of the United Nations Framework Convention on Climate Change in 1997 for the period 2008-2012. During this period, 37 industrialised nations identified in the Kyoto Protocol (normally referred to as Annex 1 countries) were to collectively reduce their GHG emissions calculated based on the 1990 reference base year by a collective average of 5.2%. However, this did not take place as there were no required ratification instruments within the secretariat so as to have the Kyoto Protocol enter into force. This only took place in February of 2005 after Russia ratified the last required instrument of the Kyoto Protocol to effect the Kyoto Protocol (Den Elzen and Hóhne, 2008). Since then, the world has agreed on the second commitment period for the reduction of GHG emissions under the Kyoto Protocol. The second commitment period will begin in 2015 and commence in 2020. This effectively means that world leaders have designated the five years between 2015 and 2020 to iron out a climate deal that will involve commitments from every nation.

Annex 1 countries that have ratified the Kyoto Protocol are to target their GHG emissions to fall under eight main platforms that include: (1) binding emission reduction targets, (2) flexible reduction targets, (3) enhanced coordinated technology efforts, (4) coordinated policies and measures, (5) mandatory financial contributions and technology transfer, (6) greening of investments, (7) sustainable development policies and (8) participation in clean development mechanisms (Streimikiene and Girdzijauskas, 2007:130). To this end, the main sectors that have been identified to stabilize and reduce atmospheric rise in GHG levels include agricultural and forestry, waste management, energy, building, transportation and industries (IPCC, 2001; UNFCCC, 2013). All the sectors identified for GHG emissions abetment are areas in which metropolitans globally (including those in South Africa) have some significant power through their green procurement decisions.

Climate change adaptation on the other hand is defined by the Intergovernmental Panel on Climate Change Third Assessment Report (IPCC TAR, 2001: 653) as the *"*adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities". This definition states that both natural and human system should be able to respond to the effects of a climate change or its anticipated effects. Such a response is posited to have the potential to reduce any harm that it may cause and at the same time take advantage of any opportunities that arise from it. The European Union (2013) indicates that climate change impacts can be predicted and in so doing, the necessary preventive measures can be taken to minimize its effects and at the same taking any advantage that could come out of the prediction. The UNFCCC (2013) portrays that since the effect of climate change cannot be avoided, policies and practices focused on combating its impacts should be developed and adopted. Climate change adaptation therefore seeks to take the necessary steps that enable humanity to accept the reality of climate change and to build capacity to deal with the impacts of climate change. This is the notion commonly associated with building climate resilient cities with infrastructure and other systems that can withstand the emerging extreme weather events like flooding, hailstorms, heat waves, droughts, frost, wild fires etc.

Although both climate mitigation and adaptation seeks to address the challenges of climate change, they differ in a number of aspects. Klein *et al*., (2005) identifies three main differences between the two approaches. The first notable difference is the scale of their effectiveness. The benefits of mitigation are global and long term and therefore the effects of mitigation measures will not necessarily be noticed immediately. On the other hand, the benefits of adaptation measures are noticed immediately and are often at a regional or local level. The second difference between mitigation and adaptation is the cost and benefit pertaining to the two approaches. Whereas mitigation costs can be determined, determining adaptation cost is difficult and is not clear (Ibid). The third difference between mitigation and adaptation are the difference in actors and polices available for their implementation. Klein *et. al*. (2005) argues that in developed countries, mitigation is observed mainly in the energy and transportation sectors whereas in developing countries, mitigation is observed mainly in the energy and forestry sectors. When compared to adaptation, the authors further observe that mitigation has limited sectorial actors that are usually related to national planning and policymaking. They argue that the actors for adaptation on the other hand are found in several sectors such as agriculture, human health, water supply, coastal management, urban planning and nature conservation. Regardless of the differences between mitigation and adaptation, both approaches are crucial in reducing the risks of climate change, whilst enhancing emerging opportunities and therefore synergies must be developed between the approaches (Shaw *et al.*, 2007). Among such strategies is green procurement, particularly by metropolitan and other local municipalities.

Green procurement as a mitigation strategy is when governments put into place policies and strategies to encourage the purchase and use of low-carbon technologies and renewable energy that will have minimal adverse effect on the environment. The local government level offers a potentially effective space for implementing such policies and strategies. This is so since the local government deals directly with communities (see Section 1.2). Green procurement at the local government level thus offers an opportunity of addressing climate change risks and at the same time exploit the availed opportunities. Although a number of opportunities such as controlling GHG emissions, economic savings, job creation

and attracting investment can be realised from addressing environmental degradation (inclusive of climate change) at local government level, the main concern has been the need to address associated risks. This is the focus of the next section.

2.3 MUNICIPALITIES AND CLIMATE CHANGE RISKS

Risk is defined as ‘a situation or event where something of human value (including humans themselves) has been put at stake and where the outcome is uncertain’ (Rosa 1998: 28). Aven and Renn (2009) alternatively maintain that ‘risk refers to an uncertainty about and the severity of the events and consequences (or outcomes) of an activity with respect to something that human’s value’ (Ibid: 6). Hence unsustainable procurement by metropolitan municipalities may result in a number of risks. Five types of risks associated with not purchasing green at the metropolitan level can be identified as follows: reputational, physical, financial, social and regulatory. These risks are discussed further in the following subsections.

2.3.1 Reputational risks

Municipalities can avoid reputational risks by implementing green procurement strategies. A municipality that implements green procurement practices demonstrates good environmental stewardship and a commitment to sustainability (City of Toronto; 2011). By considering the environment in their procurement of goods and services, municipalities directly demand the production of environmentally friendly goods and services. If a particular municipality is seen by the residents and other third parties as not addressing sustainability issues which include mitigation and adaptation to climate change, then the reputation of that municipality is at risk. For municipalities to maintain good reputation, they should mainstream green procurement and make it an integral part of their daily practices.

2.3.2 Financial risks

Closely linked to reputational risks are risks emerging from financial issues. When environmentally conscious investors are convinced a certain metropolitan municipality is not doing enough to save the environment (including addressing

climate change), they may divert their investment to a competing greener municipality. In addition, climate change mitigation and adaptation practices have and still are changing historical economic models, an aspect that calls for municipalities to be more careful as they move towards green procurement. Nhamo and Mjimba (2014) cautions on how a metropolitan could lose revenue through the reduction of the consumption of municipal-supplied coal-generated electricity through either energy efficiency or the use of alternative non-grid linked energy sources such as solar power. The authors argue that the switch to energy efficiency and alternative energy source poses a financial risk of lost revenue to the metropolitans when electricity consumption decreases. Other financial risks relate to changing patterns of precipitation and drought that disrupt the supply of urban utilities and disrupt supply chains thereby contributing to volatile commodity prices or pose unexpected capital costs (Ceres, 2010).

2.3.3 Physical risks

The physical risks associated with a municipality not purchasing green mainly deals with adaptation to climate change, an aspect identified as detrimental at the local, rather than global scale. The United Nations Centre for Human Settlements - UNCHS (2001) indicates that 60% of the world's population will be living in cities in urban areas by 2030. Research has shown that although cities cover less than two percent of the earth's surface, they, however, consume 78% of energy produced worldwide and emit 80% of GHG emissions globally (World Bank, 2010). The increasing rate of urbanization presents challenges to urban municipalities such as metropolitan municipalities (Nhamo and Mjimba, 2014). The majority of climate change physical risks relate to hard infrastructure. Table 2.2 presents some of the common physical risks that metropolitans, including those from South Africa may face and how the risks could be reduced.

Table 2.2: Physical risk and risk reduction to municipal infrastructure

Municipal Infrastructure	Identified Physical Risks	Risk reduction technique
Road construction and	Roads may deteriorate faster as a result of extreme weather events such as	Stronger roads to withstand adverse weather conditions should be

maintenance	floods, extreme cold and heat leading to a need for regular repair and maintenance.	constructed
Buildings	Adverse weather conditions such as rain, storm, hail and flood may damage buildings. Damaged buildings will have a high maintenance cost.	Construct Climate resilient buildings
Dams	Adverse weather conditions will cause dams to burst its walls and cause damage to communities living closer to the dams.	Climate resilient dams should be constructed. Regular maintenance of dams should be done
Water Supply	Water supply in dams could be contaminated by severe weather conditions.	Contaminated water supply should be appropriately treated.
Storm-water and drainage	Intense rainfall will cause overflowing storm water which will in turn cause drainage to exceed its capacity causing damage to infrastructure	Sustainable flood management system to be implemented
Sewerage and waste water	Adverse weather conditions will cause blockage to sewerage	Regular checks on sewerage systems to unblock is where necessary
Waste management	Waste not properly managed will cause pollution	To capture methane emitting from landfills
Electricity supply	Rapid urbanization will cause increase demand of electricity supply	Investing in solar energy for households and industries

Source: Adapted from Australian Green House Office: 2007

Avoiding these physical risks demands that green procurement is instituted by local authorities in order to avoid environmental degradation as well as to have climate resilient infrastructure.

2.3.4 Regulatory risks

Regulatory risks are incurred when both external and internal regulations in addressing environmental and/or climate change are not adhered to by a metropolitan. An external regulation is a top-down approach which cascades regulation down from the global, through regional, to national government and then to local government (MARSH, 2006). Nhamo (2009) indicates that the impact on climate change regulations can either be direct or indirect as well as negative or positive. Internally, metropolitans have several regulations in place that guide the development of the metropolitan as well as their response to climate change. Failure to comply with both the external and internal regulations puts the metropolitans at a disadvantage in that companies may not want to be seen associating with such metropolitans. Within the context of all these risks, cities internationally and

nationally are taking strides to address the impacts of climate change through both mitigation and adaptation strategies.

2.3.5 Social risks

Social risks in climate change are risks faced by vulnerable people in terms of diseases, demand for public health services, food insecurity due to lower crop yield and fluctuating socio economic conditions (Bohle *et al*., 1994; World Health Organisations - WHO, 2003 and Fuhrer, 2003). An estimation further made by WHO (2003) indicates that 24% of all diseases globally can be ascribed to environmental degradation that can be avoided. For example in South Africa, about 60% of the population lives in the urban areas where all the metropolitan municipalities are located (Terblanche, Nel and Golding, 1994). Certain urban areas like the Vaal Triangle in Gauteng Province have been identified as adversely affected by air pollution due to heavy industrial development as well as households relying on energy sources such as coal for their energy needs (Terblanche, *et al*., 1994).The health costs of burning fuels in the Vaal, associated with respiratory diseases, are estimated to be more than R274 million[1] every year (Ibid). Such health issues could be averted if municipalities that are directly linked to communities are able to change consumer behaviour through environmental awareness and green procurement.

Within the context of these risks, green procurement is one of the strategies to manage the risk and where possible, exploit opportunities availed by climate change mitigation and adaptation practices. Literature indicates that the management of the risks and the exploitation of opportunities are already underway in many countries. The following sections examine such cases at the international and South Africa level.

2.4 INTERNATIONAL PERSPECTIVES ON GREEN PROCUREMENT

A number of countries are striving to combat climate change by implementing either mitigation or adaptation strategies (Section 2.2). Green procurement forms an integral part of these strategies. Some of the advanced and visible green procurement practices are in place in the Organisation of Economic Co-operation

[1] The US$/Rand exchange rate as at August 2014 is: 1USD = 10.707 ZAR

and Development countries (OECD). Presently (2014), there are 34 member states of the OECD.[2] One of the objectives of the OECD is to address the sustainability challenges of globalisation. These challenges include economic, social and environmental challenges (OECD, 2007). The 2002 World Summit on Sustainable Development (WSSD) held in Johannesburg identified public procurement as a tool that has potential to contribute positively to the environmental protection drive (United Nations Commission on Sustainable Development - UNCSD, 2002). Drawing from the WSSD, the OECD council recommended the incorporation of environmental concerns in the public procurement practices and policies of its member states (Ibid).

In a demonstration of commitment to this focus, the OECD established an environmental policy committee (EPC) in 2002. The committee came up with green procurement recommendations pertaining to the products and services public procurement consideration for all member states. The objective was and still is to improve environmental performance of public procurement, and to promote continuous improvement in the environmental performance of products and services. Secondly, the committee recommended that member states develop green procurement policies to be consistent with their other relevant existing national policies. Member states were mandated to also take the necessary steps to incorporate environmental criteria into their public procurement of products and services. To achieve the later recommendation, the OECD recommended certain steps to be taken. These steps include:

i. The provision of information, training and technical assistance to all officials involved in the public procurement. These officials include the officials who set the performance criteria of products and services, those who are responsible for procurement, and those who use the products and services
ii. Making information and tools on green procurement available at all levels of government to facilitate greener public purchasing (GPP);

[2]These member states are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States (OECD, 2007).

iii. Dissemination of any information needed to facilitate and encourage greener public purchasing decisions, as well as the results and benefits that will emanate from those decisions;
iv. The establishment of procedures to identify products and services which meet the objectives of GPP policies;
v. Encouraging the development of indicators to measure and monitor progress made in greener public purchasing.
vi. To assess and evaluate GPP policies to ensure that the policies are economically efficient and environmentally effective.

Thirdly, the EPC was to support member countries to develop and apply efficient and effective green public purchasing policies by collecting and disseminating information on "best practices" to all member states. In 2007 the OECD conducted a study to analyse sustainable procurement policies within its member states. The study established that out of 60% of OECD countries that had defined sustainable procurement, more than half of them (33%) focused on green procurement (Walker *et al.*, 2012). This shows that although initially most developed countries started off on the sustainable procurement drive, there has been a gradual shift towards green procurement as a policy tool to combat climate change (Ibid).

Drawing from national governments' focus on combating climate change, several cities and municipalities within OECD member states are taking the impacts of activities on the environmental degradation seriously. To this end, several cities and municipalities have made significant strides towards addressing the impacts activities on the environment through a number of 'quick win' green projects (World Bank, 2010). These green projects include energy from waste projects, establishing rapid mass transport system, constructing green buildings and developing renewable energy projects. A detailed analysis of green procurement at metropolitan municipalities will be done in the next sections focusing on cases studies on methane capture, fuel efficient taxis, bus rapid transport systems (BRT) and solar energy.

2.4.1 Methane capture

In this sub-section the focus is on methane capture in the cities of Toronto and Rio de Janeiro. Under the Federal Sustainable Development Strategy for Canada

(2010), the Canadian National Government states that the shrinking of the national environmental footprint should begin with the government. To this end, the Canadian government made a number of policy commitments. One of such policy commitment has been the establishing of the Canadian Green Procurement Policy (GPP) which was approved by the Federal Treasury Board in 2006. A number of projects emerged under this drive. The GPP requires that environmental performance should be considered in all federal procurement.

In line with the Federal government's objectives, the City of Toronto has undertaken a number of projects following the GPP guidelines. The methane capture project addresses the city's drive of generating and supplying cleaner electricity and reducing the city's GHG emissions. As the largest city in Canada, City of Toronto has a high demand for electricity to serve its slightly over three million residents (City of Toronto, 2014). The city embarked on a project to capture methane gas from its main landfill site (Figure 2.1).

Figure 2.1: Methane capture in the City of Toronto

Source: www.**c40**.org/ (Accessed: 2014/07/20).

The landfill is in an urban centre close to a residential area. In order to dispose of the odour and methane gas that was being emitted from the landfill, the landfill gas (LFG) was captured, redirected and converted to energy that was able to provide

power for 24,000 households. An annual profit of 3-4 million Canadian dollars per annum (2012) was realised through this project. According to the city, the landfill reached its maximum and closed down in 2002. However LFG is still being harvested and will continue until the methane gas is depleted (City of Toronto: 2012). The setting up of the facility to capture LFG needed the expertise of service providers with an understanding of several concepts around climate change mitigation. In awarding a contract to set up the LFG facility, green procurement was practiced.

Another methane capture project is the Gramacho landfill gas to energy project in Rio de Janeiro (Figure 2.2). Further details regarding this project are provided in the following paragraph.

Figure 2.2: Methane capture in Rio

Source: www.**c40**.org/ (Accessed: 2014/07/20).

The Gremacho landfill site receives an average of 3 million tonnes of waste annually. A methane capturing system was installed to capture about 119 million Nm3 of methane gas produced (Rio de Janeiro, 2012). Energy produced through this project is sold back to an energy facility thereby generating an income to be used by the facility. Projected benefits of the programme include the overall reduction of 5.96 tonnes of carbon dioxide emissions and the production of 90 million Nm3 biogas over a 20 year period (Ibid). Lessons from these projects are critical as one analysis

whether similar sustainability and green procurement projects are being implemented in South African metropolitan municipalities. Hence during the presentation of data, analysis and discussion of research findings in Chapter 4, cross reference will be made to such instances to confirm decline or come up with new findings.

2.4.2 Lake water air conditioning

Another project that helped reduce carbon emissions in the City of Toronto is the lake water air conditioning project (Figure 2.3). The lake water air conditioning project uses cold water from Lake Ontario to provide air conditioning for 51 high-rise buildings in the city Toronto (City of Toronto: 2011b).

Figure 2.3: Lake Water air conditioning system

Source: www.**c40**.org/ (Accessed: 2014/07/20).

Through pipes that are laid 83 metres below the surface of the lake, very cold water (4º Celsius) is tapped and used to provide cooling in the buildings. The use of heat exchangers ensures the removal of thermal energy from water being returned by users. Finally, precaution is put in place to prevent the cooled water for the air conditioning project and the City's water coming into contact with each other. The

lake water air conditioning project reduces 79,000 tons of City of Toronto's carbon emissions and 90% of electricity that would have been used for conventional air conditioning (City of Toronto, 2011b).

2.4.3 The use of seawater to heat homes in The Hague

The use of seawater to heat homes in The Hague is a project that extracts and process seawater for residential heating. This is undertaken through either a heat exchanger (in summer) or heat pump (in winter) to supply heating and hot water to residents of a sea coast (The Hague, 2011). The sea temperature in summer is more than 11ºC and in winter can drop to as low as 4ºC. The heat exchanger is used in summer to feed heated water from the sea into a central supply unit. This central supply unit then connects individual houses through a distribution grid. Since the seawater is cold in winter, a heat pump is used to warm the water before it is fed into the local grid for distribution. To further heat the water for household use, separate individual heat pumps are installed in the homes. According to The Hague, heat produced from the sea yields up to 1,100% energy that cuts CO2 emissions up to 50% (Ibid). Since some of South African metropolitans under study border oceans (Indian and the Atlantic), the lesson of using seawater to heat homes could be learnt too.

2.4.4 Fuel efficient taxis (FET)

Fuel efficient taxis system is discussed for Mexico City. In a bid to reduce motor vehicle emissions, Mexico City implemented FET programme also known as the Government of Mexico City's Taxi Substitution Program. The programme was sponsored by the Mexico City municipality (Mexico City, 2011). The project sought to reduce carbon emissions by replacing 10,000 of Mexico City's older taxis with new and fuel efficient models by the year 2012. Under the programme the metropolitan municipality subsidised the purchasing of new taxis meeting a number of stringent specification most notably and of relevance to the environment, a fuel economy of 12.5 kilometres per litre of fuel (Ibid).The metropolitan subsidy was one fifth of the total price of a new fuel efficient taxi to taxi drivers to purchasing new vehicles. The balance of the purchasing price was financed loans from a local bank and was payable over a period of four years. This case clearly illustrates a green procurement

initiative with a municipality interacting with its citizens in ensuring that the citizens' economic and social needs are met and environmental degradation is curtailed.

2.4.5 Integrated mobility plan in Venice

The integrated mobility plan in Venice is a framework with different projects for sustainable mobility which were initiated in 2008 by the municipality of Venice (City of Venice, 2014). The aim of the mobility plan is to reduce carbon emissions in the transport sector by up to as high as 35% (ibid). To realise this dream, a dedicated and multi-skilled team had to identify a project, sources funding then implement and monitor that project. To realise the aim of the mobility plan, projects such as tram lines were installed, bike lanes were demarcated, electric vehicle charging stations were built as well as bike and car sharing schemes developed. Furthermore, park and ride facilities were constructed to enable people to park their cars to catch buses, tram or cycle to their various destinations. With the advent of electric and hybrid vehicles in South Africa, once more, there are lessons to be learnt here and this study investigated such in the metropolitans. From the city's perspective, the integrated mobility plan was a success. The success of the modal spilt was assessed in that only 40% of private transport was used. 60% of the population either used bikes (20%), public transport (12%), travelling by foot (23%) and by other means (5%).

2.4.6 Energy saving partnership in Berlin

The Berlin energy savings partnership (ESP) is a participation model to reduce carbon emissions and energy costs for property owners (City of Berlin, 2011). The ESP is a joint project between City of Berlin and Berlin energy agency (BEA). An energy service company (ESCO) was contracted to determine the most applicable energy savings investment to implement. The ESCO upgrades and refurbishes hardware components and retrofit public and commercial buildings. Hardware components that can be refurbished include automatic control engineering systems, heating, lighting, ventilation and air conditioning control systems. The BEA acts as the intermediary between ESCO and building owners and helps both parties to arrange payments after the installations. The ESCO further offers support on

consumer behaviour to its clients after the installation of the hardware components. Berlin's ESP projects are also implemented in other countries through the BEA's division called 'International Know-How-Transfer' project (City of Berlin, 2011).

2.4.7 Reclaimed wastewater and green building programmes in Tokyo

Tokyo is the capital city in Japan. Japan was among the first countries to introduce Eco-Labelling in 1989. However it was not until 2000 that the green purchasing Law of Japan was legislated and enforced in 2001 (Eco institute, 2013).The Green Purchasing Law required that all state institutions develop and implement green procurement implementation plans and practices and report on these annually. They are also obliged to purchase selected products and services categorised as "eco-friendly goods". The goods and services are classified as such if they have a low impact on the environment (Ho *et al.,* 2009). Two main green procurement projects in Tokyo will be assessed here. These are the reclaimed wastewater project and the green building programme. The reclaimed wastewater project is the first of its kind in Tokyo. It is a wastewater treatment using ceramic filtering (Figure 2. 4).

Figure 2.4: Wastewater treatment plant in Tokyo

Source: www.**c40**.org/ (Accessed: 2014/07/20).

Collected wastewater is treated and purified through coagulation and sedimentation and finally filtered through ceramic filters. The filtered water is then supplied through

underground pipes for use in ablution facilities in office buildings as well as to sprinkle street plants (Tokyo, 2012).

The Tokyo green building programme has been in existence since 2002 (City of Tokyo, 2011). It is a mandatory programme for environmental performance for all new large buildings in Tokyo. The programme requires that the design of all new large buildings be environmentally friendly. The environmental performance of the buildings should be rated according to the four main categories indicated by Tokyo metropolitan government (TMG) guidelines. The four categories are: efficient energy use; appropriate use of resources; preservation of the natural environment and mitigation of the heat-island effect. The rating should then be disclosed and posted on the TMG website. The aim of the green building programme is to reduce carbon emissions (Ibid). The Tokyo's green buildings programme makes some interesting finding as South Africa is also moving in this direction fast with all these key green buildings having to sit in one metropolitan or the other or one municipality or the other.

2.4.8 Bus rapid transit systems and low emission transport

The bus rapid transit (BRT) is defined by UNEP (2007, 11) as "a high-quality bus based transit system that delivers fast, comfortable, and cost-effective urban mobility through the provision of segregated right-of-way infrastructure, rapid and frequent operations, and excellence in marketing and customer service". Apart from moving goods and services, the BRT also focuses on reducing carbon emissions in big cities. The first ever BRT system was initiated by Bogota in Columbia. Several attempts to initiate the BRT system since 1978 failed until it was finally initiated in 1999 (USA Department of Transportation, 2006). Dubbed TransMilenio, the Bogota BRT (Figure 2.5) is a long-term mobility strategy that aims to discourage the use of privately-owned vehicles and to promote walking and cycling. Separate bus lanes were constructed for the TansMilenio's trunk services with stations situated 500 metres apart. Characteristics of the TransMilenio includes segregated bus lanes, express services, high capacity stations, elevated platform, high capacity buses and quick passenger access (Ibid). The TransMilenio uses a cashless system. Pre-paid

smart cards are charged or recharged at booths at the stations and are automatically debited at turnstiles at the stations.

Figure 2.5: TransMilenio BRT system in Bogota

Source: USA Department of Transportation, 2006

Given that the BRT route for South African metropolitans is gaining speed, lessons from the TransMilenio and other BRTs are crucial in terms of both environmental sustainability and green procurement. Documented advantages of the TransMilenio include the following:

1. a savings of average travel time of 16 minutes per trip
2. a higher safety environment
3. reduction of about 79% in the number of collisions on trunk corridors
4. more passengers are transported daily. For example, an average of 1 million passengers was recorded to have been transported per day in January 2006 (Ibid).

The high success rate of the TransMilenio has made it a catalyst for the implementation of BRT system in other cities worldwide and possibly the inrods in South Africa around the BRT could also have been inspired by this system.

In addition to the BRT systems, several cities are reducing their carbon emissions by switching their city fleets to electric vehicles (EV) or low emission and/or hybrid vehicles. A leading example is the city of San Francisco. The San Francisco Municipal Transportation Agency (SFMTA) aims to reduce the municipal fleet emission through the implementation of three strategies. These are: (1) to maximise the use of zero to low-emission buses (Figure 2.6), (2) replacing conventional diesel buses with hybrids (with lower maintenance and generating half the pollution of a regular diesel bus) and (3) the retrofitting of the remaining fleet with available technologies and low carbon fuels (SFMTA, 2011).

Figure 2.6: San Francisco's low-emission bus

Source: www.**c40**.org/ (Accessed: 2014/07/20).

Several accomplishments were achieved by implementing the three strategies highlighted earlier. These include having over 700 low emission vehicles either using compressed natural gas or being a hybrid, over 50 heavy duty vehicles using bio-fuel and 25 fire trucks and ambulances using bio-diesel. Finally, the implemented strategies made SFMTA have a total savings of 25% carbon emission over a period of 20 years (between 1990 and 2010) (Ibid)

2.4.9 Solar energy

Solar energy in the city of Philadelphia is the focus in this sub-section. Solar energy is energy converted from rays from the sun. Solar energy is renewable and clean energy in that it produces no pollutants (DME, 2002). The Philadelphia solar energy project was installed at a water pollution plant with an aim of reducing carbon emissions (Philadelphia, 2012). At the waste water plant, 250KW solar panels were mounted on the ground, covering an area of more than one acre (Figure 2.7).

Figure 2.7: Solar energy in Philadelphia

Source: www.c40.org/ (Accessed: 2014/07/20).

In total, the solar energy project generates up to 300,000KWh of energy annually; equivalent to energy that can power 28 homes. The project also prevents an annual carbon emission of 220 metric tons (Ibid). Having interrogated the international perspectives on green procurement, the next section looks at the South African national perspectives on green procurement.

2.5 SOUTH AFRICAN NATIONAL PERSPECTIVES ON GREEN PROCUREMENT

South Africa is a signatory to both the United Nations Framework Convention on Climate Change (UNFCCC)[3] and the Kyoto Protocol. The country recognizes the risk of general environmental decay and global warming and is committed to responding to the climate change challenge (RSA, 2009). To this end, the country has taken a number of steps to address this challenge. One of the steps is formulation and implementation of the NCCRP in 2011 (DEA, 2011). South Africa's response to climate change has two objectives namely:

1. To make a fair contribution to the global effort to stabilize GHG concentrations in the atmosphere to a level that prevents dangerous anthropogenic interference with the climate system, and
2. To effectively adapt to and manage unavoidable and potential damaging climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity (DEA, 2011).

In order to achieve its climate change response objectives, South Africa has decided to mainstream and integrate climate change response into all national, provincial and local planning regimes (DEA, 2011). One of the identified areas in which climate change response can be achieved is through green public procurement as suggested at the World Summit on Sustainable Development (WSSD, 2002). At the summit, it was stated that governments are in the prime position to promote environmentally-friendly products and business activities through 'public procurement policies that encourage development and diffusion of environmentally sound goods and services' (Ibid: 21).

[3]The UNFCCC is an international environmental treaty negotiated at the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, held in Rio de Janeiro from 3 to 14 June 1992. The objective of the treaty is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"

Research has established that in South Africa, government is the largest buyer of goods and services (DEAT, 2008). Public procurement accounts for between 11% and 15% of the country's GDP (Ibid). As stated earlier, (see Section 1.2) public procurement in South Africa is governed by the Public Finance Management Act (PFMA) (1999) and the Preferential Procurement Policy Framework Regulations (PPPFA - 2000) (RSA, 2000). The PPPFA (2000) sets out general guidelines on how all public tenders should be awarded and evaluated. The Act uses the preference point system of 80/20 or 90/10 to award and evaluate tenders. The point system takes into account functionality and price and Broad-Based Black Economic Empowerment (B-BBEE). B-BBEE is a programme enacted as an opportunity to address the inequalities of the past in South Africa (RSA, 2003a). For tenders to the value of R1 million, 80 points are allocated to price and 20 points are allocated to the tenderers compliance with B-BBEE. For tenders to the value of over one million Rand, 90 points are allocated to price and 10 points to a tenderer's compliance with B-BBEE. An overall score is calculated by using a specified formula to add the score obtained for price and for B-BBEE status and the tender is awarded to the tenderer with the highest points (Turley and Perera, 2014). It is therefore clear that the point system is focused on empowering the historically disadvantaged individuals (HDIs) in South Africa and does not support green procurement. In view of this, there is no national policy in place that explicitly addresses green procurement. However, there are several acts and policies that implicitly support the green procurement drive.

As discussed earlier, South Africa's concern of environmental degradation dates as far back as the national Constitution in 1996 (see Section 1.2). Following from the constitution, in 1997 a green paper on public sector procurement reform was released. Clause 4:27 of the green paper states that in order to comply with all environmental legislation, all organs of state (this includes metropolitan municipalities) should procure only from vendors who are (1) in compliance with all environmentally-related legislation, (2) promote environmental awareness amongst suppliers, service providers and contractors and (3) favour procurement of less environmentally damaging products (RSA, 1997).

The constitutional reference for clean environment is operationalized through the National Environmental Management Act (NEMA) 107 of 1998**.** The Act articulates

the need for the formulation and implementation of all development plans in a manner that presents minimal impact on the environment. Section 2.3 of NEMA specifically articulates the need for development to be socially, environmentally and economically sustainable (RSA, 1998b). Section 2 (4a) supports sustainable development. It further states that sustainable development should consider and avoid the disturbance of ecosystems, loss of biological diversity, pollution and degradation of the environment and the landscapes and sites that constitutes the nation's cultural heritage. In instances where disturbance cannot be avoided, they should be minimised and remedied. Section 2 (4h) further indicates that communities should be empowered though environmental awareness and education and any other means through which knowledge could be shared (Ibid). The NEMA articulates that to achieve sustainable development, avoidance of waste should be considered as well as the consideration of re-using and re-cycling where possible. This should be done in addition to the development and use of renewable resources in place of the use of non-renewable natural resources (Ibid). Although NEMA does not explicitly address green procurement, its reference to sustainable development and the environment implies that organs of state could use the NEMA as a mandate to engage in green procurement practices. Whilst organs of state are striving to promote and implement the Acts stated earlier on, there has been a transition from simple sustainability to green economy.

Green economy transition has emerged as another platform for enhancing green procurement. 'Green economy is an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities' (UNEP, 2010: 5). Green economy can also be described as an economy with an alternative vision for growth and development; one that can generate growth and improvements in people's lives in ways consistent with sustainable development (Bapna and Talberth, 2011). In contrast to the two definitions, the OECD (2011:9) defines green economy as an economy that fosters "economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. To do this it must catalyse investment and innovation which will underpin sustained growth and give rise to new economic opportunities". Summing up the three

definitions and others, it can be concluded that there is no fixed definition for green economy as indicated by Death (2014). Green economy can however, be described as an economy that promotes the triple bottom line; that is, it is an economy that simultaneously supports progress in the economic, social and environmental domains. To give effect to its national green economy, the South African Green Economy Accord (GEA) was signed in 2011. The GEA is an agreement between the government, private sector, communities and organized labour. The aim of the GEA is for all stakeholders to work towards a green economy of the country (Economic Development Department – EDD, 2011). Stakeholders of the GEA agreed to 12 green economy commitments. The commitments are summarized in Table 2.3.

Table 2.3: The Green Economy Accord commitments

Commitment	Area of Commitment
Commitment 1	Roll out of one million solar water heaters by 2014/2015
Commitment 2	Increase investments in the green economy, including through the industrial development corporation (IDC), private investors and retirement funds
Commitment 3	Procurement of renewable energy as part of the energy generation plan
Commitment 4	Promotion of biofuels for vehicles
Commitment 5	Launching clean-coal initiatives to reduce the emissions from the use of coal-based technologies
Commitment 6	Promoting energy efficiency across the economy
Commitment 7	Retrofitting of domestic, industrial and commercial building to promote energy efficiency
Commitment 8	Waste recycling
Commitment 9	Reducing carbon-emissions on the roads including through improved mass transport system and a shift to rail for freight transport
Commitment 10	Electrification of poor communities and reduction of fossil-fuel open-fire cooking and heating
Commitment 11	Economic development in the green economy through promotion of localization, youth employment, cooperatives and skills development
Commitment 12	Cooperation around the United Nations COP17 and its follow-up.

Source: After EDD (2011:9)

The GEA does not, however, explicitly mention green procurement. This is despite the evidence that all the GEA's twelve commitments are in support of the green procurement agenda. In South Africa, laws and Acts are translated from the National government to the provincial government and then to the local government. The next section will look at the South African local government uptake on green procurement.

2.6 SOUTH AFRICAN LOCAL GOVERNMENT PERSPECTIVE ON GREEN PROCUREMENT

Following the WSSD held in Johannesburg in 2002, South African municipalities and other attendees committed themselves to pursuing some form of green procurement (WSSD, 2002). The WSSD further committed local authorities to promote public procurement policies that encourage development and diffusion of environmentally sound goods and services and to promote green procurement policies to encourage industries to base their production in environmentally friendly and fair manners (Ibid). The South African metropolitan municipalities fall under local government and therefore have the mandate to promote environmental protection through procurement. In addition to the commitment, several national and municipal legislation and policies support environmental protection through procurement.

Section 7 of the South African constitution addresses local government. It states that all local governments should include the promotion of a safe and healthy environment into their local objectives. Section 152 (1) further states that the objectives of local government should include the provision of a democratic and accountable government for local communities: to ensure the provision of services to communities in a sustainable manner; to promote social and economic development; to promote a safe and healthy environment; and to encourage the involvement of communities and community organizations in the matters of local government. Section 152 (2) articulates that a municipality must strive, within its financial and administrative capacity, to achieve the objects set out in subsection (1) of section 152. Therefore, the Constitution implicitly allows metropolitans to include environmental considerations in to their procurement in other to “promote a safe and healthy environment” (RSA; 1996: 63).

Translating from the 1999 PFMA (see Section 1.2), the Municipal Finance Management Act (MFMA, 2003) is a framework to regulate supply chain management (SCM) at municipal level. The main aim of the MFMA is to improve municipal financial management and service delivery. Section 111 of the MFMA states that each municipality must develop and implement a SCM policy which must be fair, equitable, transparent, competitive and must be cost effective (Section 112) (RSA, 2003b). Although the MFMA (2003) is the overarching framework for

procurement in metropolitans, the Act does not make any provision for the inclusion of environmental considerations in municipal procurement. Drawing from the MFMA, all the metropolitan municipalities have SCM policies. The procurement policies and practices of South Africa's metropolitan municipalities are informed by their development plans and visions. The grand development vision and objectives of all South African metropolitan municipalities are articulated in their Integrated Development Plan (IDP). The concept of an IDP was developed by the Department of Provincial and Local government (DPLG). The DPLG also came up with guidelines on the development and implementation of an IDP. Within the realm of environmental management, a metropolitan municipality's IDP has to incorporate aspects of the NCCRP.

A 2008 IISD study of green procurement of South Africa's provincial and local government shows that at the local government level only Tshwane and Nelson Mandela Bay Metropolitans had green procurement strategies. The Ekurhuleni, EThekwini and Cape Town metropolitans had other policies that implicitly relate to green procurement. From the IISD study (2008), it could be deduced that as at 2008, a number of legislative initiatives related to green procurement had been developed and/or were in draft form at local government level. The IISD argues that the actual implementation of these initiatives were not clear. At the time of the IISD study, South Africa had six metropolitan municipalities and all (with the exception of City of Johannesburg) participated in the study. Presently (2014), there are eight metropolitans in South Africa after Buffalo City and Mangaung municipalities were given metro status in 2011.

In 2012, Urban SEED conducted a green procurement study focusing on the local government (Urban SEED, 2012). Urban SEED further came up with the number of metropolitans making an effort in using green procurement as a policy tool for environmental issues. Table 2.4 indicates the level of commitment of local government to green procurement as of 2012.

Table 2.4: The state of green procurement in local government as at 2012

2012 Current State	Municipality
Green public procurement policy/strategy developed	Nelson Mandela Bay Metropolitan – a green procurement strategy in place, pending final approval from council
Other (environmental) polices related to or influencing procurement	City of Cape Town Metropolitan City of Tshwane Metropolitan Ekurhuleni Metropolitan
No environmental criteria or guidelines considered in procurement decisions, but other environmental initiatives related to GPP	EThekwini Metropolitan City of Johannesburg Metropolitan
No environmental criteria or guidelines considered and no environmental initiatives related to GPP	Mangaung Metropolitan Buffalo City Metropolitan

Source: Urban SEED (2012)

Both the IISD and the Urban SEED studies indicate the paucity of explicit green procurement legislation at the local government level. Despite this 'anomaly' metropolitans have been able and still are implementing projects that speak to the green procurement drive. Details illustrating this drive are the main subject of the data presentation, analysis and discussion of findings chapter (Chapter 4).

2.7 CONCLUSION

Environmental decay (inclusive of climate change) is a phenomenon that affects all. In response to climate change, several schools of thoughts have emerged on how to address it of which the two main ones are: mitigation and adaptation. The main mitigation objective is to reduce GHG emissions into the atmosphere. Adaptation to climate change on the other hand is aimed at reducing the effects of climate change as well as to improve any positive impact of climate change through either private or public action. Research has shown that governments in countries spend huge amount of money on procurement. Therefore, by procuring green, governments can influence the mind set of service providers, manufactures and suppliers to go green as means of dealing with climate change. Hence the focus of this study is on "Assessing Green Procurement in South Africa's Metropolitan Municipalities". More importantly green procurement presents metropolitan municipalities the means to manage climate risk and exploit opportunities associated with the management of

these risks. The presented theory and empirical work forms the basis for analyzing and discussing research findings in chapter four.

CHAPTER THREE: METHODOLOGY

3.1 INTRODUCTION

Leading from previous chapters that introduced the research and reviewed the relevant literature, this chapter outlines the research approach used to address the research aim and objectives. The chapter begins with an outline of the research design used in the study. This is followed by the description of data gathering tools in the form of secondary and primary data collection. Following the data gathering, is a description of how the data was analysed. This chapter further outlines the credibility and dependability of the study as well as the ethical consideration undertaken in the study. Finally the constraint issues that characterized and guided the research are highlighted.

3.2 RESEARCH DESIGN

There are three main types of research designs: qualitative, quantitative and mixed method. Qualitative design is the use of narratives to represent the findings of a study. A qualitative design is also any type of research that the results are not obtained by statistical means, but is more descriptive (Strauss and Corbin, 1990: 10-11). Quantitative design is different from qualitative design in that it is the use of numbers to represent the findings of a study statistically and is expressed as "explaining phenomena by collecting numerical data that are analysed using mathematically based methods" (Aliaga and Gunderson, 2002: 2). Mixed method design on the other hand is a combination of both qualitative and quantitative methods (Creswell, 2009). The selection of a research design for a study depends on the nature of the study and what needs to be achieved (Ibid). Given that green procurement is a fairly new phenomenon and/or concept in South Africa, it thus called for a holistic methodology to tease out insights and understanding on this new concept. Consequently the study employed a mixed method approach to gain perspectives from different local government levels. Johnson *et al.*, (2007) states

that mixed the method design is when elements of both qualitative and quantitative designs are combined in a study for the purpose of obtaining a deeper understanding of the phenomenon under investigation. Creswell and Plano Clark (2007) add to Johnson *et al* by stating that the use of both qualitative and quantitative approaches in a study puts a study in a better position than when either qualitative or quantitative research is used as the sole research method. Creswell (2008) further justifies the use of mixed method design arguing that using both qualitative and quantitative approaches offers a better understanding of the research problem than using each approach singularly. Creswell (2009) presents six major mixed methods models namely: (i) the sequential explanatory model, (ii) the sequential exploratory model, (iii) the sequential transformative strategy, (iv)♣ the concurrent triangulation strategy, (v) the concurrent embedded strategy and, (vi) concurrent transformative strategy (Ibid)

Sequential explanatory model applies to research case where qualitative data is collected and analysed as a buildup on an original quantitative data collection and analysis process. Thus the "initial quantitative results informs the secondary qualitative data collection" (Creswell, 2009:211). Sequential exploratory model is the reverse of the sequential explanatory model. Here, quantitative data are collected and analysed as a build up to the original qualitative data collection and analysis. The results of the qualitative data inform the quantitative data. Sequential transformative strategy is the use of either the sequential explanatory model or the sequential exploratory model "with a theoretical lens" (ibid: 212). The theoretical lens, then guides the whole study from proposal to the end of the study. Concurrent triangulation strategy involves the concurrent collection, comparison and contrasting of both quantitative and qualitative data. Similarly, concurrent embedded strategy also involves concurrent collection of both qualitative and qualitative data; however, there is a main method that guides the study and a secondary method that provides support to the main method. The secondary method is then said to be embedded within the main method. Finally, the concurrent transformative strategy is when both qualitative and quantitative data is collected and analysed concurrently and is guided by a theory from its conception to the end.

This study used the concurrent embedded strategy where both qualitative and quantitative data were collected concurrently during the data collection phase. With

this strategy, the main method which guided the study was the qualitative method. This method was complimented and supported by a secondary method which gathered quantitative data. The supporting role method was embedded within the main method (Creswell, 2009).

The mixed methods approach used in this study sought to gather data through three types of data generating methods namely document analysis, interviews and questionnaire. The methods and their application are discussed in the following section.

3.3 DATA GENERATION METHODS

Data generation is fundamental to all research and the data generating methods used for this study were document analysis, interviews and questionnaires. Document analysis is a "systematic procedure for reviewing or evaluating documents" (Bowen; 2009:27) in order to produce meaning and develop first-hand knowledge (Corbin and Strauss, 2008). The document analysis focused on municipal policies, procedures and regulations.

Interviews are "specific form of conversation where knowledge is produced through an interaction between an interviewer (one gathering data) and an interviewee (one responding to the enquiry) (Kvale 2007, p: xvii). Interviews can be face-to-face or one-on-one communication between a researcher and a participant. Depending on the scope of the study, an interview could either be a structured interview or a semi-structured interview (Rubin and Rubin, 2005). Structured interview relate to cases in which there is a set of self-completing questions which are created in advance and have a limited set of responses. Such interviews are often aimed at gathering data from large samples (Cohen *et al*., 2007). Semi-structured interview on the other hand relate to cases in which data are collected through face-to face interviews with an interview guide assisting the interrogation of the topic under investigation (Roper and Shapira, 2000:22). An interview guide is a set of pre-determined open-ended questions that are used to guide an interview (Greef, 2002:302). The semi-structured interviews that were conducted for this study sought narratives on procurement in the different metropolitans.

A questionnaire is a list of questions designed to gather information from individuals regarding their views on a particular issue of interest (Wilkinson and Birmingham, 2003). In this study, the questionnaire was designed to elicit information on green issues from municipal officials. Noting the complexity of the research problem and research terrain because of the politics around metropolitans particularly around procurement issues, a pilot study was conducted to test and refine the data gathering instruments.

3.4 PRIMARY DATA GATHERING: PILOT STUDY

A pilot study is conducted to test the appropriateness and adequacy of a research design and proposed data gathering instruments (Strydom, 2002:202). For example, Strydom and Delport (2002:216) argue piloting a questionnaire ensures that any inherent errors are rectified before the main study. This research piloted its research design and instruments in the Tshwane Metropolitan Municipality. The piloting process engaged five procurement officers and tested both the interview guide and questionnaire on the views of the officers on green procurement policies and practices. The process also involved testing the interview questions through a focus group discussion. The focus group interview was led by the researcher and assisted by a research assistant. The questionnaire was administered to the pilot study participants after the interviews so as not to stretch contact time between the researcher and informants.

The pilot study led to three distinct changes. First, it revealed the need to refine the quality of the questionnaire with particular reference to the sequence of the questions. Second, it enabled the focusing of questions on specific expertise. For example, the section of the questionnaire that strongly focused on procurement questions was restricted to the procurement officials in the questionnaire used in the main study (See Appendix E). Third, the focus group approach to engage the respondents was abandoned. This was because of time restrictions on targeted respondents. In addition the pilot study indicated that data gathered in the focus group discussion could be adequately gathered in interviews with the concerned respondents. Having refined the data gathering instruments through a pilot study, the main data gathering was embarked on.

3.5 MAIN DATA GATHERING

The main data generating tools chosen for this study were document analysis, interviews and a questionnaire. Data gathering is fundamental to all research and data gathering tools used in a research has its strengths and weaknesses. The nature, strengths and weaknesses of tools used in this research are discussed in the following three subsections.

3.5.1 Documents analysis

This study made use of publicly available documents mainly accessed through the internet. The study accessed and analysed a number of documents including; policies, procedures and/or strategic documents related to green procurement in all the metropolitans under study (Table 3.1).

Table 3.1 Key documents retrieved for analysis

Name of Metropolitan Municipality	Year of Document	Document Retrieved
Buffalo City Metropolitan Municipality (BCMM)	2001	• BCMM Procurement Policy
	2012	• BCMM Integrated Development Plan (IDP) review (a) • Draft Integrated Development Plan, 2012-2013 (b) • BCMM Supply Chain Management Policy
City of Cape Town (CoCT)	2003	• CoCT Integrated Metropolitan Environmental policy (c)
	2006	• CoCT Integrated Waste Management Policy (a) • Framework for the Adaptation to Climate Change in the City of Cape Town (b) • CoCT Energy and Climate Change Strategy (c)
	2009-2014	• CoCT Environmental Agenda
	2010	• CoCT Energy and Climate Change Action Plan
	2011	• CoCT Environmental Awareness, Education and Training Strategy for City Staff and Councillors (a) • CoCT Public Environmental Awareness,

		Education and Training Strategy (b)
	2012	• CoCT Information and Guideline Document on the implementation of Green Public Procurement in the City of Cape Town (a) • CoCT City of Cape Town Smart Building handbook. A guide to green building in Cape Town (b)
	2013	• CoCT Supply Chain Management Policy (a) • CoCT Integrated Development Plan2012 – 2017, 2012 – 2013 Review (b)
City of Johannesburg (CoJ)	2003	• CoJ Supply Chain Management Policy
	2005	• The Waste Management Plan for CoJ
	2011	• CoJ Integrated Waste management Policy
	2012	• CoJ 2012/2016 Integrated Development Plan (IDP). "Committing to a promising Future"
City of Tshwane (CoT)	2005	• Tshwane Environmental Education and Awareness Strategy (a) • Development of the Tshwane Sustainable Energy and Climate Change Strategy (b)
	2007	• CoT integrated Environmental Policy (TIEP)
	2010	• CoT Green Buildings by-law and Policy
	2011	• CoT Supply Chain Policy
	2013	• CoT Vision 2055: Remaking South Africa's Capital City (a) • CoT Draft 2013/2014 IDP Review (c)
Ekurhuleni Metropolitan Municipality (EMM)	2006	• Ekurhuleni Supply Chain Management Policy (a) • Ekurhuleni Environmental Policy (b)
	2007	• Energy and Climate Change Strategy
	2010	• Draft: Review of 2009 – 2013 Ekurhuleni Metropolitan Municipality Integrated Development Plan
	2013	• Environmental Policy and Implementation Plan

		(a) • Waste Management Tariff Policy (b)
eThekwini Metropolitan Municipality	2002	• eThekwini Environmental Management Policy (construction)
	2003	• Targeted Procurement Policy
	2004	• Integrated Waste Management Plan for the eThekwini Municipality
	2005	• Environmental Management Policy for the eThekwini Municipality (a) • Supply Chain management Policy(b)
	2008	• Institutionalizing Climate Change at the Local Government Level in Durban
	2013	• eThekwini Municipality: Supply Chain Management Policy (a) • eThekwini Municipality. Draft IDP 5 Year Plan: 2012/13 to 2016/17 (b)
Mangaung Metropolitan Municipality (MMM)	2012	• Draft Expanded Public Works Programme (EPWP) Policy and implementation Plan
	2013	• Supply Chain management Policy (a)
		• Waste Management by-law (b)
	2013/2014	• MMM IDP. Review 2013-2014
Nelson Mandela Bay Metro (NMBM)	2005	• NMBM Integrated Waste Management Plan. 2005-2010
	2011	• NMBM Green Procurement Implementation Strategy
	2011 - 2016	• NMBM Draft IDP. 2011-2016
	2012	• Integrated Environmental Policy for the NMBM
	2013	• NMBM Supply Chain Management Policy

Source: Fieldwork (2013)

The retrieved and analysed documents included integrated development plans, supply chain management policies, environmental policies, integrated waste management policies, energy and climate change policies, green procurement guidelines and green procurement implementation strategies. The documents were

analysed to establish the link between the need for green procurement and any action being taken to address climate change in the metropolitan.

It must be noted that these documents were not written for research and as such may not provide data that could fully meet the research objectives. In addition, such documents may have some inconsistencies, incompleteness; limited linguistic skills and lack of standard format (see Bailey, 1994 and Creswell 2003). Therefore this study sought to address this deficit through complementing data gathered from these documents by exploring narratives around the actual practices that are informed by these policy documents. The narratives were collected through interviews with relevant officials from the different metropolitan.

3.5.2 Interviews

This study employed the use of face to face semi structured interviews to explore the understanding of concepts around green procurement from the interviewees' points of view. The process was guided by an interview guide that was designed and refined by the piloting process (Appendix F). In addition to the interview guide, probing questions were sometimes asked when clarification was needed. This probing ensured a "depth, detailed and vivid" interrogation of issues of green procurement (Rubin and Rubin, 2005:129).

The interview part of the research sought to engage seven metropolitan (the eighth Tshwane was used in the pilot study). However, the Ekurhuleni metro declined to participate (see Box 1 Section 3.8). As such, the narratives informing this research were drawn from six metropolitan namely: Buffalo City Metropolitan Municipality; Nelson Mandela Bay Metropolitan; City of Cape Town; Ekurhuleni Metropolitan Municipality; City of Johannesburg; City of Tshwane; eThekwini Metropolitan Municipality and Mangaung Metropolitan Municipality.

In each metro, a town planner, two environmental specialists and two procurement officers were interviewed. All the interviewed participants were senior officials who had significant leading roles in policy implementation within the metropolitans. Although a total of 30 respondents were interviewed only 27 interview transcripts were obtained. This is because; participants in some of the metropolitan had to be interviewed jointly due to lack of time. For example, in the case of EThekwini, two environmental specialists were interviewed together. In addition to that, not all the

targeted participants were interviewed as planned. For example, in the CoJ, three environmental specialists were interviewed instead of two and in EThekwini; an Economic Development official was interviewed. Table 3.2 gives a summary of the designation and number of metropolitan officials that informed this research through interviews and questionnaires.

Table 3.2: Designation and number of participants informing the research

Metro	Town Planner	Procurement Officers	Environmental Specialist	Economic Development	Total number of people interviewed per Metro	Total number of questionnaires per Metro
Buffalo City Metropolitan Municipality	1	1	2	-	4	3
City of Cape Town	1	2	2	-	5	5
City of Johannesburg	-	1	3	-	4	3
eThekwini	1	2	2	1	6	6
Mangaung	1	3	2	-	6	6
Nelson Mandela Bay Metro	1	2	2	-	5	4
Total number per Category	5	10	13	1	30 (27)	27
Proportional Sample in relation to interviews	17.2%	34.4%	45%	3.4%	100%	
Proportional Sample in relation to Questionnaire	19%	33%	44%	4%	100%	100%

Source: Fieldwork (2013)

To facilitate the interview process, the study engaged the services of research assistants. Whenever possible, the research assistants further assisted with field notes during interviews. .

All interviewees were supplied with the major interview questions before the face to face interviews. This was to enable the targeted respondents to prepare ahead of the interview. The interview process followed Seidman's (1998) guidelines in an attempt to ensure informative interviews. Siedman suggests five guides to facilitate the process namely; (1)Ask clear, brief and easy to understand questions; (2) Let the

participants do most of the talking when answering the questions with few interjections; (3) Ask one question at a time to avoid confusion; (4) Avoid sensitive questions and (5) Repeat the key questions throughout the interview. .

Permission was also sought from the participants to record the interviews by using electronic audio recordings as advised by Kvale (2007) and Bryman (2012). These audio interview recordings allowed "a much fuller record than notes taken during the interview" (Smith *et al*., 1995:17). The recorded interviews were later transcribed for deeper analysis. Each interview lasted between 20 to 40 minutes. Interviewees were asked to respond to a questionnaire immediately after each interview.

3.5.3 Questionnaires

The questionnaire that was used was always given to the participants a few days before the actual interview took place. This enabled participants to familiarise themselves with the questionnaire and also to complete it after being interviewed. The questionnaire comprised a total of 74 questions divided into three sections (Appendix E). Some of the questions used were adapted from a similar research conducted in Europe in 2005 by Bouwer *et al.* (2005).

The first section of the questionnaire focused on the demographics of the respondents. Demographic information was needed to enable participants to be contacted should the need for clarification arise. The second part of the questionnaire was on green procurement. This part focused on testing the knowledge of municipal officials on green procurement policies and what it entails. The third part was concerned with the environmental criteria in specific services and products procured in each metro. A total of 27 questionnaires were completed and returned out of the total 29 dispensed. This gave a response rate of 93%.Only two respondents (from City of Johannesburg and Nelson Mandela Bay Metro) did not complete the questionnaire.

The interview and questionnaire approaches generated a lot of data that needed to be stored safely before and during analysis. The storage and access to the data was guided by the UNISA code of ethics in data management.

3.6 DATA ANALYSIS

The purpose of data analysis is to shrink the information gathered into a manageable and interpretable form for the establishment of relations between research problems so as to enable the drawing of appropriate conclusions (De Vos, 1998:202). Data is also analysed so that they can be presented in a "more meaningful way" (Liamputtong, 2013:241). Three main data analysis were conducted according to the three main forms of data collection methods. Different analytical techniques were used for each data collection method as discussed below.

Data was generated by analysing relevant documents using content analysis technique. Content analysis involved the checking of patterns and trend of words in a document to determine "their frequency and relationship" (Liamputtong, 2013:246). In view of this, documents to be sampled are selected, codes or themes are identified before they are checked in a document and finally, the number of times the codes occur in the documents are counted (Silverman, 2011). This practice confirms what Miles and Huberman (1994) say that there is some sort of counting in qualitative research although qualitative research does not work with numbers.

In this study, a total of 51 policy documents were selected for analysis as indicated earlier in Table 3.1. The analysis sought to determine the frequency of phrases such as climate change, green procurement, renewable energy, energy sufficiency, mitigation, adaptation, clean technology, carbon footprint, sustainable development and green economy in the selected documents (see section 4.3) and the number of times they appear in the documents were then identified and counted. Although content analysis is the simplest form of data analysis, it has been criticized by a number of qualitative researchers. One of such criticisms is that content analysis "may only focus on counting words and leave no possibility for detailed interpretations of the data" (Grbich, 2007, p: 122). To overcome the criticism outlined, all the themes that were identified were read in context in the document and not just taken out of context. This ensured that the themes were informed by both "what" was said and also "how" it was said (Seale and Tonkiss, 2012: 460). This approach enabled contextualisation of the analysis process.

The second data analysis is the analysis of the interviews data through thematic analysis. Thematic analysis is an approach to dealing with data that involves the

creation and application of ‘codes’ to data. The approach refers to a data analysis approach in which themes are identified and analysed within the collected data (Braun and Clarke, 2006: 79). The identified themes are “repeated patterns of meaning” (Ibid: 86) that is picked up from the data in relation to the research question. The idea usually represents a response or meaning within the data (Braun and Clarke, 2006).

Thematic analysis may be approached from two angles. These are the inductive or bottom-up approach and deductive or top-down approach. Inductive thematic analysis involves cases in which the themes that are generated are all derived from the collected data, whereas in deductive thematic analysis, themes that are generated are derived from literature. In using either inductive or deductive thematic analysis, data must be coded. Coding of data is arranging data into themes. Coding takes place at two levels. The first level is the initial coding. Initial coding is when data is analysed and categorized into codes. This is followed by the second level of coding known as axial coding where identified codes in the initial coding are connected to form themes (Liamputtong, 2013).

This study used inductive thematic data analysis approach. The first stage of the analysis was to transcribe the recorded interview data. The data was read and re-read to become familiar with the data. Secondly, initial codes were generated by an in depth analysis of the data followed by axial coding of the data which was linking the generated codes. Thirdly, the generated codes were clustered together to form themes which were reviewed and described.

The third and final data analysis that took place was the analysis of the questionnaires. This analysis used a basic numerical analysis using MS Excel. This analysis involved drawing up of tables with the number of frequency a question is answered. This was later analysed. An integrated and synthesized set of findings addressing the research findings is presented in Chapter four.

3.7 TRUSTWORTHINESS

> *“A trustworthy study is one that is carried out fairly and ethically and whose findings represent as closely as possible the experiences of the respondents …” (Padgett, 2008: p: 184).*

To establish the trustworthiness of this study, the criteria of credibility and dependability was used as opposed to the concept of validity and reliability which is traditionally used in quantitative research (Lincoln & Guba, 1985:300; Clont, 1992; Seale, 1999; Stenbacka, 2001:552). Qualitative researchers have argued that the use of validity and credibility to establish the trustworthiness in qualitative research is seen as "being too subjective and lacking in rigor" and therefore is problematic (Liamputtong, 2013: 24). To this end, Tuckett (2005) advocates the use of alternative strategies such as credibility, transferability, dependability and confirmability as a way to determine the trustworthiness of a study. Creswell (2012) further indicates that at least two of these strategies should be used in a study to establish its trustworthiness. This research used credibility and dependability approach to ensure trustworthiness.

3.7.1 Credibility

Credibility which is compared to internal validity in quantitative research refers to finding a common ground on what the participants said, and how the perspectives of the participants are represented accurately in a particular study (Padgett, 2008; Chilisa, 2012). Chilisa further states that the credibility of a study is established if the study "represents as adequately as possible the multiple realities revealed by the participants" (Ibid: 165). Purposefully selecting participants because they are knowledgeable on the subject being investigated also establishes the credibility of a study (Carpenter and Suto, 2008).

By following Chilisa's suggestions, the question of credibility was addressed by first, having a prolonged engagement with the targeted respondents prior to the main fieldwork. This allowed a "trusting relationship to be built between the researcher and the participant" which reduced the "likelihood of participants lying or withholding information" (Liamputtong 2013: 28). Honesty in participants was encouraged from the onset of the data collection period. Furthermore, to reduce the uneasiness of participants, they were always reminded of the withdrawal clause in their consent form. This gave each participant the right to withdraw from the study at any point in time without the fear of negative repercussions .

In addition, the triangulation of the study ensured credibility. Triangulation is using multiple sources in collecting data for a study (Carpenta and Suto, 2008; Padget,

2012) and if a study is well triangulated, the study will “contain richness, depth, breadth, complexity and rigour” (Liamputtong 2013: 30). Four types of triangulation have been identified by Denzin (1989). These are:

1. Methodological triangulation which is the use of more than one method of data collection in a study
2. Theoretical triangulation which is the use of more than one theory in a study
3. Data or source triangulation which is the use of multiple participants in a study and finally
4. Researcher triangulation which is the use of more than one researcher in a study.

This study employed the use of both methodological and data triangulation. The methodological triangulation employed the use of a mixed method approach resulting in the use of more than one method of data collection (section 3.2) and the data triangulation was the use of multiple participants to elicit information on green procurement (section 3.5).

The next strategy used to ensure credibility of the study was peer review. Peer review is when a party (e.g. colleague) who is not directly involved in the research, but is knowledgeable on the topic being researched is requested to review field notes and transcripts (Liamputtong, 2013). This is done to eliminate (minimize) dishonesty in researchers as well as to reduce research bias (Creswell, 2012 and Lincoln and Guba; 1985). Peer reviewing was done consistently throughout the writing process of the study. In addition to the peer reviewing, frequent debriefing sessions were held with the supervisor of the study. At the end of each data gathering visit, a debriefing session was organized with the supervisor to review the interviews and to identify any emerging trends to assist in making the appropriate adjustments. These debriefing sessions eliminated (minimized) any possible “flaws in the proposed course of action”. (Shenton, 2004: 67)

3.7.2 Dependability of the study

Research dependability was further established to address and enhance the trustworthiness aspect of the study. Dependability compared to reliability in

quantitative research (Chilisa, 2012), is to ensure that a *thick description* of the methods used in the study is provided (Lincoln and Guba, 1985). In this research, dependability was ensured by a rich and thick description of the research design, data gathering, detailed transcription and data analysis process. This approach can enable other researchers to repeat the study to obtain similar results (Shenton, 2004: 71).

3.8 ETHICAL CONSIDERATIONS

In research, ethical considerations are very important. Equally important is the honest reporting of data gathered and the results generated. This research considered and followed prescribed ethical considerations.

First, the study sought permission to engage the metropolitan municipalities of South Africa to interview specific individuals within these organizations. Request for permission to conduct research of the metropolitan was sought through the municipal managers of the eight metropolitan. Initial contact with the managers was through emails with request letters (Appendix C) which were then followed by telephone calls and personal visits where possible. Visits were made to Tshwane, Johannesburg and Ekurhuleni metropolitan. The visits to the three metropolitan were to familiarize the researcher with the data gathering sites as well as to establish rapport with participants who were to be involved in the study.

After getting acceptance to engage the metropolitan, the second step was to subject the research to an internal ethical evaluation and clearance. This involved submitting an ethical clearance application to the ethical committee of the College of Agriculture and Environmental Science (CAES) UNISA for consideration and approval. This application was approved before the research could proceed (Appendices A and B)

The third step of the ethical considerations involved the mode of engaging the targeted respondents of the study through an informed consent. Informed consent is when the participants of a study are given information about the study so that they make informed decision to decline or to consent to participation in the research (Emanuel *et al*, 2000; Liamputtong 2007). The information includes the nature and purpose of the study, the research process, confidentiality clauses, withdrawal clauses and the potential benefit(s) of the study. To this end, an informed consent

form (Appendix D) was drafted for every participant to sign and to be co-signed by a witness giving the researcher permission to interview him/her. Before the consent form was signed, details of the form were read out to each participant to obtain a verbal consent as well (Liamputtong, 2013; Gordon, 2000). Included in the consent form is the following information:

1. The nature and purpose of the study: a brief background of the study is given. This is followed by a description of why the study is being undertaken.

2. Research process: How the research was going to be conducted is outlined. The number of people that will be interviewed was also specified and respondents were assured that the interview will be conducted by the researcher.

3. Notification that the interview will be recorded: respondents were notified that the interview proceedings will be recorded to prepare them ahead. This is to enable the researcher to transcribe it for close analysis. Notifying the respondents before the interview is recorded is very important as the presence of a recording device may change the behavior of some respondents.

4. Confidentiality clause: respondents were assured that their interviews and the information they supplier were strictly confidential and as such their identity was not going to be revealed (Liamputtong, 2007).

5. Withdrawal clause: participants were informed that they were not under any obligation to answer any or all of the questions if they did not wish to do so. They were also informed of their right to withdraw participation consent at any point of the research.

6. The potential benefit of the study: summarized potential benefits of the study for all metropolitan were outlined. This was to encourage participants that being part of the study will benefit their respective metropolitan.

7. Contact information of the supervisor of the study: Participants were also informed that should they have any questions on the authenticity of the study, they could contact the supervisor of the study for confirmation and

clarification. Finally, participants were assured that at the end of the study, research findings will be made available to participating metropolitan.

3.9 CONSTRAINTS OF STUDY

The research encountered a number of challenges. As a result the data collection period was longer than was initially anticipated. In total, the data collection period stretched over 21 months as opposed to the anticipated 12 month period. This was mainly due to the difficulty of establishing contacts with municipal managers. For instance, it was particularly difficult to establish contact with the Ekurhuleni Municipal Manager (Box 3.1). Efforts to establish links with the manager were long-drawn and the Ekurhuleni metropolitan municipality eventually had to be left out of the study.

Box 3.1: Attempts to get Ekurhuleni to respond to consent to conduct Research

The first request to conduct research at Ekurhuleni was sent via email to the city manager in May 2012. After several telephone calls without any headway, a follow-up email was sent to the municipal manager in August 2012. This was followed by several other follow-up emails, to which there was no response. In January 2013, a scoping visit was scheduled to Ekurhuleni. The main reason for the scoping visit was to conduct a follow-up on the emails previously sent to the municipal manager. Another reason for the scoping visit was to try and establish contacts with some of the people targeted as respondents in the municipality and lastly to be acquainted with the research area. The visit, however, proved unfruitful because none of the metro officials could officially give consent to participation in the study. From February 2013 till December 2013, several unsuccessful attempts to get Ekurhuleni to respond to the request to participate in the research failed. These attempts included emails sent to the municipal manager, personal contacts, emails sent to various personnel at the metro, a special request from the Deputy Minister of Higher Education to Ekurhuleni Mayor, three more visits to the metro after the scoping visit and the use of Twitter to place comments and tagging Ekurhuleni in attempt to elicit a positive response. Additional attempts to engage the metro were made in January 2014 and these were also not successful. A decision to exclude this metro was made on 31st January 2014.

The second constraint was the unwillingness of some participants to be interviewed due to sensitive and confidentiality issues surrounding procurement in general. Initially some procurement officers were unwilling to complete the questionnaire as well as to be interviewed. However, after careful explanation of the study objectives and focus which dispelled the views of the study as an evaluation of metropolitan on green economy and/or procurement progress and performance, the majority of targeted participants (93%) eventually agreed to inform the study. This high participation rate was also driven by the realisation of the potential benefits that the study could bring to the metropolitan.

3.10 CONCLUSION

Chapter three presented the research design that was used in the study. The mixed method design that was selected for the study made use of both qualitative and quantitative methods. The primary and main data gathering methods were also highlighted. Analysis of data was presented. This was followed by the credibility and dependability of the study. Of utmost importance was the ethical considerations taken into account during the study which have been outlined and finally the constraints that were encountered with during the study were outlined. This chapter therefore provides a report on the procedures that were used to gather data for this study. The next chapter will present and discuss the results of the study.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

This chapter presents data, analyses and discusses the emerging findings of the study. The main body of the chapter is divided into three broad sections that come in various sub-sections. The broad sections addressed are: (1) the level of understanding of sustainable development and the need to address climate change in the metropolitan municipalities; (2) legislative provisions for green procurement and (3) status of green procurement practices in the metropolitans. The findings of the study are discussed in the context of literature that was reviewed in chapter two. The major sources of data used as presented in the previous chapter included documents, interviews and the questionnaire. The analysis of the interviews undertaken during fieldwork is presented through narratives highlighting the emerging trends. This complements the analysis of responses from the questionnaire that are also presented through general descriptions and graphic representations.

4.2 SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE

Since green procurement looks at the integration of environmental issues in procurement, the environment was not treated in isolation during the study. Instead, green procurement was investigated within the large context of sustainability. Findings around this issue are specified in the following sub-sections.

The first was to determine the level and extent of basic understanding of the sustainable development concept. To that end, officials were asked if they had knowledge on what sustainable development was. The interviews show that all the interviewees (n = 30) understood what sustainable development was. However, some respondents indicated that the term ‘sustainable development’ have been overly used with one of them stating: “Sustainable development is a bit of a buzz word. I think it is overly used and has lost value” (Excerpt from interview, Nelson Mandela Bay, 2013). Another respondent also stated that:

> Sustainable development has become sort of a buzz word that everybody uses and part of the change [problem] is that it started becoming something that meant everything to everybody and it became a loose term…, (Excerpt from interview, Buffalo City, 2013).

In addition to showing a general understanding of the concept, the interviews revealed two distinct views on sustainable development emerged. The first view was that the implementation of sustainability is difficult. According to Drexhage and Murphy (2010), although the sustainability concept has been accepted widely, its implementation has not been successful and will take a long time and great effort to achieve it. Drexhage and Murphy's view was corroborated by a respondent who stated that sustainable development was very difficult to achieve in reality. The respondent stated: "unfortunately the sustainable agenda was not at the high level, but project based. And because of that it is difficult to achieve sustainability" (Excerpt from interview, Buffalo City, 2013). He further said that unless there was a policy on sustainable development; sustainability was never going to be realised. The second view was that sustainability issues tended to be discussed in terms of the environment. The majority of the respondents (80%, n=30) referred to sustainable development as an environmental concept. This is in sharp contrast to the common global and consensus understanding of the concept of sustainable development as not only focused on the environment but also a focus on economic and socials issues. This narrow focus however reflects Drexhage's and Murphy's (2010) conclusions that sustainable development is often compartmentalised as an environmental issue as discussed section 2.2. Although the majority of respondents referred to the sustainable development concept as an environmental issue, one respondent, however, was able to link environmental, social and economic issues. The respondent stated:

> One of our biggest threats to sustainability in this metropolitan is the current socio-economic dynamic. There are many people who are unemployed and living in poverty. There is also much inequality in our city, that's the critical element we need to address over the next ten years otherwise...sustainability will not be reached (Excerpt from interview, City Cape Town, 2013).

Responding to a question of the sustainability of the metropolitans, 60% of the respondents indicated that their metropolitans were not sustainable and 40% of the respondents indicated that their metropolitans were sustainable. A respondent from the former group rated this particular metropolitan very lowly scoring it a 20 out of 100 points on sustainability rating score ranging from zero to 100 points stating: “maybe 10 years later we may be a sustainable metropolitan”. The respondent explained this low rating as deriving from limited evidence of environmental friendly and economical sound practices. These practices include the buying and use of energy efficient office and home appliances and recycling. Despite the divide between respondents viewing the metro as being sustainable and others as not, the two groups concurred that there was a lot that still needs to be done before the metropolitans can fully achieve sustainability. In view of this, respondents were asked to give suggestions on what South African metropolitans could do to achieve sustainable development. Some of the suggestions to that end included raising awareness within communities and schools, as well as among metropolitan staff members. The Awareness and education aspects raised are subject of detailed deliberations in the next sub-sections.

4.2.1 Sustainable environment awareness in communities and schools

Against the background of the National Environmental Management Act (NEMA) Section 2 (4h) that advocates for community wellbeing and empowerment that should be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means (Section 2.5), respondents were asked what their metropolitans were doing to promote sustainable environments within their communities and schools. Only 20% of the respondents did not know of any initiatives to promote sustainable environment in communities and schools compared to 80% of the respondents that referred to several programmes being underway in their respective metropolitans. Some of the programmes and projects aimed at promoting sustainable environments in the communities and schools are discussed further in the next paragraphs.

The Buffalo City metropolitan respondents indicated that they celebrated environmental days annually. During such days, the metropolitan invites schools and

demonstrates the advantages of protecting the environment to the school children. A respondent from Buffalo City remarked:

> When we celebrate the environment days, we invite the schools around the city and take them to places like the zoo and the landfill site. At the sites, students are taught how the land fill site operates and also how to sort their waste (Excerpt from interview, Buffalo City, 2013).

The City of Cape Town respondents revealed that they conducted environmental sustainability awareness campaigns for schools through the Youth Environmental School (YES) programme. The YES programme is a youth capacity building, training, education and awareness programme for all schools and educators in Cape Town. One of the respondents gave further clarification on the YES programme as detailed in Box 4.1.

Box 4.1: The YES Programme explained

…The YES programme involves the schools in the environmental awareness program throughout the year. Environmental messages are sent across through dramatization and competitions. The YES programme links with all the environmental weeks like the water week, clean up week, Arbour day, Arbour week, environment day and earth hour. We also work with the school teachers and the principals directly. Trees to be planted get handed to schools at the right times. The metropolitan also have vegetable gardens at the schools and the school have projects in terms of environmental sustainability.

Source: Fieldwork (2013)

Several activities are provided to the youth under the YES programme. The activities include environmental drama festival, the Blue Flag Beach programme, Youth and Urban Nature programme, Discovery Race programme, biodiversity showcase garden environmental education programme, human impact on the environment programme, energy audit and retrofit programme and career fairs. In addition to the YES programme, the City of Cape Town runs an internship programme in which unemployed graduates are placed in nature reserves, the head office and in the

district offices across the City. The interns are given various tasks to handle in order to expose them to various environmental issues. An official from the City of Cape Town indicated that the internship programme, popularly known as the Urban Sustainability Internship Programme takes about forty interns annually. The interns work for twelve months and are paid a stipend.

The City of Johannesburg creates awareness on sustainable environment when fulfilling its national mandate of building Reconstruction and Development Programme (RDP) houses for the community. A City of Johannesburg official revealed that:

> In addition to building RDP houses as a national mandate, we install solar water heaters on the roof tops of the houses to reduce the use of electricity. Through community education, we encourage people to become sustainable in their day to day activities. We do run programmes in communities to alleviate poverty and create jobs (Excerpt from interview, City of Johannesburg, 2013).

In addition to providing housing with environmentally friendly fittings, the City of Johannesburg has also embarked on the establishment of the bus rapid transport (BRT) system and the fully endorsed the Gautrain with the aim of reducing the city's public transport carbon footprint. In the establishment of the two public transportation systems, the communities were educated on the benefits of using the BRT and the Gautrain as alternative modes of transport when either travelling within the city or from the city to places like Pretoria and the airport.

The Johannesburg Metropolitan is one of the three metropolitan municipalities in Gauteng Province. It is the commercial capital of South Africa and as such has a number of industries situated there. Because of the numerous industries, Johannesburg is considered one of the highest GHG emitters in South Africa (Nhamo and Mjimba, 2014). To this end, the metropolitan has embarked on a number of mitigation projects to reduce its carbon emissions. One of these projects is a BRT system branded 'Rea Vaya' which means 'we are going' (Figure 4.1).

Among the aims of the BRT is to reduce transport related carbon emissions through the reduction of privately owned cars on the roads and some of the buses using greener fuels (Ibid).

Figure 4.1: Rea Vaya BRT bus in Johannesburg

Source: http://en.wikipedia.org/wiki/File:Rea_Vaya_stop_in_CBD.JPG

The roll out of the *Rea Vaya* BRT began in 2009 (City of Johannesburg, 2013). The *Rea Vaya* BRT system features include the following:

1. modern buses with double-sided door for easy access
2. Thirty-one stations fully staffed
3. An average weekday passenger trips of 40 000 totalling over 1 million passengers per month
4. Cashless system. Fares are collected using pre-loaded smartcards
5. Information about bus arrivals or next station is provided to passengers at stations and on buses respectively
6. Stations are monitored at a control centre using CCTV
7. A GPS control centre observe and communicate with buses via GPS and to monitor adherence to schedule

A survey conducted in 2012 among *Rea Vaya* commuters indicated that 80% of them were very satisfied with the services being provided (Rea Vaya, 2012). Finally, in recognition of the success of Johannesburg's BRT system, the city was chosen as a finalist in the transportation category of the 2014 C40s[4] city climate leadership awards (C40 Blog, 2014).

Another project embarked on by the City of Johannesburg in creating awareness and educating their communities on sustainable environment is at the various landfills in and around the City. A respondent indicated that at the entrance of the landfills, efforts are made to educate people on how to separate their waste in order to use the waste for energy generation. Besides this project, the respondent indicates that there were initiatives to make sure that future and long term purchases of garbage collection trucks would seek specifications on vehicles that could facilitate energy generation out of the waste. Finally, through its active citizenry programme, the city encourages and involves its citizens to play active roles in their various communities.

The eThekwini metropolitan, has also embarked on a number of outreach programmes to educate both communities and schools about environmental sustainability. With regard to communities, one respondent commented that:

> A lot has been done in our communities… from energy saving to waste management. The solid waste unit has special division within it to just deal with awareness campaign (Excerpt from interview, eThekwini, 2013a).

Some of the projects identified in eThekwini are emission reduction projects such as: (1) waste to energy project (Box 4.2), (2) replacing lights in municipal buildings, robots and street lights with energy efficient bulbs, (3) installing solar water heaters on all low cost houses throughout the city, (4) facilitating the installation of solar water heater for middle and high income houses, (5) developing a wind map for the City and (6) installed and operated four wind turbines for the city as a pilot (eThekwini, 2012).

[4] C40 BRT network is a network of 13 cities worldwide being supported to enhance their BRT systems. The selected 13 cities will in turn help drive BRT best practices in other cities (C40 blog, 2014).

Box 4.2: eThekwini Landfill to gas capture project

eThekwini is a coastal city faced with a number of climate change risks such as flooding due to rising sea levels (Nhamo and Mjimba, 2014). Just like other metropolitans, eThekwini has initiated a number of projects to reduce its GHG emissions. One such project is the installation of Africa's first landfill methane capturing plant in 2007 (eThekwini, 2013b). To date (September 2014), eThekwini has two methane capturing plants that generate a total of 50,000MW of energy per annum. The two plants have a combined emission reduction of 20,000 tons per month (eThekwini, 2013b).

Source: Fieldwork (2013)

In addition to the community awareness on environmental sustainability, respondents indicated that eThekwini was also involved in the Eco-Schools programme which is run by "Imagine Durban". The programme is the long term development programme formulated by the planning department of the metropolitan. Its aim is to make eThekwini the most sustainable metropolitan by inspiring collective action of individuals and organizations to work together to achieve sustainability. A school-focused programme is the solid waste collection programme run by the Department of Solid Waste (DSW) in the metropolitan. One of the respondents revealed that the DSW run a series of school competitions. For example, recycling bins are placed at various schools and the schools are encouraged to collect certain kinds of recyclable wastes for which are rewards by payment of up to and over R50 000.00.

The Nelson Mandela Bay metropolitan has the 'All Hands on Waste' programme an initiative within the Department of Environmental Affairs. The programme was launched in 2010 and aims to encourage communities and schools to clean their environment as well as teach waste management techniques such as recycling for the benefit of the whole community. Another project that was launched in March 2013 to educate schools on the environment and sustainability was the celebration of water week. During the water week (18^{th} – 25^{th} March 2013), five environmental education officers conducted water awareness in primary and high schools in the metropolitan area. The awareness programme included educating pupils on the importance of water conservation. Data on the awareness programme was collected and translated into graphs to be used for further education on the environment.

On educating the community on sustainability and the need to procure green, the NMBM's supply chain management sub-directorate assisted by the Environmental Management sub-directorate conducted green procurement road shows from the 2nd to the 16th of September, 2013. The road shows educated suppliers within the community who intended to enter into business partnership with the metropolitan on the metropolitan's green procurement implementation plan. Finally, a respondent indicated that the NMBM 'Go Green' campaign which began in 2008 was officially launched in December 2013. She further explained that the 'Go Green' campaign was an awareness programme for both communities and schools focusing on key themes like water conservation, energy conservation, recycling of waste, education on air and water pollution, and encouraging the support of environmentally friendly goods and services that are locally produced.

Mangaung presented an interesting contrast to other metropolitan municipalities. The study revealed limited knowledge of environmental sustainability awareness programmed within schools and the community in Mangaung metropolitan. Although all respondents in Mangaung stated that there were awareness taking place they however, could not name any project underway. One respondent simply stated that there was a division in the metropolitan responsible for environmental education.

In addition to focusing on the metropolitan citizens, the metropolitans also had programmes aimed at their own staff to change attitudes and practices at the work place.

4.2.2 Promotion of Environmental Issues among staff members

Responding to internally focused environment programmes, the majority of the respondents (84%, n = 30) indicated that there were such programmes. Responses from 16 % of respondents indicated that there were no such programmes and that where present; the programmes were limited and inadequate. The respondents added that the metropolitans could do much more than they were currently doing. In support of the view that there were a number of internal focused programmes addressing environmental issue, the respondents mentioned a number projects and programmes as evidence to that effect. For example, the City of Cape Town runs a

newsletter called the ‘Enviro Works’ that is distributed to staff members. The publication highlights and promotes environmental issues. In addition, the metropolitan has the ‘Smart living handbook’ that aims to make staff members aware of living green. Such initiative are promoted because the City of Cape Town believes that as staff members adopt ‘living green’ principles and practices at the work place they will in the end adopt these principles and practices outside the work space.

The eThekwini Metropolitan Municipality also has programmes aimed at its members of staff. A respondent from the municipality stated that the metropolitan held monthly capital projects meeting (CPM) in which the environmental impact assessment of each project is discussed following defined guidelines. Incorporating and discussing environmental issues in these meeting is viewed as promoting environmental awareness among staff members. In addition to the CPM, the metropolitan also has a sustainable living exhibition. This is an annual event that has been held in September since the year 2010. Metropolitan staff members are encouraged to participate and are given free stalls to exhibit their environmental friendly practices and devices. The respondent further suggested that for every staff member to be responsible, environmental issues should be built into the key performance indicators of every staff member. An interesting practice in the eThekwini Metropolitan Municipality was the signage reminding members of staff about good practices. The signage covered reminders about switching off office equipment such computers and printers at the end of a working with an emphasis of switching off these equipment at the plugging points. An emerging issue around these initiatives was the mode of communicating the desired practices. A respondent stated that communication was key because views that such initiative were management driven in a top-down communication approach was likely to meet resistance of implementation. The respondent suggested the inclusion of junior members of staff in the initiatives so as to ensure a holist buy-in.

Having established the extent of environmental awareness to staff members at the metropolitans, respondents were asked to indicateif procurement personnel in the metropolitans receive green procurement training. An estimated 18% (n = 30) strongly disagreed that any training has taken place, 30% disagreed; 41% were not

sure; 7% agreed to training have taken place and 4% strongly agreed. These results indicate that only 11% were of the view that there was some training on this aspect. Further to the training of procurement personnel, respondents were asked to indicate if environmental training and education for all employees had been and/or were being conducted. The responses indicate that 15% of the respondents strongly disagreed, and 19% agreed that some training had taken place (Table 4.1).

Table 4.1: Environmental education and training (n = 30)

Responses	Environmental awareness in metropolitan	Environmental education and training for all employees
Strongly disagree	-	15%
Disagree	16%	39%
Not Sure	0%	27%
Agree	84%	19%
Total	100%	100%

Source: Fieldwork (2013)

Table 4.1 indicates a limited knowledge (46%) of formal metropolitan driven training initiative focusing on its staff members. This is in sharp contrast to the level of environmental awareness programmes and projects (84%). In addition to creating awareness of environmental issues in schools, communities and among staff to ensure sustainability, one important aspect of sustainability that this study addressed is the socio-economic issues of sustainability.

4.2.3 Addressing socio-economic issues to ensure sustainability

The three pillars of sustainability are social equity, economic development and environmental protection (section 2.2). This was mentioned by a respondent who stated that 'looking after people will propel the people to look after the environment and in the end it [environmental management] will profit all'. The respondent stated that financially challenged people has a limited desire to look after the environment but were instead likely to exploit and damage the environment for their survival. The respondent posited that sustainability should first focus on addressing poverty. Research has indicated that globally, poverty has been halved from 47% to 22% as at 2010 (UN DESA, 2013). Despite this progress, the UN estimates that more than a billion people still live in extreme poverty (Ibid). To address the problem, the United

Nations Department of Economic and Social Affairs (UN DESA, 2013) suggests that poverty eradication must be central in all developmental agendas. South Africa has a number of people living in poverty. As at 2011, 45.5% of the population lived under the poverty datum line translating into about 23 million people living under the poverty datum line (Statistics South Africa, 2014). Against a background of such high levels of poverty, a respondent questioned the wisdom of initiative of environmental sustainability without first looking at the socio-economic issues of the country. The responded remarked:

> The biggest step towards an environmentally sustainable future would be an increase in equity, quality and standard of living for all people. That includes the quality of their living environment and also access to basic resources. Secondly, the priorities to the poorest of the poor is not green issues… so unless green issues are linked to the basics of bread and butter [issues] it will never be a priority in this country.. (Excerpt from interview, City of Cape Town, 2013).

This view mirrors the focus of sustainability as resting on three pillars one of which is a focus on the social needs of people. This focus has given rise to policies and legislations seeking to entrench sustainable development practices as daily norms.

4.3 LEGISLATIVE PROVISIONS FOR GREEN PROCUREMENT

To assess the level of commitment to green procurement as a mitigation strategy to addressing climate change within South African metropolitan municipalities, the research analysed a number of policy documents guiding both the development visions and related practices of the metropolitan municipalities. The analysis started from simple frequency counts of key green procurement terminologies in the reviewed policy documents. Noting that the climate change and green economy discourses are intertwined and articulated through the use of different terms, the frequency count included terms like; green procurement, renewable energy, energy efficiency, mitigation, adaptation, clean technology, carbon footprint, sustainable development, and green economy. The analysis of the policy documents (see Table 3.1) indicates a general awareness of green procurement (inclusive of climate

change discourses) and the need to address this. This awareness can be demonstrated by the frequency with which the term climate change and other associated terms appear in the reviewed policy documents as shown in Table 4.2.

Table 4.2: Reference to key green procurement terminology (n= 51)

Theme	Frequency	Percentage (%)
Climate change	710	32
Green procurement	393	18
Renewable energy	189	8
Energy efficiency	297	13
Mitigation	84	4
Adaptation	225	10
Clean Technology	2	-
Carbon footprint	22	1
Sustainable development	283	13
Green economy	32	1
Total	2237	100

Source: Fieldwork (2013)

Table 4.2 shows that there were 2237 counts of reference to the stated terms associated with green procurement in the reviewed documents. Within this count, the term green procurement feature 393 times constituting a significant 18% frequency. Although green procurement is a climate change mitigation strategy; the term 'mitigation' is mentioned at a frequency of only 4%. This revelation suggests that the linkages between climate change mitigation and green procurement still needs to be strengthened in the metropolitan municipalities informing this study. Having established the frequency of the identified terms in the documents, respondents were asked to indicate their level understanding of the terms through a questionnaire The questionnaire classified the understanding under five categories in which the respondents either strongly disagreed, disagreed, were not sure, agreed or strongly disagreed that they understood the meaning of each of these terms. Table 4.3 gives the results of the findings of this part of the inquiry.

Table 4.3: Understanding of concepts related to green procurement (n = 30)

Concept	Strongly disagree (%)	Disagree (%)	Not sure (%)	Agree (%)	Strongly Agree (%)	Total (%)
Renewable Energy	4	-	4	67	25	100
Energy Efficiency	4	-	4	58	34	100
Climate Change	4	4	4	53	35	100
Green Procurement	4	4	16	64	12	100
Mitigation	4	-	15	54	27	100
Adaption	4	-	16	52	28	100
Clean Technology	4	-	40	40	16	100
Carbon Footprint	4	8	15	50	23	100
Sustainable Development	4	-	15	46	35	100
Green Economy	4	4	24	44	24	100
Solar Water Heating	4	-	8	60	28	100

Source: Fieldwork (2013)

From Table 4.2, it emerges that there is good understanding of the key concepts associated with green procurement among metropolitan respondents. Further to understanding key concepts related to green procurement, legislating green procurement was reiterated by several of the respondents. One respondent stated that: “If government does not legislate green procurement, it will never be done as people’s mindsets and perspectives can only be changed through legislation” (Excerpt from interview, Buffalo City, 2013). There are moves to try and legislate green procurement practices at local government level. For example, a respondent from the Nelson Mandela Bay indicated that although the metropolitan had developed a strategy for green procurement, council was yet to accept and adopt the proposed strategy. The respondent indicated that because the green procurement strategy is just a strategic way to implement green procurement practices, it is not being taken very seriously. The respondent suggested a need to address legislation beginning with national legislation by stating that:

> The PPFMA should be amended by inserting a paragraph for sustainable procurement… it will then become legislatively enforceable for procurement officials to implement it. The Legislation will be a driver for demand [of green products and services] (Excerpt from interview, Nelson Mandela Bay, 2013).
>
> .

A respondent from Buffalo city reiterated that the point system as outlined in the PPPFA regulation for awarding tenders (section 2.5) should be restructured to include green procurement. The respondent said that instead of the 80/20 and the 90/10 points in which 80 and 90 points are allocated to price; it should be restructured as 70/20/10 or 80/10/10 with the 10 points allocated to environmental consideration. Noting that Table 3.1 shows an aggregated reference to all reviewed document, the research sought to disaggregate this reference to specific document in order to address the research objectives. The disaggregation involved a further analysis for pivotal documents that include: the integrated development plan, the environmental policy and the supply chain management policy.

4.3.1 Integrated Development Plan (IDP)

The IDP is the overarching strategic framework for the development of a metropolitan. As such all the metropolitan municipalities must have IDPs. The IDPs were analysed to determine two issues. The first was to establish if any of the documents made mention of the identified themes in their development strategy. Secondly, the analysis sought to determine if there was a strategic move to address climate change through green procurement (Table 4. 4).

Table 4.4: Reference to green procurement related terms in IDPs

Theme	Frequency	Percentage (%)
Climate change	154	36
Green procurement	2	0.4
Renewable energy	43	10
Energy efficiency	34	8
Mitigation	46	11
Adaptation	41	9
Clean Technology	--	--
Carbon footprint	5	1
Sustainable development	87	20
Green economy	21	5
Total	433	100

Source: Fieldwork (2013)

From the IDPs retrieved, only one metropolitan IDP made an explicit reference to green procurement. The other IPDs used related terms without the use of the term 'green procurement'. The Brundtland Commission (1987) states that "the environment is where we live; and development is what we all do in attempting to improve our lot within that abode, therefore "the two are inseparable" (World Commission on Environment and Development, WCED, 1987; 8). This assertion is an indication of the need to consciously and deliberately formulate and legislate environmental management as an integral part of economic development. Against this background the research sought to determine the available and adequacy of, the environmental policies in the metropolitans covered by this research.

4.3.2 Environmental Policy

It was observed that all the older metropolitans namely; City of Cape Town, City of Johannesburg, City of Tshwane, Ekurhuleni, eThekwini and Nelson Mandela Bay have environmental policies in place. A list of these policies is given in Table 4.5. This was in contrast to the younger metropolitans such as Buffalo City and Mangaung that have environmental statements but are yet to develop the statement into fully fledged environmental policies.

Table 4.5: Summary of Environmental Policies in the metropolitans

Metropolitan	Name of Environmental policy	Year
City of Cape Town	Integrated Metropolitan Environmental Policy	2003
City of Johannesburg	Environmental Management Framework	2000
City of Tshwane	Tshwane Integrated Environmental Management Policy	2005
Ekurhuleni	Environmental Policy and Implementation Plan	2013
eThekwini	Environmental Management Policy	2002
Nelson Mandela Bay	Integrated Environmental Policy	2012

Source: Fieldwork (2013)

These environmental policies of the metropolitan were analysed for any mention of green procurement. The study found out that three of the metropolitans made reference to green procurement in their environmental policy. These are the City of Tshwane in its 2005 Integrated Environmental Policy (TIEP), Ekurhuleni in its environmental policy (City of Tshwane, 2013 and reference to Ekurhuleni) and Nelson Mandela Bay in its Integrated Environmental Policy (2012). The environmental policies of these three metropolitans in addition to City of Cape Town will further be interrogated in subsequent paragraphs to highlight green procurement projects that are mentioned in the policies.

City of Tshwane

Of the three metropolitans that make reference to green procurement in their environmental policies, the TIEP was found to be the most comprehensive in terms of green procurement. Section 5.4.6 of the TIEP supports the green procurement concept by indicating the promotion and implementation of green procurement practices (City of Tshwane, 2005c). To support this objective, a green procurement guideline was to be developed. The guideline was proposed to select five categories of products that are environmentally friendly annually and these were to be included in the city's procurement list (City of Tshwane, 2007). As at the time of the study (2014), the proposed guideline had not been developed.

The TIEP also has a section dedicated to the green buildings cause. A green building is a building that incorporates environmental considerations into the infrastructure construction and maintenance (City of Tshwane, 2005c). Section 5.4.2,

of the TIEP encourages the implementation of green building initiatives (Ibid). In view of that, both green building guidelines and green building guidelines for low-cost housing were to be developed to specify practices that will incorporate sustainable technologies in all building works (Ibid). In support to the green buildings initiative the policy suggested the need for the building industry supply chain to consider environmental issues in its practices. The policy proposed incentives to encourage the desired practices (City of Tshwane, 2007). In response to the green buildings initiative as specified in the TIEP, the City of Tshwane through its Agriculture and Environmental management Department in collaboration with Council for Scientific and Industrial Research (CSIR, South Africa) has developed three instruments to ensure a sustainable built environment. These are: (i) Green Building Development By-law (2013) which outlines the legislative status for both the Green Building Development Policy and the Green Building Development incentive scheme, (ii) Green Building Development Policy (2009) which indicates either mandatory or promoted guidelines for the development of green buildings and (iii) Green building Development Incentive Scheme which encourages the adoption of promoted standards instead of mandatory standard for new buildings (Ibid).

Under the spatial development planning of the TIEP, objective 3 aims to establish an effective environmental friendly transport system for the city. This was given effect with the establishment of a Tshwane Rapid Transit (TRT) system branded ‘A Re Yeng’ which means ‘let’s go’ (Figure 4.2).

Figure 4.2: A Re Yeng TRT bus in Tshwane

Source: http://www.tshwane.gov.za/AboutTshwane/NewsandEvents/news/Pages/First-A-Re-Yeng-bus-unveiled-to-the-public-in-Hatfield.aspx (Accessed: 2014/09/25).

The City of Tshwane (2010) describes *A Re Yeng* as a bus system that is of a high-quality, rapid, affordable, safe and convenient. The *A Re Yeng* buses are also designed to emit less harmful gases into the atmosphere. The TRT is fairly new and is expected to be completed in phases. The first phase is covering a 7km road with seven bus stations. As of September, 2014, the inception phase was 80% complete with the construction of six out of the seven stations commenced (Ibid). *A Re Yeng* exclusive features include the following:

1. Exclusive dedicated bus lanes for the buses
2. Multiple doors for easy access and passenger capacity up to 33 seated and 35 standing
3. Low carbon emitting engines
4. Cashless system. Bus fares are paid with a pre-loaded smart card
5. All buses will be equipped with Wi-Fi and cameras which will be monitored at a central office. Bus drivers will be in constant communication with the central office

Priority seats for people with disabilities with space for two wheelchairs (Ibid).

In addition to the TIEP, City of Tshwane has developed a Framework for a Green Economy Transition (City of Tshwane, 2013b). The framework echoes and reinforces the GEA targets set out by the South African national government (see sub-section 2.5.1). The City aims to achieve a percentage (5.6%) of each target outlined by the national government. For example, the target for green jobs in the renewable energy sector by 2020 for the national government is 50 000. To achieve its 5.6% target, the city aims to create 2820 renewable energy green jobs by 2020.

Ekurhuleni

Ekurhuleni is one of the three metropolitan municipalities situated in the Gauteng Province. The metropolitan is heavily industrialised with South Africa's largest airport; the OR Tambo International Airport located within the metropolis (Ekurhuleni, 2013). The use of coal and wood for domestic use especially in low-income households contributes to pollution and is also a health risk. The Ekurhuleni 2013 Environmental Policy and implementation plan was revised from its 2006 policy and therefore builds on the momentum of the metropolitan's energy policy to support reduction of pollution and the use of renewable energy (Ibid). In view of this, Ekurhuleni commissioned South Africa's first solar PV plant in 2012 (Ekurhuleni, 2012a). The energy that is generated by the PV plant is converted by an inverter and fed directly into the municipal grid from which electricity is supplied to 133 low cost housing (ibid). The PV plant (Figure 4.3) generates 200kw of electricity from 860 solar panels (Ekurhuleni, 2012a).

Figure 4.3: Ekurhuleni Solar photovoltaic (PV) plant

Source: Ekurhuleni (2012a)

Other carbon emission reduction projects undertaken by Ekurhuleni include the following: Energy efficiency in municipal buildings through retrofitting; Installation of energy efficient street lighting by replacing mercury bulbs with high pressure sodium bulbs; Installation of solar powered street lighting (Figure 4.6) and Mass rollout of solar water heaters to low income households (Ekurhuleni, 2007).

Figure 4.4: Solar powered streetlight in Ekurhuleni

Source: Ekurhuleni (2012b).

The solar street lights (SSL) are made up of a light-emitting diode (LED) light that are energy efficient, and a solar panel that could provide up to 12 hours of lighting at night. The SSL has a solar powered battery that could store up to 48 hours of excess electricity for back up in cloudy days (Ekurhuleni, 2012b).

Nelson Mandela Bay

Section 6 of the NMBM 2012 Integrated Environmental Policy highlights the metropolitan's commitments towards identified sectors. Section 6.8 recommends a sustainable transport system with less impact on the environment. In line with other metropolitan municipalities under study, the NMBM implemented the BRT system to reduce the carbon footprint of the metropolitan, among other reasons. The NMBM BRT was branded 'Libhongolethu', which means 'our pride' (Adewumi and Allophi, 2014c). Unlike other BRT's in other cities, the *Libhongoletu* which started operating in 2010 to meet the world cup demands had to be put on hold due to challenges that included badly constructed roads. *Libhongoletu* was later restructured and commenced services again in 2013 (Ibid). The NMBM BRT faces other challenges that make it not conformable to standard BRT system. The challenges include the following:

1. Buses operate in a mixed traffic flow with no dedicated bus lanes

2. No specially constructed BRT stations
3. Buses are not linked to a central control point for schedule updates on bus routes and
4. Fares are collected in the bus.

The outlined challenges of the *Libhongolethu* should be addressed to make it more viable and attractive to commuters. This will bring the system at par with its counterparts in other cities within South Africa.

City of Cape Town

Although the City of Cape Town's Integrated Metropolitan Environmental Policy (IMEP) does not make reference to green procurement, the IMEP outlines a number of strategies to be implemented to ensure the overall sustainability of the metropolitan (City of Cape Town, 2003). Section 2 of the IMEP outlines the City's 2020 vision for the environment. As part of the vision, the IMEP suggests the implementation of a public transport system that would reduce pollution and congestion on the city's roads (Ibid). To achieve the vision for its public transport system, City of Cape Town joined other cities in South Africa to establish the BRT system and branded it MyCiTi (Figure 4.5).

Figure 4.5: MyCiTi BRT bus in Cape Town

Source: http://www.capetownpartnership.co.za/2012/06/first-myciti-buses-roll-off-epping-production-line/

Some of the features of MyCiTi BRT include the use of segregated bus lanes (see sub-section 2.4.8), express services, high capacity stations, articulated and standard buses and quick passenger access through double side doors (Adewumi and Allopi, 2014a). MyCiTi makes use of public announcement in the bus to inform passengers of the next station. Furthermore, MyCiTi uses a cashless system. A flat rate bus fare is paid with pre-loaded smartcards that is swiped at the entrance of the bus.

Section 4.9 of the IMEP is on energy. Under this section, the city recognises the dual role of energy; its importance in development and its negative effect on the environment (City of Cape Town, 2003). In view of this, IMEP supports and promotes the use of 'alternative, renewable, cleaner and safer energy sources' (Ibid, 11). To give effect to this section of the IMEP, the City of Cape Town in a media release on 27th February 2006 claimed the leading role of the city in the use of solar energy. It was stated in the media release, that solar water heating systems was to be installed in low-cost housing, resulting in a savings of about 50 000 tons of carbon emissions per annum (City of Cape Town, 2006). Of notable achievement for the City of Cape Town in line with its energy section of IMEP is the establishment of the city's and South Africa's first 'green' taxi rank in August 2014 (City of Cape Town, 2014) (Figure 4.6).

Figure 4.6: Cape Town's 'green' taxi rank

Source: htpp://cities-today.com/wp-content/uploads/Green-taxi-rank-City-of-Cape-Town-571x380 (Accessed: 2014/09/27).

The rank is equipped with a rooftop solar PV panel system to generate electricity (City of Cape Town, 2014). The generated solar electricity caters for all the electricity need of the rank. Electricity generated in excess is stored in 24 large batteries (Figure 4.7) to be used at night or on cloudy days.

Figure 4.7: Batteries for the storage of excess generated solar electricity

Source: City of Cape Town. (Accessed: 2014/09/27).

Another notable feature of the ‘green’ taxi rank is the use of rain water harvesting and recycled water (up to 70%) to provide for the ranks huge demand for water (City of Cape Town, 2014). The harvested rain water is stored in an underground tank and then pumped to the washing bays to be used for the washing of the taxis. It is presumed that the metropolitan’s ‘green’ taxi rank will become a benchmark for public transport facility for other cities in South Africa (Ibid)

Besides analysing documents for reference to green procurement, the research also engaged the staff in these metropolitan municipalities seeking to determine the level of awareness on the presence or lack of knowledge about the existence of environmental policies. The inquiry revealed that 77% of the respondents (n=30) were aware of the existence of environmental policies and practices in their metropolitans, 8% indicated that their metro had no policy and 15% indicated that they did not know if their metro had a policy or not. Inspired by the adage ‘the taste of the pudding is in the eating’, the research further sought to explore supply chain management policies of the metropolitan municipalities under study focusing on existing green procurement strategies.

4.3.3 Supply Chain Management (SCM) Policy

It is mandatory for all metropolitans to have supply chain management (SCM) policies. The SCM are governed by regulation specified in the Municipal Finance Management Act 56 0f 2003 (MFMA) (see Section 2.6). Since green procurement falls within SCM, SCM policies were also analysed. The analysis revealed that two metropolitans, the City of Cape Town and eThekwini metropolitans make reference to green procurement in their amended SCM policies; the City of Cape Town supply chain management policy (incorporating preferential procurement – 2013) and the eThekwini supply chain management policy (2013). All respondents from these two metropolitans indicated awareness of the existence of these policies. Cape Town's SCM policy states that green procurement practices should be an integral part of procuring goods, services and construction works used in the metropolitan. The inclusion of green procurement into the policy therefore gives impetus to the city's green procurement guideline document (see sub-section 4.3.4). The eThekwini SCM (2013) on the other hand has a whole section dedicated to green procurement. Section (54) of the SCM is on green procurement. Green procurement in the metropolitan aims to:

1. Encourage a decrease in energy and resource use
2. Promote environmental best practices in terms of waste minimization and management, water and energy efficiency and conservation, pollution reduction and socio economic development and
3. Encourage suppliers to change their behaviour for environmental issues in the design, manufacture and disposal of their products (eThekwini, 2013:69).

The Section encourages the development of a green procurement policy in consultation with stakeholders. The stakeholders will be trained to understand environmental specifications that will be developed and used in tender processes. Finally, a questionnaire will be used to determine the environmental commitment of suppliers. This strategy is however yet to be implemented. The study further revealed that the Nelson Mandela Bay and City of Cape Town had developed green procurement strategies: the Implementation strategy on green procurement (2011) and the information and. The subsequent sub-sections will discuss further details regarding existing green procurement guidelines and strategies.

4.3.4 Existing green procurement guidelines and strategies

Two metropolitans that have made significant strides towards green procurement are City of Cape Town and Nelson Mandela Bay. The city of Cape Town recognised the need for green procurement as far back as 2006 in the city's Integrated Waste Management Policy (IWMP). However, it was not until 2012 that the city developed guidelines documenting the implementation of green public procurement. The guideline document was developed as an annexure to the city's 2006 SCM policy. The main aim of the guideline document is to reduce the direct and indirect negative impact of SCM decisions (City of Cape Town, 2012). The guideline document gives pointers on the relationship between green procurement and the SCM policy under two main sections. These are the acquisition management section which includes bid specification committees and the disposal and risk management sections. Under the acquisition management section, the document encourages green procurement to be included in all the stages of procurement. Under the bid specification committees, a number of generic selection criteria are outlined to be considered when tenders are evaluated. Among the generic criteria are the minimization of waste, energy consumption, emissions and the use of hazardous substances in manufacturing (Ibid). The generic selection also encourages the use of environmentally certified suppliers (ibid, 6).

Among others under the disposal and risk management section is the promotion of incentives for suppliers who engages in environmentally friendly disposal of goods. The guideline document suggests that the implementation of green procurement should take place in phases depending on the capacity and resources available. For the implementation to be successful, the city is mandated to identify products and services that are considered to be green to be included in specifications for tenders. Despite the development of the guidelines the study found that there is still limited recognition of green procurement. The responding Cape Town procurement officials insisted on not being responsible for greening specifications and that they only comply with specifications received from various departments. This assertion corroborates the finding of the IISD (2014) and implies that although green procurement strategy has been acknowledged at a strategic level, the implementation of it is still lacking.

The Nelson Mandela Bay green procurement implementation strategy is a recommended strategy that was developed in 2011 and was approved by council in 2014 (Personal communications with NMBM respondent, 2014). The aim of the strategy is to incorporate environmental aspects into all the metropolitan's procurement activities (NMBM, 2011). Two policies in the metropolitan were reviewed to identify areas where green procurement will be applicable. The two policies are the NMBM environmental policy (2004) and the NMBM SCM Policy (2009). The implementation strategy proposed amendments to both policies to include environmental considerations (Ibid). Amendments to the environmental policy are:

1. The term green procurement was added to the glossary section as: "green (sustainable) procurement which is defined as "systematically integrating environmental and social considerations into all procurement activities. It is a system or procedure where environmental considerations are taken into account within the procurement process" (Ibid: 35)
2. An additional paragraph was added stating that : "the NMBM aims to reduce any harmful effects on the environment caused by its activities, products and services through the adoption of environmentally sound procurement policies and practices" (Ibid: 35)
3. An additional principle was added articulating the needs for the "implementation of green procurement practices into the supply chain management and to promote environmental responsibility and performance of suppliers" (Ibid: 35).

Four main additions were recommended to be included in the SCM policy. The additions were in sections 11, 14, 27 and the Annexure "A" of the policy. Section 11 deals with system of acquisition management. The addition to this section is to incorporate environmental considerations "in the acquisition process and to form a component of the bid specification" (Ibid: 36). Under Section 14, issues of a list of accredited providers are addressed. The policy specifies that accredited service providers should be listed and the addition to this Section is for the inclusion of the environmental performance of accredited service providers (Ibid). Another addition states that:

> Environmental considerations are to be given equal weighting along with other aspects when selecting preferred suppliers and goods. While paying due regard to price and quality, the specifications must encourage the purchasing of goods and services that will have the least possible impact on the environment during their life cycles (Ibid: 36).

Besides amending the environmental policy and the SCM policy, the green procurement strategy also uses the supplier focus approach to drive the green procurement practice. Through the use of questionnaires, audits and rating systems, suppliers are rated on their environmental performance and awarded a 'Green Certificate'. The Green Certificate qualifies a supplier for inclusion in the list of approved suppliers and is an important component of tender documents. The metropolitan intends to implement the strategy in three years and in seven phases. Phase one will be to educate Council through workshops, phase two will seek to build capacity within the metropolitan, phase three will focus on education and increasing awareness among the public; phase four will focus on the development of registration system, phase five the registration of companies into the metropolitan database, phase six the training of a tender services company to assist in the green procurement drive and phase seven will be the auditing of the registration process (NMBM, 2011).

In analysing policies and documents, the study found out that metropolitans made reference to green procurement in different policies. As indicated in table 4.6. This is a follow-up on the 2008 studies by IISD and the 2012 study by Urban SEED (see Section 2.6)

Table 4.6: The state of green procurement in local government as at 2013

2014 Current State	Local Government
Green public procurement guidelines/strategy developed	Nelson Mandela Bay Metropolitan City of Cape Town
Procurement/supply chain management policy with green procurement incorporated	City of Cape Town eThekwini
Environmental polices related to or influencing green procurement	City of Tshwane Ekurhuleni Metro Nelson Mandela Bay Metropolitan
Waste management Policy related to or influencing green procurement	City of Cape Town City of Johannesburg
Energy and climate change policy related to or influencing green procurement	Ekurhuleni
A stand-alone environmental policy	City of Cape Town City of Johannesburg City of Tshwane Ekurhuleni Metropolitan eThekwini Metropolitan Nelson Mandela Bay Metropolitan
A stand-alone procurement/supply chain policy	Buffalo City Metropolitan City of Cape Town City of Johannesburg City of Tshwane Ekurhuleni Metropolitan eThekwini Metropolitan Mangaung Metropolitan Nelson Mandela Bay Metropolitan
No environmental policy and no environmental initiatives related to GPP	Buffalo City Metropolitan Mangaung Metropolitan

Source: Fieldwork (2013) Modified after IISD (2008) and SEED (2012)

Table 4.6 indicates that City of Cape Town and City of Johannesburg make reference to green procurement in their integrated waste management policies of 2006 and 2011 respectively. City of Tshwane and Ekurhuleni make reference to

green procurement in their environmental policies (see sub-section 4.3.2). Ekurhuleni also make reference to green procurement in its 2007 energy and climate change strategy. City of Cape Town and eThekwini makes reference to green procurement in their 2013 SCM policies. In view of this, it was observed that all the metropolitans are striving to fulfil their climate change mitigation mandates by engaging in different projects to reduce their GHG emissions. In pursuit of engaging in the “green projects”, green procurement is practiced.

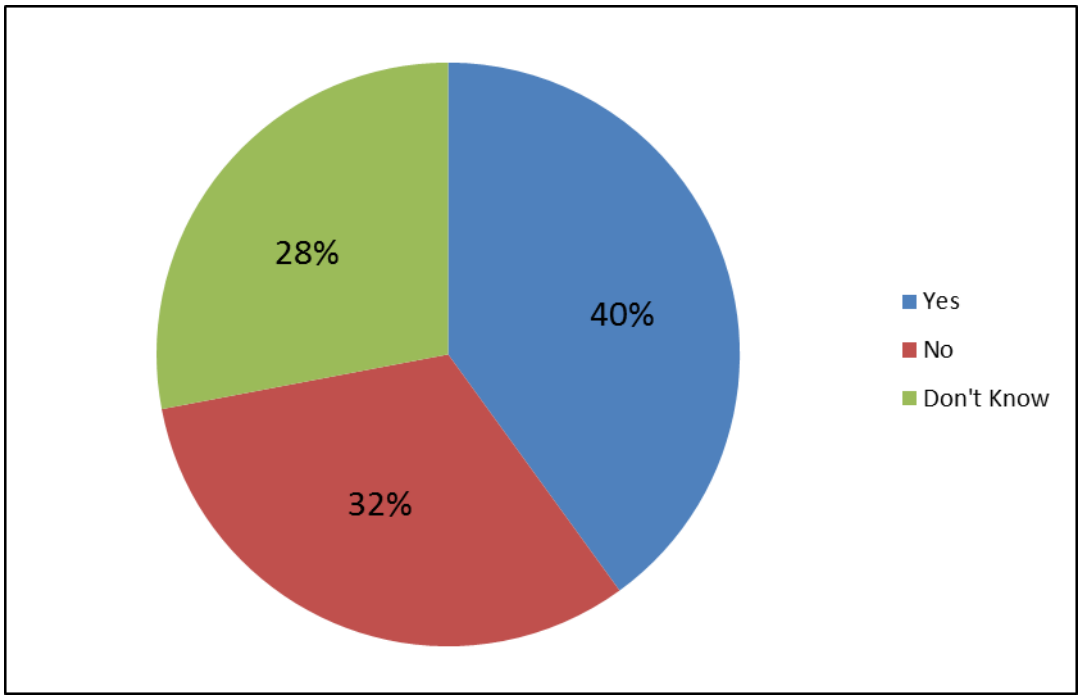
4.4 STATUS OF GREEN PROCUREMENT PRACTICES

To address objective two of the study, a questionnaire was administered as discussed in chapter 3 (sub-section 3.5.3). Among the questions were those assessing the levels of green procurement practices within the metropolitans. Apart from the questionnaire, available green procurement policies were retrieved and analysed. The results from both document analyses and the questionnaire will now be presented in depth in the next sub-sections.

4.4.1 Environmental criteria in calls for tender

An in depth analysis of selected tender documents from the metropolitans identified the absence of environmental criteria in the documents. In addition to the analysis of the tender documents, metropolitan procurement officials were asked if environmental criteria were included in the call for tender when purchasing goods and services. About 40% of the respondents (n = 30) indicated that the call for tender included environmental criteria, 32% said the call for tender did not include environmental criteria and 28% did not know if environmental criteria were included in calls for tender or not (Figure 4.8).

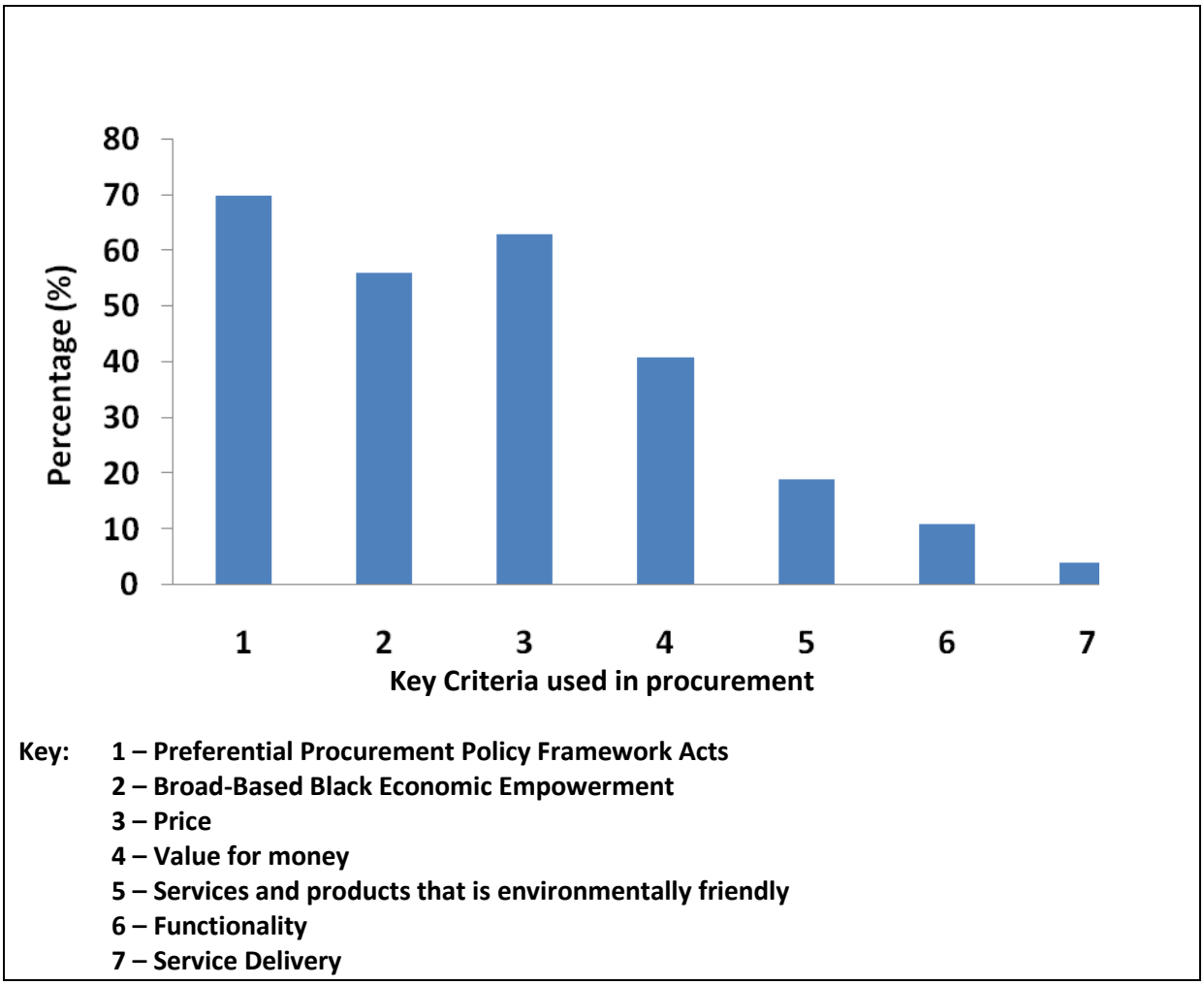
Figure 4.8: Environmental criteria included in calls for tenders (n = 30)



Source: Fieldwork (2013)

What was interesting from the responses on this aspect is the 40% acknowledgement of tender documents carrying environmental consideration contradicts evidence from the analysed documents. Analysed tender documents from all the metropolitans revealed no inclusion of environmental consideration. Against this background, respondents were asked to rank the importance of identified factors in determining purchasing decisions. Seven factors were identified as (i) PPPFA, (ii) BBBEE(iii) price, (iv)value for money (v) environmental friendliness of services and products, (vi) functionality and, (vii) service delivery. The response shows that 70% of the respondents (n = 27) ranked the PPPFA as a key criterion determining purchasing decision and 63% highlighted the price of the product or service as the top most criterion. The third criterion was BBBEE as indicated by 56% of the respondents and 41% of them listed value for money as the fourth criterion. The fifth criterion was services and products that are environmentally friendly with 19%, functionality was listed as the next criterion to consider in procurement with 11% and the last one to be mentioned was service delivery with 4% (Figure 4.9).

Figure 4.9: Key criteria used in procurement (n = 30)



Source: Fieldwork (2013)

In addition to asking respondents to identify key criteria used in procurement, respondents were also asked to indicate how often performance based specifications are used in their procurement process. About 36% indicated that performance based specifications were always used with 20% saying it was often used, 24% indicated that it was sometimes used and 20% did not know if performance based specifications was used or not.

4.4.3 Environmental criteria in procurement of specific services and products

To assess the consideration of environmental criteria in specific services and products, 49 categories of products and services (see Appendix A) were listed and respondents were asked to indicate if the listed products and services were procured in the 2011/2012 financial year. All the respondents (100%) (n = 30) indicated that

their metropolitan procured the listed products and services. Asked if environmental criteria were applied in procuring the products and services, only 2% strongly agreed. Further results are shown in Table 4.7.

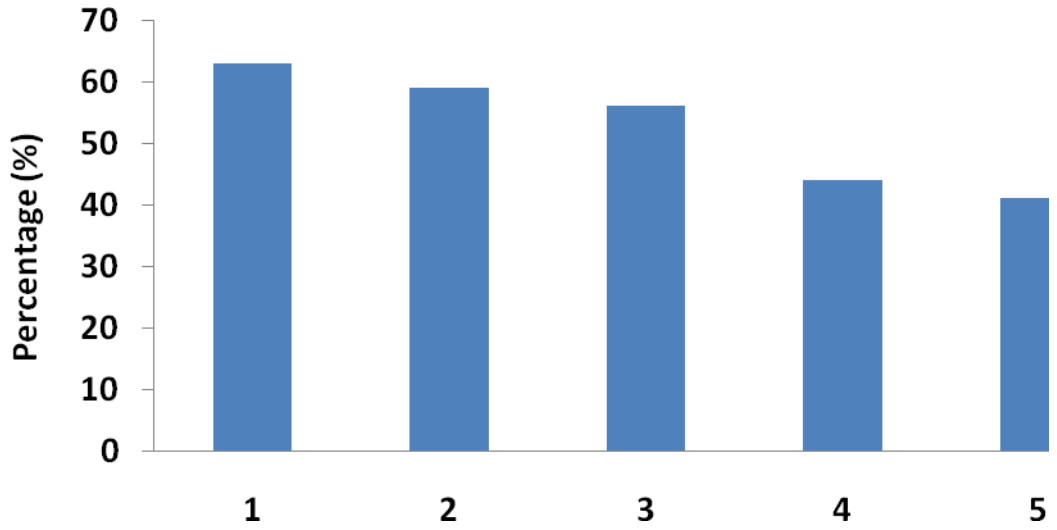
Table 4.7: Environmental criteria used in procurement of products and services (n = 30)

Category	Percentage (%)
Disagree	18
Not sure	59
Agree	21
Strongly agree	2
Total	100

Source: Fieldwork (2013)

Further to the purchasing criteria part of the inquiry, the research sought to determine obstacle to the adoption of green procurement practices. The inquiry identifies five such obstacles, namely; (i) lack of knowledge about the environment and how to develop green procurement knowledge criteria, (ii) lack of green procurement policy/guideline and or regulations, (iii) inefficient management systems, (iv) perception that environmentally friendlier products would be more expensive and, (v) lack of information. A ranking of the efficacy of each obstacle in preventing green procurement shows that the 'lack of knowledge about the environment and how to develop green procurement knowledge criteria' were regarded a formidable obstacle by 63% of the respondents. 'Lack of information' ranked the lowest with 44%. Further details regarding the obstacles are presented in Figure 4.10.

Figure 4.10: Obstacles to understanding and implementing green procurement (n = 30)



Key: **1 – Lack of knowledge about the environment and how to develop green procurement knowledge criteria**
2 – Lack of green procurement policy/guidelines and or regulations
3 – Inefficient management systems
4 – Perception that environmentally friendlier products would be more expensive
5 – Lack of information

Source: Fieldwork (2013)

Against a background of obstacle to green procurement the respondents were asked to select and rank factors in their order of importance with reference to their importance in assisting in the development of green procurement practices in metropolitans. The highest rank factor is 'training for municipal procurement officers' as chosen by 63% of the respondents. This was followed by advice from external consultants at 58%. Details in ranking of the other pointers are presented in Table 4.8.

Table 4.8: Development of green procurement practices (n = 30)

Points in order of importance	Percentage (%)
Training for municipal procurement officers	63
Awareness raising to municipal tender committee	48
Access to written information (manual, procurement guidelines)	42
Advice from external consultants	58

Source: Fieldwork (2013)

After determining how green procurement practices could be developed, respondents were asked finally to indicate if metropolitans had fully embraced the 'going green' concept and had put it into practice. An estimated 25% of the respondents (n = 30) indicated that they disagreed that their metropolitan had fully accepted the 'going green' concept. A further 25% indicated that they were not sure if their metropolitan have embraced the going 'green concept'. However, the majority of the respondents either agreed (42%) or strongly agreed (8%) that their metropolitans had embraced the concept and actually put the concept into practice.

4. 5 CONCLUSIONS

In assessing green procurement practices in South African metropolitan municipalities this study interrogated current procurement practices in the metropolitans to determine aspects of greening. The study engaged procurement officers, environmental specialists and town planners focusing on their knowledge on green and sustainability issues. Asked whether they knew about sustainable development, 80% of the respondents responded yes but indicated that their respective metropolitan were not sustainable enough and suggested what the metropolitan should do to achieve sustainability. All respondents however knew about various programmes undertaken by the metropolitan to promote awareness on green issues among staff members as well as various communities. Policy documents were analysed to establish the link between the need for green procurement and any action being taken to address climate change in the metropolitan. It was established that there was a general awareness of the climate change discourse by it being the most referred to in all the identified key terms. The least referred to key terms are clean technology, carbon footprint and green economy. It was also established through the document analysis that the linkage

between mitigation and green procurement still needs to be strengthened in the metropolitans. Three main policies that were common to all the metropolitans were also analysed. The policies are integrated development policy, environmental policy and SCM policy. It was observed that all the older metropolitans had environmental policies whereas the younger metropolitans only had environmental statements. Although all the metropolitan municipalities have procurement policies, only City of Cape Town and eThekwini metropolitan had incorporated a green procurement strategy into their 2013 amended SCM policy. City of Cape Town and Nelson Mandela Bay metropolitans were the only ones with a stand-alone green procurement strategy.

At the local government level, different metropolitans make reference to green procurement either implicitly or explicitly in different policies. Policies such as environmental policy, SCM policy, waste management policy and energy and climate change policies are used to make reference to green procurement. In spite of referring to green procurement in policies, the study found out that implementation of green procurement through tender decision, call for tender and the actual procurement is not imminent as evidenced by over 70% of the respondents. This indicates a gap that exists between policies and implementation. Engaging with the metropolitan municipalities in South Africa has proven that a lot still needs to be done in the aspect of green procurement at the local level for a developing country like South Africa to be able to be at par with its developed counterparts. The next chapter will present a summary of the findings, conclusions and recommendations of the study.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

Leading from the previous chapter that presented, analysed and discussed key research findings, this chapter summarises the key findings, draws conclusions and presents recommendations from the findings. However, before the foregone can be presented, it is imperative that there is a recap of the aim and objectives of the study.

5.2 AIM AND OBJECTIVES OF THE STUDY: A RECAP

The aim of the study was to assess the levels of green procurement practices of goods and services within South Africa metropolitan municipalities. From this aim, twin objectives were stipulated to guide the study. The first objective was to determine the level of understanding of sustainable development, especially, the need to address climate change in South African metropolitan municipalities. The second objective was to determine the extent to which green procurement is practiced in South African metropolitan municipalities. An understanding of the nature and determinants of green procurement practices has the potential to inform the development, implementation and improvement of green procurement in South African metropolitan municipalities. Green procurement at the local government level can further assist South Africa in fulfilling its national and global responsibilities embracing sustainable development, address climate change, reduce poverty, create green jobs and improve the quality of life.

5.3 SUMMARY OF KEY FINDINGS

The study found out that all the responding metropolitan officials had a good understanding of the sustainable development discourse. Two distinct views emerged on the sustainable development discourse. The first being that although

most respondents have an idea of what constitutes sustainable development, it emerged that sustainable development was a concept that was difficult to achieve at metropolitan municipal level in South Africa. The second view was that the majority of the respondents (80%) equated sustainable development to mainly good environmental stewardship. This second view is in contrast with the accepted definition of sustainable development which includes the three pillars of sustainability namely: economic sustainability, social sustainability and environmental sustainability. Although 60% of the respondents indicated that their metropolitans were not sustainable, the metropolitans were nevertheless engaged in a number of sustainable development projects and activities. The projects and activities identified included raising awareness on environmental issues in schools and communities. For example, activities to celebrate the World Environmental days included the observation of the Earth Hour (that takes place on the 5th May annually), the National Arbour Week (1-7 September), National Clean-up Week (15-20 September), South Africa Recycling Day (19th September) and the World Habitat Day (6th October). In communities, the projects that were identified as addressing sustainable development concerns include retrofitting, the installation of solar water heaters (in City of Cape Town, EThekwini, Ekurhuleni and Tshwane), methane capture from landfills to generate energy (in eThekwini) and the establishment of BRT system (from the cities of Cape Town, Johannesburg and Tshwane). The study also found out that although extensive environmental awareness in relation to sustainable development is taking place at the metropolitan level, very limited education and training is being offered to metropolitan personnel, especially to procurement officers.

The study found out that there are mainly two categories of metropolitans namely: the older and younger ones. The older metropolitans include those that received metropolitan status ten plus years from the date of study that was 2013. These include the City of Cape Town, City of Johannesburg, City of Tshwane, Ekurhuleni, eThekwini and Nelson Mandela Bay. The younger metropolitans are those that received their metropolitan status within three plus years from the date of study that was 2013. These are namely Buffalo City and Mangaung. The study found out that in the older metropolitans, different policies are used to convey the green procurement discourse. Such policies include the Supply Chain Management

Policies of the City of Cape Town and eThekwini; the Environmental Policy from the City of Cape Town, City of Tshwane and Ekurhuleni; Waste Management Policy of the City of Cape Town and the Energy and Climate Change Policy from Ekurhuleni. Two metropolitan that had made significant strides in the area of green procurement are the City of Cape Town and Nelson Mandela Bay Metropolitan. The City of Cape has developed an Information Guide on the Implementation of Green Public Procurement and the Nelson Mandela Bay has also developed the Green Procurement Strategy to be implemented by the city. Whereas the older metropolitans have made efforts to include green procurement in selected policies, the younger metropolitans are yet to do so. Regardless of the policy status accorded to green procurement by the older metropolitan, the study found out that the implementation of green procurement through tender decision, call for tender and the actual procurement is not imminent as evidenced by over 70% of the respondents. This indicates a gap that exists between policies and implementation.

5.4 CONCLUSIONS

Climate change is a global phenomenon that affects us all. Two main approaches of dealing with climate change are through mitigation and adaptation. Climate change mitigation seeks to reduce the emission of greenhouse gas into the atmosphere. Green procurement at all levels of government has been identified as a mitigation strategy. This study assessed green procurement practices in eight metropolitan municipalities of South Africa. The assessment began with understanding the level of sustainability and the need to address climate change. Sustainability as a concept is widely understood by metropolitan officials. However, the metropolitans need to do more to be classified as sustainable metropolitans. In addition, if green procurement is to take residence in South African metropolitan municipalities, education, awareness, training and capacity development should be extended in large proportions to procurement and other decision making officials from these municipalities. This should not be a once off event but must be done on a continuous improvement basis. This means instituting on-going programmes to feed into the system to address matters of staff movements.

Legislative provisions mandating green procurement is not entirely lacking at local government levels. However, only two out of the eight metropolitans have developed guidelines/strategies for the implementation of green procurement. The lack of implementation of green procurement in the metropolitans can therefore be attributed to the lack of policy understanding, the age differences of the metropolitans and the lack of education and training. In spite of this, the study found out that all the metropolitans are undertaking mitigation projects to reduce greenhouse gas emissions. Projects in the transport sector such as the bus rapid transport, in the waste sector such as recycling and methane capture from landfills and in the energy sector such as installation of solar energy were identified. All the identified projects are, however, fragmented. These projects were found to be in different departments with limited coordination between departments and at times within the same department. This sometimes lead to duplication and in such instances, resources are wasted. Having reviewed the conclusions of the study, the next sections will outline recommendations to enable metropolitans to procure green as well as recommendations for future studies.

5.5 RECOMMENDATIONS FOR METROPOLITAN MUNICIPALITIES

The OECD (2007) indicates that mitigation and adaptation to climate change by both public and private sector rests on three pillars. These pillars are namely: the development of relevant policies, investments in infrastructure and technologies, and behavioural change. In view of this, the following are recommendations for the South African metropolitans to be able to play a major role in mitigating climate change through green procurement:

1. The green procurement discourse can be incorporated into already existing policies to give it a legislative status. Impetus could be given to green procurement by developing an information guide, strategies and/or procedure on the implementation of green procurement.
2. Younger metropolitan municipalities need to learn from the older metropolitan municipalities and work towards incorporating green procurement into their policies.
3. Procurement and other key decision making officials should be educated and trained on the implementation, monitoring and evaluation of green

procurement through capacity building. Procurement personnel should be particularly skilled in integrating environmental and social considerations into procurement. This could be achieved through formal education and in service short course training. This is an aspect that was well captured by a respondent from the Nelson Mandela Bay Metropolitan municipality who stated that:

> Procurement as a function and procurement as a profession should be looked into. Procurement officers should be at the front position when it comes to green procurement. This will call for their training so that they will not be behind the scenes anymore but to be able to champion the green procurement agenda within a municipality (Nelson Mandela Bay respondent).

4. A budget allocation is needed for the implementation of green procurement. Procurement officials indicated that green procurement is expensive and that their already overstretched budgets cannot accommodate it. To dispel the notion that green procurement is expensive, metropolitans should be able to allocate a separate budget for the implementation of green procurement. Metropolitans could also work in collaboration with private sectors to achieve green procurement.
5. Green procurement projects in South African metropolitans should be identified and consolidated under one umbrella as at the moment the projects are fragmented under different departments.
6. The gap between policy, awareness and implementation should also be explored and sealed.

5.6 RECOMMENDATIONS FOR FUTURE STUDIES

This study suggests the need for two supporting studies. The first is a need for a study focusing on the policy and legislative regimes supporting or retarding green procurement practices in South Africa. Such a study will serve to shed light on a number of issues most importantly systemic coherence of the policy and legislative green procurement regime. The second study would be an examination of green

procurement in the private sector and how lessons from this sector could inform practices in South African metropolitan municipalities.

References

Adwumi, E., and Allopi, D., 2014a. Determining the best BRT for eThekwini. (Part 1): public transport IMIESA, 39(7), 37-41.

Adewumi, E., & Allopi, D., 2014b. Determining the best BRT for eThekwini (Part 2): public transport. *IMIESA*, *39*(7), 16-19.

Adewumi, E., & Allopi, D., 2014c. Critical assessment of Port Elizabeth bus rapid Transit system. *Journal of Architecture and Civil Engineering*, 2 (1), 1-9.

Aliaga M., and Gunderson B., 2002. Interactive Statistics. (2nd ed.). Prentice Hall

Audet, D., 2002. Government procurement: a synthesis report. OECD, *Journal on Budgeting*, 2 (3), p. 151.

Australian Greenhouse Office, 2007. National Greenhouse Gas Inventory 2005: Accounting for the 108% Target, Canberra: AGO, March.

Aven, T., and Renn, O., 2009. On risk defined as an event where the outcome is uncertain. *Journal of Risk Research,* 12 (1), 1–12.

Bailey, K.D., 1994. Methods of Social Research, 4thed. New York: Free Press.

Bajari, P., and Lewis, G., 2009. Procurement contracting with time incentives: Theory and evidence. National Bureau of Economic Research Working Paper No. 14855. [online]. Available from: http://www.nber.org/papers/w14855. [Accessed 15 June 2014].

Bapna, M., and Talberth, J., 2011. What is a “green economy?”. World Resource Institute. [online]. Available from: htpp://www.wri.org/stories/2011/04/qa-what-green-economy. [Accessed 18 March 2014].

Bohle, H.G., Downing, T.E., and Watts, M. J., 1994.Climate Change and social vulnerability. Towards a sociology and geography of food insecurity. *Global Environmental Change,* 4 (1), 37-48.

Bolton, P., 2008. Protecting the environment through public procurement: the case of South Africa. *Natural Resource Forum*, 32, 1-10.

Bouwer, M., Jong, de K. Jonk, M., Berman, T., Bersani, R., Lusser H., Nissinen, A., Parikka, K., and Szuppinger, P., 2005. *Green Public Procurement in Europe 2005 – State overview.* The Netherlands: Virage Milieu & Management. [online]. Available from: http://ec.europa.eu/environment/gpp/pdf/report_facts.pdf. [Accessed: 29 April, 2012].

Bowen, G. A., 2009. Document analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9 (2), 27-40.

Bryman, A., 2012. Social Research Methods. (4th ed). Oxford University Press. Oxford.

Braun, V., and Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology,* 3 (2), 77-101.

Buffalo City, 2001. Procurement Policy. Buffalo City Metropolitan Municipality.

Buffalo City, 2012a. Integrated Development Plan Review, 2010 – 2011. Buffalo City Metropolitan Municipality.

Buffalo City, 2012b. Draft Integrated Development Plan, 2012 – 2013. Buffalo City Metropolitan Municipality.

Buffalo City, 2012c. Supply Chain Management Policy. Buffalo City Metropolitan Municipality.

c40 Cities, 2014. In Conversation: c40's Gunjan Patrick speaks to Johannesburg and Bueno Aires newly appointed leads of the c40 Bud Rapid Transit Network. (September 18, 2014). C40 Blog. [online]. Available from: http://www.c40.org/blog_posts/in-conversation-c40-s-gunjan-parik-speaks-to-

johannesburg-and-buenos-aires-newly-appointed-leads-of-the-c40-bus-rapid-transit-network. [Accessed 23 September 2014].

Carpenter, C., and Suto, M., 2008. Qualitative research for occupational and physical therapists: A practical guide. Oxford: Wiley Blackwell.

Ceres, 2010. Climate change risk perception and management: a survey of risk managers. [online]. Available from: www.ceres.org/Resources/Reports. [Accessed 21 February 2014].

Chilisa, B., 2012. Indegenous Research Methodologies. Sage, Thousand Oaks, CA.

City of Berlin, 2011. Energy Saving Partnership Berlin (ESP) — An Effective and Innovative Model to Reduce CO2 and Energy Costs without Expenses for Building Owners. [online]. Available from : http://www.c40.org/case_studies/. [Accessed 22 July 2014].

City of Cape Town, 2003. Integrated Municipality Environmental Policy. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2006a. Integrated Waste management policy. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2006b. Framework for the Adaptation to Climate Change in the City of Cape Town. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2006c. Energy and Climate Change Strategy. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2006. City of Cape Town leads the way in using solar energy. Media release, February 27.

City of Cape Town, 2009. Environmental Agenda, 2009 – 2014. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2010. Energy and Climate Change Action Plan. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2011a. Environmental Awareness, Education and Training for City Staff and Councillors. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2011b. Public Environmental Awareness, Education and Training Strategy. City of Cape Town Metropolitan Municipality.

City of Cape Town 2012a. Information and Guideline Document on the Implementation of Green Public Procurement in the City of Cape Town. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2012b. City of Cape Town Smart Building Handbook.A guide to green building in Cape Town. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2013a. Supply Chain Management Policy: Incorporating Preferential Procurement. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2013b. Integrated Development Plan 2012 – 2017, 2012 – 2013 Review. City of Cape Town Metropolitan Municipality.

City of Cape Town, 2014. City unveils South Africa's first 'green' taxi rank. Cape Town Metropolitan Municipality.

City of The Hague, 2011. The Hague Uses Seawater to Heat Homes. [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July 2014].

City of Johannesburg, 2003. Supply Chain Management Policy. Adopted in terms of Section 111 of the MFMA No 56 of 2003.City of Johannesburg Metropolitan Municipality.

City of Johannesburg, 2005. The Waste management Plan for the City of Johannesburg. City of Johannesburg Metropolitan Municipality.

City of Johannesburg, 2011. City of Johannesburg Integrated Waste Management Policy. City of Johannesburg Metropolitan Municipality.

City of Johannesburg, 2012. 2012/2016 Integrated Development Plan (IDP). "Committing to a promising Future". City of Johannesburg Metropolitan Municipality.

City of Johannesburg, 2013. Strategic Integrated Transport Plan Framework for the City of Joburg. Draft for discussion. City of Johannesburg Metropolitan Municipality.

City of Philadelphia, 2012. Solar Panels at the Southeast Water Pollution Control Plant. *The Joint U.S.-Brazil Initiative on Urban Sustainability, part of the U.S. Environmental Protection Agency.* [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July 2014].

City of Toronto, 2011a. Commitment to buy green. Green purchasing guide. [online]. Available from: http://www.partnersinprojectgreen.com/files/GreenPurchasingGuide.pdf. [Accessed 5 May 2012].

City of Toronto, 2011b. Lake Water Air Conditioning Reduces Energy Use by 90%. [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July2014].

City of Toronto, 2012. Trash to Cash - Methane Capture Generates $3-4 Million Annually. [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July 2014].

City of Tshwane, 2005a. Tshwane Environmental Education and Awareness Strategy.City of Tshwane Metropolitan Municipality.

City of Tshwane, 2005b. Development of the Tshwane sustainable Energy and Climate Change Strategy.City of Tshwane Metropolitan Municipality.

City of Tshwane, 2005c. Tshwane Integrated Environmental Policy - TIEP. Pretoria: City of Tshwane Metropolitan Municipality.

City of Tshwane, 2007. The TIEP Implementation Plan. Pretoria. City of Tshwane Metropolitan Municipality.

City of Tshwane, 2010. City of Tshwane Green Buildings by-law and Policy. City of Tshwane Metropolitan Municipality.

City of Tshwane, 2011. Tshwane supply Chain Policy. City of Tshwane Metropolitan Municipality.

City of Tshwane, 2013a. Vision 2055.Remaking South Africa's Capital . City of Tshwane Metropolitan Municipality.

City of Tshwane, 2013b. Framework for a Green Economy Transition. Pretoria. City of Tshwane Metropolitan Municipality.

City of Tshwane, 2013c. City of Tshwane Draft 2013/2014 IDP Review. City of Tshwane Metropolitan Municipality.

City of Venice, 2014. Venice Integrated Mobility Plan. [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July 2014).

Clont, J. G., 1992. The concept of reliability as it pertains to data from qualitative studies. Paper Presented at the annual meeting of the South West Educational Research Association. Houston, TX. 605 The Qualitative Report December 2003.

Cohen, B., 2006. Urbanization in developing countries: current trends, future projections, and key challenges for sustainability. *Technology in Society*. 28 (2006), 63-80.

Creswell, J. W., 2003. Research Design: Qualitative, Quantitative and Mixed Methods Approaches. Thousand Oaks, CA: Sage.

Creswell, J. W., 2009. Research Design: Qualitative, Quantitative and Mixed Methods Approaches. (3rd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W., & Plano Clark, V. L., 2007. Designing and conducting mixed method research. Thousand Oaks, CA: Sage.

Corbin, J., and Strauss, A., 2008. Basics of qualitative research: Techniques and procedures for developing grounded theory. (3rd ed.). Thousand Oaks, CA: Sage.

Death, C., 2014. The Green Economy in South Africa: Global discourses and local politics. *Politikon,* 41 (1), 1-22

Den Elzen, M., and Hóhne, N., 2008. Reductions od greenhouse gas emissions in Annex I countries for meeting concentration stabilization targets. An Editorial Comment. *Climate Change*, 91, 249-247.

Denzin, N. K., 1989. The research act: A theoretical introduction to sociological methods. (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.

Department of Communications, 2011. South Africa Year book, Pretoria: Government Printers.

Department of Environmental Affairs – DEA, 2011. South Africa National Climate Change Response White Paper, Pretoria: Government Printers.

Department of Environmental Affairs and Tourism – DEAT, 2005. South Africa Country Report: Fourteenth session of the United Nations Commission on Sustainable Development, Pretoria: Government Printers.

DEAT, 2008. National Framework for Sustainable Development, Pretoria: Government Printers.

DEAT. 2009. National Sustainable Consumption and Production South Africa. [online]. Available from: http://www.environment.gov.za/Services/documents/Publications/Report%20NSCP_16%20September.pdf. [Accessed 1February 2010].

Department of Minerals and Energy – DME, 2002. Draft white paper on the promotion of renewable energy and clean energy development, Pretoria.

De Vos, A. S., (Ed.), 1998. *Research at grass roots*. *A primer for caring professions*. (1st ed.). Pretoria: J L Van Schaik Publishers.

Drexhage, J., and Murphy, D., 2010. Sustainable Development: From Brundtland to Rio 2012. Background paper prepared for consideration by the high level panel on Global Sustainability at its first meeting, 19 September 2010.

Driscoll D. L., Appiah-Yeboah, A., Salib P., & Rupert, D. J., 2007. Merging Qualitative and Quantitative Data in Mixed Methods Research: How To and Why Not. *Ecological and Environmental Anthropology,* 3 (1), 19-28.

Driscoll, T., Halliday, A., Rasted, J., .And Stock, R., 2010.Green Procurement Practices in the London Borough of Croydon.An interactive Qualifying report. Worcester Polythecnic Institute in partial fulfillmrnt of the requirement for the degree of Bachelor of Science.

Ecoinstitute., 2013. SEAD Guide for Monitoring and Evaluating Green Public Procurement Programs.SEAD.

Economic Development Department, 2011. *Green Economy Accord*. [online]. Available from: http:// www.economic.gov.za/communications/publications/green-economy-accord. [Accessed 15 June 2014].

Ekurhuleni, 2006a. Supply Chain Management Policy. Ekurhuleni Metropolitan Municipality.

Ekurhuleni, 2006b. Environmental Policy. Ekurhuleni Metropolitan Municipality.

Ekurhuleni, 2007. Energy and Climate Change Strategy. Ekurhuleni Metropolitan Municipality.

Ekurhuleni, 2010. Draft: Review of 2009 – 2013 Ekurhuleni Metropolitan Municipality Integrated Development Plan. Ekurhuleni Metropolitan Municipality.

Ekurhuleni, 2012a. Ekurhuleni Metropolitan Municipality: Solar PV installation. Ekurhuleni Metropolitan Municipality.

Ekurhuleni, 2012b. Energy and Climate Change Strategy for Ekurhuleni Metropolitan Municipality.

Ekurhuleni, 2013. Environmental Policy and Implementation Plan. Ekurhuleni Metropolitan Municipality.

Elkington, J., 1998. Cannibals with Forks: The Tripple Bottom Line of the 21st Century Business. John Wiley and Sons, London.

Elkington, J., 2004. Enter the triple bottom line. In Henriques, A. and Richardson, J. (eds). The tripple bottom line: Does it all add up? Earth Scan, London.

Emanuel, E. J., Wendlar, D., and Grady, C., 2000. 'What makes clinical research ethical?'. *Journal of the American Medical Association*, 238 (20), 2701-2711.

eThekwini, 2002. eThekwini Environmental Policy (construction). eThekwini Metropolitan Municipality.

eThekwini, 2003. Targeted Procurement Policy. eThekwini Metropolitan Municipality.

eThekwini, 2004. Integrated Waste Management Plan for the eThekwini Municipality. eThekwini Metropolitan Municipality.

eThekwini, 2005a. Environmental Management Policy for the eThekwini Municipality. eThekwini Metropolitan Municipality.

eThekwini, 2005b. Supply Chain Management Policy. eThekwini Metropolitan Municipality.

eThekwini, 2008. Institutionalizing Climate Change at the local Government Level in Durban. eThekwini Metropolitan Municipality.

eThekwini, 2012. Draft Integrated Development Plan. 5 Year Plan: 2012/13 to 2016/17. eThekwini Metropolitan Municipality.

eThekwini, 2013a. eThekwini Municipality: Supply Chain Management Policy. eThekwini Metropolitan Municipality.

eThekwini, 2013b. Durban Climate Change Strategy: waste and Pollution Report. eThekwini Metropolitan Municipality.

European Union, 2013. Adaptation to Climate Change. [online]. Available from: http://ec.europa.eu/clima/policies/adaptation/index_en.htm. [Accessed 14 October 2013].

Federal Republic of Canada, 2010. Planning for a sustainable future: A Federal sustainable development strategy for Canada. Sustainable Development Office.Environment, Canada.

Fuhrer, J., 2003. Agroecosystem responses to combinations of elevated CO2, ozone and global climate change. *Agriculture, Ecosystem and Environment*, 97, 1–20.

Global Leadership for Climate Action. 2009. Facilitating an international agreement on climate change: Adaptation to climate change. [online]. Available from: www.globalclimateaction.org. [Accessed 14 October 2013].

Goldblatt M., and Middleton J., 2007. Climate Policy Coherence and Institutional Coordination: Clarifying Institutional Responsibilities in South Africa, BASIC Paper No.13.

Goodland, R., and Ledec, G., 1987. Neoclassical Economics and Principles of Sustainable Development. *Ecological Modelling,* 38, 19-46.

Gordon, E. J., 2000. 'When oral consent will do'. *Field Methods*, 12(3), 235-238.

Grbich, C., 2007. Qualitative Data Analysis: An introduction. Sage, London.

Greef, M., 2002. Information Collection: Interviewing. In De Vos, A. S., Strydom, H., Fouche, C. B & Delport, C. S. L. 2002. Research as Grassroots: For the Social Sciences and Human Service Professions. 2nded: Pretoria: Van Schaik Publishers.

Harrison, P.A., Berry, P.M., & Paterson, J.S., 2010. Climate change adaptation and mitigation:synergies, antagonisms and trade-offs for biodiversity and ecosystems services. *BOU Conference Proceedings – Climate Changeand Birds*. [online] .Available from: http://www.bou.org.uk/bouproc-net/ccb/harrison-etal.pdf. [Accessed 4 April 2014].

Heizer, J., and Render, B., 2008. Operations Management, 9th ed. Pearson-Prentice Hall, Upper Saddle River, NJ.

Ho, L. W. P., Dickinson, N. M., and Chan, G. Y. S., 2010. Green procurement in the Asian public sector and the Hong Kong private sector. *Natural Resources Forum,* 34 (2010), 24-38.

Intergovernmental Panel on Climate Change - IPCC Third Assessment Report (TAR), 2001. Climate Change: Impacts, Adaptation and Vulnerability. IPCC Third Assessment Report, Cambridge University Press.

IPCC, 2007. Fourth Assessment report. [online]. Available from: http://www.ipcc.ch/ipccreports/ar4-syr.htm [Accessed 30 September 2010].

International Council for Local Environmental Initiatives - ICLEI, 2000. Green Purchasing: Good Practice Guide. An ICLEI Policy and Practice Publication.

International Institute for Sustainable Development – IISD, 2008. Sustainable public Procurement in South Africa. .[online]. Available from: www.iisd.org. [Accessed 14 October 2013].

Johnson, R. B., Onwuegbuzie, A. J., and Turner, L. A., 2007. Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, *1*(2), 112–133.

Klein, R.J.T., Schipper, E.L.F., and Dessai, S., 2005. Integrating Mitigation and adaptation into climate and development policy: Three research questions. *Environmental Science and Policy*, 8 (6), 579-588.

Kvale, S., (2007).Doing Interviews.Sage, London.

Lambert, D.M., Cooper, M. C., and Pagh, J. D., 1998. Supply Chain Management: Implementation Issues and Research Opportunities. *International Journal of Logistics Management,* 9 (2), 1 – 20.

Lambert, D.M., and Cooper, M. C., 2000. Issues in Supply Chain *Management.Industrial Marketing Management*, 22, 65–83.

Liamputtong, P., (2007). Reseacing the Vulnerable: A uide to ensitive research methods. Sage. London.

Liamputtong, P., 2013. Quntative Resreach Methods. (4th ed.). Oxford University Press, Melbourne.

Lincoln, Y. S., and Guba, E. G., 1985. Naturalistic inquiry. Beverly Hills, CA: Sage Publications.

Los Angeles, 2012. Green Energy for a Green Los Angeles Provides a Renewable Energy Option for Consumers. [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July 2014].

Mangaung, 2012. Draft Expanded Public Works Programme (EPWP) Policy and implementation Plan.Mangaung Metropolitan Municipality.

Mangaung, 2013a. Supply Chain management Policy.Mangaung Metropolitan Municipality.

Mangaung, 2013b. Waste Management by-law.Mangaung Metropolitan Municipality.

Mangaung, 2013c. Integrated Development Plan. Review 2013 – 2014. Mangaung Metropolitan Municipality.

MARSH., 2006. Climate Change: Business risks and solutions. A report for clients and colleagues of Marsh on risk-related topics. [online]. Available from: http//www.solutions.marsh.com/climate/documents/climateChange200604.pdf. [Accessed 19 August 2014].

Matsumoto, N., 2006. Analysis of policy processes to introduce Bus Rapid Transit systems in Asian cities from the perspective of lesson-drawing: cases of Jakarta, Seoul, and Beijing. Better Air Quality Workshop, 2006, Yogyakarta, Indonesia. [online]. Available From : http://enviroscope.iges.or.jp/modules/envirolib/view.php?docid=789. (Accessed 20 September 2014).

Maunder, W.J., 1992. Dictionary of Global Climate Change. University College London Press limited. London.

McCrudden, C., 2004. Using public procurement to achieve social outcomes. *Natural Resource Foru,* 28, 257 – 267.

McIlveen, R., 2010. *Cutting the Cost of Cutting Carbon*, in *Greener, Cheaper*, S. Less, ed., Policy Exchange, London.

Mexico City, 2011. Mexico City Replaced 3,000 Taxis with More Fuel Efficient Models. [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July 2014].

Miles, M. B., and Hubberman, M. A., 1994. Qualitative Analysis: An Expanded Sourcebook. (2nd ed.). Thousand Oaks, CA: Sage.

Mkhize, Z., 2004. MEC for Finance and Economic Development. Paper presented at the supply chain management conference. Transforming the government procurement system. Durban, South Africa.

Moeti, K., Khalo, T., Mafunisa, J., Nsingo, S., and Makondo, T., 2007. Public finance fundamentals, Cape town; Juta.

Mokwena, L., 2009.Municipal Responses to Climate Changein South AfricaThe case of eThekwini, the City of CapeTown, and the City of Johannesburg. Research Report; Centre for Policy Studies Johannesburg.

Municipal Demarcation Board, 2011. Personal Communication.

National Treasury, 2003. Policy strategy to guide uniformity in government procurement reform processes in government. [online]. Available from: http:// www.treasury.go.za/legislation/PFMA/default.aspx — go to “Supply Chain Management”. [Accessed 19 February 2012].

National Climate Change Response Policy, 2009. Discussion Document for the 2009 National Climate Change Response Policy development Summit, Gallagher Convention Centre, Midrand, 3-6 March 2009.

Nelson Mandela Bay, 2005. Integrated Waste Management Plan. 2005 – 2010. Nelson Mandela Bay Metropolitan Municipality.

Nelson Mandela Bay, 2011a. Green Procurement Implementation Strategy.Nelson Mandela Bay Metropolitan Municipality.

Nelson Mandela Bay, 2011b. Draft IDP. 2011 – 2016. Nelson Mandela Bay Metropolitan Municipality.

Nelson Mandela Bay Metropolitan Municipality, 2012. Integrated Environmental Policy for the Nelson Mandela Bay Metropolitan Municipality.

Nelson Mandela Bay Metropolitan Municipality, 2013. Supply Chain Management Policy.Version 4.Nelson Mandela Bay Municipality.

Nhamo G., 2009. Climate Change as double edged sword for African development and trade. *International Journal of African Renaissance Studies*, 4 (2), 117–139.

Nhamo G., 2013. Green economy readiness in South Africa: A focus on the national sphere of government. *International Journal of African Renaissance Studies*, 8 (1), 115–142.

Nhamo, G., and Mjimba, V., 2014. Biting the hand that feeds you: green growth and electricity revenues in South Africa metropolitans. *Public and Municipal Finance*, 3 (1), 20-31.

Nhamo, G., and Pophiwa, N., 2014. Business in the Green Global Economy in Breakthrough: Corporate South Africa in a Green Economy. Ed: Nhamo, G. Africa Institute of South Africa.

Odhiambo, W., and Kamau, P., 2003. Public procurement: Lessons from Kenya, Tanzania and Uganda. OECD Development Centre Working Paper No. 208.

Organisation of Economic Co-operation and Development - OECD, 2007. Giving Knowledge for free: The emergence of open educational resources. [online]. Available from: http://www.oecd.org/edu/ceri/38654317.pdf. [Accessed 20 September 2013].

OECD, 2011. Towards Green Growth. Paris: OECD.

Padgett, D. K., 2008. Qualitative Methods in Social Work Research.2nd ed. Sage Publications. Los Angeles.

Pearce, D.W., 1987. "Foundations of an ecological economics." *Ecological Modelling,* 38, 9-18.

Perera, O., Chowdhuryn N., & Goswami, A., 2007. State of play in sustainable procurement. Winnipeg: International Institute for Sustainable Development. [online]. Available from: http://www.iisd.org/pdf/2007/state_procurement.pdf. [Accessed 5 May 2012].

Polit D.F., & Hungler B.P., 2004. Nursing Research: Principles and Methods, 7th edn. Lippincott Williams & Wilkins, Philadelphia, PA, USA.

Preuss, L., 2009. Addressing sustainable development through public procurement. Supply Chain Management: *An International Journal*, 14 (3), 213-223.

Rea Vaya, 2012. Presentation to Rea Vaya Steering Committee on 2012 Customer Survey, September 2012. City of Johannesburg Metropolitan Municipality.

Rees, W.E., 1990. "The Ecology of Sustainable Development," *The Ecologist*, 20(1), 18-23.

Republic of South Africa – RSA, 1996. *The Constitution of the Republic of South Africa, 1996*. Cape Town: Government Printer.

Rio de Janeiro, 2012. Gramacho landfill to gas energy system. The Joint U.S.-Brazil Initiative on Urban Sustainability, part of the U.S. Environmental Protection Agency. [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July 14.)

Roper, J.M., & Shapira, J., 2000. Ethnography in nursing research. Thousand Oaks: Sage.

Rosa, E.A., 1998. Metatheoretical foundations for post-normal risk. *Journal of Risk Research,* 1, 15–44.

RSA, 1997. Green Paper on Public Sector Procurement Reform in South Africa, Ministry of Finance and Public Works, *Government Gazette* 17928, 14 April 1997.

RSA, 1998a. Local Government Municipal Demarcation Act 27 of 1998. Pretoria: Government Printer.

RSA, 1998b. National Environmental Management Act, No. 107 of 1998. Pretoria: Government Printer.

RSA, 1999. Public Finance Management Act No1 of 1999. Pretoria: Government Printer.

RSA, 2000a. National Treasury – Treasury Regulations for departments, constitutional institutions and trading entities. Issued in terms of the Public Finance Management Act, 1999. *Government Gazette* 21249, 31 May 2000.

RSA, 2000. Preferential Procurement Policy Framework (PPPFA) Act, no. 5 of 2000. Pretoria: Government Printer.

RSA, 2003a. Broad Based Black Economic Empowerment Act, No. 53 of 2003.Pretoria: Government Printer

RSA, 2003b. Municipal Finance Management Act, No 56 of 2003. Pretoria: Government Printer.

RSA, 2009. National Climate Change Response Policy. A discussion document for the National climate change response policy development summit. [online]. Available from: http://www.southafrica.info/about/geography/provinces.htm#ixzz1U9fM0p4o. [Accessed 5 August 2011].

Rubin, H. J., & Rubin, I. S., 2005. *Qualitative interviewing: The art of hearing data*(2 ed.). London: Sage Publications.

San Francisco Municipal Transportation Agency, 2011. Climate action strategy for San Francisco's Transportation System. [online]. Available from: http://www.fta.dot.gov/documents/SFMTA_for_web.pdf. [Accessed 24 September 2014].

Seale, C., 1999. Quality in qualitative research. *Qualitative inquiry,* 5 (4), 465-478.

Seale, C., and Tonkiss, F., 2012. 'Content and comparative keyword analysis'. In Seale, C. (ed). Researching Society and Culture. (3rd ed.). Sage, London.

Seidman, I., 1998. Interviewing as qualitative research. (2nded.). New York: Teachers College Press.

Shaw, R., Colley, M., & Connell, R., 2007. Climate change adaptation by design: A guide for sustainable communities. London: Town and Country Planning Association.

Shenton, A. K., 2004. Strategies for ensuring trustworthiness in qualitative research projects. *Education Information*, 22, 63-75.

Silverman, D., 2011. Interpreting qualitative data: a guide to the principles of qualitative research. (4th ed.). London: Sage.

Smith, J.A., Harre, R., & Van Langenhoven, L., 1995. Rethinking methods in Psychology. London: Sage.

Statistics South Africa, 2014. Poverty trends in South Africa: An Examination of absolute poverty between 2006 and 2011. Statistics South Africa; Pretoria.

Stenbacka, C., 2001. Qualitative research requires quality concepts of its own. *Management Decision,* 39(7), 551-555.

Stigson, B., and Russell, T., 1998. Greener purchasing: opportunities and innovations. England: Greenleaf publishing.

Strauss, A., and Corbin, J., 1990. Basics of qualitative research: Grounded theory procedures and tecniques. Newbury Park, CA: Sage publications, Inc.

Streimikiene, D., and Girdzijauskas, S., 2007. Assessment of post-Kyoto climate change mitigation regimes impact on sustainable development. *Renewable and Sustainable Energy Reviews* 13, 129 – 141.

Strydom, H., 2002. The Pilot Study. In De Vos, A. S., Strydom, H., Fouche, C. B & Delport, C. S. L., (2002). Research as Grassroots: For the Social Sciences and Human Service Professions. (2nd ed.). Pretoria: Van Schaik Publishers.

Strydom, H., & Delport, C. S. L., 2002. Sampling and Pilot Study in qualitative research.In De Vos, A. S., Strydom, H., Fouche, C. B & Delport, C. S. L., (2002). Research as Grassroots: For the Social Sciences and Human Service Professions. (2nd ed.). Pretoria: Van Schaik Publishers.

Swedish Environmental Management Council – SEMCo, 2006. Climate Information for Green Procurement. Stockholm Sweden.

Terblanche P., Nel R., and Golding T., 1994.Household energy sources in South Africa: an overview of the impact of air pollution on human health. CSIR Environmental Services, Department of Mineral & Energy Affairs and Emsa (Pty) Ltd.

The Hague, 2011. The Hague uses sea water to heat homes. [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July 2014].

Tokyo, 2011. Completion of First Reclaimed Wastewater Treatment Facility in Japan Using Ceramic Filtering. [online]. Available from: http://www.c40.org/case_studies/. [Accessed 22 July 2014).

Tuckett A.G., 2005. Applying thematic analysis theory to practice: A researcher's experience. *Contemporary Nurse,* 19, 75-87.

Turley, L., and Perera, O., 2014. Implementing Sustainable Public Procurement in South Africa: where to start. IISD Report. [online]. Available from: http://www.iisd.org/sites/.../publications/implementing_spp_south_africa. [Accessed 4 April 2014].

U.K. Department of Environment, Food and Rural Affairs, 2006. Procuring for the future: Sustainable Procurement Action Plan. Recommendations from the Sustainable Procurement Task Force. [online]. Available from: https://www.gov.uk/

government/uploads/system/uploads/attachment_data/file/69417/pb11710-procuring-the-future-060607.pdf. [Accessed 20 May 2014).

United Nations Commission on Sustainable Development – UNCSD, 2002. Implementing Agenda 21: Report of the Secretary-General, United Nations, New York.

United Nations Centre for Human Settlements – UNCHS, 2001. The State of the World's Cities Report. [online]. Available from: www.unchs.org/Istanbul+5/statereport.htm. [Accessed 07 July 2013].

United Nations Department of Economic and Social Affairs – UN DESA, 2013. World Economic and Social survey – Sustainable development Challenges. United Nations Publication.

United Nations Development Programme - UNDP Practice Series, 2008. Environmental Procurement. Practice Guide Volume 1. [online]. Available from: http://www.undp.org/procurement/documents/undp-sp-practice-guide-v2.pdf. [Accessed 29 November 2011].

United Nations Environmental Programme – UNEP, 2002. African Environmental Outlook: Past, Present and Future perspectives. Earthprint. Hertfordshire, England.

UNEP, 2007. Bus Rapid Transit. Planning guide. New York.

UNEP, 2010. Green Economy Developing Countries Success Stories. UNEP, Geneva.

United Nations Framework Convention on Climate Change – UNFCCC, 1992. [online]. Available from: http://www.unfccc.int/resource/docs/convkp/conveng.pdf. [Accessed 19 December 2011].

UNFCCC, 2013. Report of the Global Environment Facility to the Conference of the Parties. [online]. Available from: http://www.unfccc.int. [Accessed 20 March 2014].

Urban Sustainable Energy for Environment and Development – Urban SEED Programme, 2012. Green procurement: a guide for local government. *Urban SEED update* *2*(10). [online]. Available from: http://www.cityenergy.org.za/uploads/resource_159.pdf. [Accessed 20 March 2013].

USA Department of Transportation, 2006. Applicability of Bogota's TranMilenio BRT system to the United States. Final Report. [online]. Available from: http://www.Bogota_report_final_report_may_2006_pdf. [Accessed: 24 September 2014].

Walker, H., Brammer, S., 2009. Sustainable procurement in the United Kingdom public sector. *Supply Chain Managemen,* 14(2),128.

Walker, H., Mayo, J., Brammer, S., Touboulik, A., and Lynch, J., 2012. Sustainable procurement: an international policy analysis of 30 OECD Countries. Proceedings of the 5th International public procurement conference; Seatle, USA.

Watermeyer, R. B., 2011. Regulating public procurement in Southern Africa through international and national standards.Public Procurement Regulation in Africa Conference. Stellenbosch.

Weiss, J., 2000. "Sustainable Schools," In Council of Educational Facility Planners International- CEFPI Brief on Educational Facility Issues. Issue Track: 4. [online]. Available from: http://www.healthyschools.cefpi.org/issue11.pdf. [Accessed 20 May 2014].

Wilkinson, D., and Birmingham, P., 2003. Using research Instruments. A guide for researchers. Routledge Falmer. London.

World Bank, 2010. Cities and climate change: an urgent agenda. Urban Development Series. [online]. Available from: http://www.siteresources.worldbank.org/INTUWM/.../CitiesandClimateChange.pdf. [Accessed 20 May 2014].

World Commission on Environmental and Development – WCED, 1987. *Our common future*: *A Global agenda for change.* Oxford: Oxford University Press.

World Health Organization, 2003. Climate change and human health: risks and responses. [online]. Available from: http://www.who.org. [Accessed 20 May 201].

World Trade Organisation – United Nations Environment Programme – WTO-UNEP, 2009. Trade and climate change. Geneva and Nairobi: WTO – UNEP.

World Summit on Sustainable Development, 2002. Johannesburg Summit. 26 August – 4 September, 2002, Johannesburg, South Africa.

WOODS, G.G., 2008. Financial Management and Cost Accounting. Cape Town: University of Stellenbosch.

List of Appendices

Appendix A: Declaration Letter in support of ethical clearance from supervisor

UNISA | centre for corporate citizenship

University of South Africa, P.O. Box 392, Unisa 0003

19 January 2013

CAES
Ethics Committee

Dear Sir/Madam

RE: Declaration Letter in Support of Student Ms A. O. AGYEPONG
Ethics Application

This letter serves to acknowledge that the Ethics submission by student **Ms A. O AGYEPONG** (Student Number **35192712)** is a full reflection of the procedures and processes to be used during her research in South Africa.

Ms Agyepong's research is focusing on "An Assessment of Green Procurement Practices in Selected South African Metropolitan Municipalities".

Should you require further information, please do not hesitate to contact the undersigned on the following numbers: Mobile: 073-163-1114; Office: 012-841-4213; and Email: nhamog@unisa.ac.za.

Kind regards

_____

Godwell Nhamo (PhD)

Professor and Chair for

Exxaro Chair in Business & Climate Change

Appendix B: Research Ethics Clearance

Ref. Nr.: 2013/CAES/044

UNISA university of south africa

To:

Student: N Agyepong **Student nr: 35192712**

Supervisor: Prof G Nhamo

Department of Environmental Science

College of Agriculture and Environmental Sciences

Dear Prof Nhamo and Mrs Agyepong

Request for Ethical approval for the following research project:

An assessment of green procurement practices in selected South African metropolitan municipalities

The application for ethical clearance in respect of the above mentioned research has been reviewed by the Research Ethics Review Committee of the College of Agriculture and Environmental Sciences, Unisa. Ethics clearance for the above mentioned project (Ref. Nr.: 2013/CAES/044) **is approved** after careful consideration of all documentation submitted to the CAES Ethics committee.

Please be advised that the committee needs to be informed should any part of the research methodology as outlined in the Ethics application (Ref. Nr.: 2013/CAES/044), change in any way. In this instance a memo should be submitted to the Ethics Committee in which the changes are identified and fully explained.

The Ethics Committee wishes you all the best with this research undertaking.

Kind regards,

Prof E Kempen,

CAES Ethics Review Committee Chair

Appendix C: Permission letter to municipalities conduct research

PO Box 30445
Sunnyside
0132
Date: 20-04-2013

The City Manager
City of Cape Town Metroploitan Municipality
Johannesburg

Dear Sir,

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH STUDY AT CITY OF CAPE TOWN METROPOLITAN MUNICIPALITY

I am a student at University of South Africa; (Unisa)**,** studying towardsmy PhD in Environmental Management. I am sure you are aware that any post graduate study involves completion of a Dissertation or Thesis. It is for this reason that I request your personal and professional permission to partake in my research in your departments within City of Johannesburg Metropolitan Municipality (CoJMM).

My study is in green procurement and the the title of my research Thesis is AN ASSESSMENT OF GREEN PROCUREMENT PRACTICES IN SOUTH AFRICAN METROPOLITAN MUNICIPALITIES. The study is being undertaken under the Supervision of Prof Godwell Nhamo, Programme Manager for Exxaro Chair in Business and Climate Change at the Institute for Corporate Citizenship; Unisa.

The main aim of this study is to assess the levels of green procurement practices of goods and services within South Africa metropolitan municipalities, an activity that could lead to the development and promotion of a generic framework for green procurement in metropolitan municipalities. Ultimately, green procurement would assist South Africa to fulfil its national and global responsibilities embracing sustainable development, address climate change, reduce poverty, create green jobs and improve the quality of life.

The main objectives of the study are:

i. To determine the level of understanding of sustainable development, especially, the need to address climate change in South African metropolitan municipalities.
ii. To determine the extent to which green procurement is practiced in South African metropolitan municipalities, identifying policy and legislative requirements (if any).

The research study shall make use of interviews and completion of questionnaries with key selected potential participants or respondents, chosen according to the purposive sampling of the study.The potential participants or respondents would thus include:

- Two procurement officers
- Two environment specialist and
- a town planning specialist. This will bring the total number of people to be interviewed to five for the metro.

The study will be at no monetary cost to the metro but will be benefitial to metro in that this groundbreaking work will assist South African metropolitan municipalities (CoJMM included) in shaping their green procurement policies as they engage the space to address climate change in the country.

The ethical research principles will be strictly adhered to thoughout the research process so as to maintain a high standard of work and a high quality of the research study. The infomation obtained will be used only for purposes of this study, and will ensure anonymity and confidentiality of potential research participants or

respondents A copy of the full research report, once approved by the University will be handed to CoJMM.

I thus request granting of permission to collect the necessary data/information from relevant officials at CoJMM for the purposes of completion of my Research Thesis. Your kind assistance in granting me permission will therefore be highy appreciated and thank you for taking the time in allowing your staff to be part of this research study as I am sure it will not only be of benefit to me but to them as well..

Yours faithfully,

Nana Agyepong (Mrs)
Email: nanagyasiwa@yahoo.com
Cell: 072 525 4080
Tel: 012 433 4638 (Office)

CITY MANAGER

Approved	**Not Approved**

Appendix D: Consent Form

MUNICIPAL CONSENT FORM

TITLE OF RESEARCH PROJECT

An assessment of green procurement practices in selected South African metropolitan municipalities

NATURE AND PURPOSE OF THE STUDY

The purpose of this study is to assess the levels of green procurement practices of goods and services within South Africa metropolitan municipalities, an activity that could lead to the development and promotion of a generic framework for green procurement in metropolitan municipalities. Ultimately, green procurement would assist South Africa to fulfil its national and global responsibilities embracing sustainable development, address climate change, reduce poverty, create green jobs and improve the quality of life.

RESEARCH PROCESS

1. Two procurement officers, an environment specialist, a town planning specialist and an engineer will be identified in the metro and they will be interviewed to obtain their opinion on green purchasing for their respective metro. This will bring the total number of people to be interviewed to five for the metro.
2. The interview will be conducted by the Researcher
3. Questionnaires or interview guides to be used will be emailed to selected respondents to enable respondents to familiarize themselves prior the interviews.

NOTIFICATION THAT PHOTOGRAPHIC MATERIAL, TAPE RECORDINGS, ETC WILL BE REQUIRED

Permission would be obtained from the respondents to record the interviews on tape to be later transcribed for close analysis. Notes would also be jotted as respondents are being interviewed

CONFIDENTIALITY

The opinions of the respondents are viewed as strictly confidential, and only members of the research team will have access to the information. No data published in dissertations and journals will contain any information through which participants may be identified. Your anonymity is therefore ensured

WITHDRAWAL CLAUSE

Participants would be made to understand that they may withdraw from the interview at any time. They therefore participate voluntarily until such time as they request otherwise

POTENTIAL BENEFITS OF THE STUDY

This study will assess the procurement practices of all the metropolitan municipalities in South Africa as the metropolitan municipalities are major consumers within the country. This is because 60% of the country's population live in urban areas where all the metropolitan municipalities are located (Cohen, 2006). The assessment of the procurement practices of the metropolitan municipalities will establish how green their procurement practices are as by using their purchasing power to opt for goods and services that also respect the environment; they can make an important contribution towards sustainable development (Preuss, 2009).

Assessing green procurement strategies in metropolitan municipalities and developing an implementation plan for effective procurement will therefore contribute significantly to integrating environmental considerations into all stages of the purchasing process in metropolitan municipalities within South Africa. This will have a ripple effect in the reduction of environmental risks and in turn risks to climate change.

INFORMATION (contact information of my supervisor)

Should you have any questions concerning the study, please contact the supervisor, Prof Godwell Nhamo,Programme Manager for Exxaro Chair in Business and Climate Change at the Institue for Corporate Citizenship, Club One Campus, Unisa, Tel: 012 429-3767; Cell: 073-163-1114 and email: nhamog@unisa.ac.za.

CONSENT

I, the undersigned, ……..... (full name)

The.....(Designation) of.....(Metro)

have read the above information relating to the study and declare that I understand it and that I agree and give my consent for two procurement officers, an environment specialist, a town planning specialist and an engineer to be identified in the metro and they will be interviewed to obtain their opinion on green purchasing for the metro. This will bring the total number of people to be interviewed to five for the metro.

I indemnify the university and any employee or student of the university against any liability that may be incured during the course of the research.

I further undertake to make no claim against the university in respect of damages to my person or reputation that may be incurred as a result of the research or through the fault of other participants, unless resulting from negligence on the part of the university, its employees or students.

Signature: .....

Designation.....

Signed at ……..... on.....……

Appendix E: Questionnaire for Metropolitan Municipalities

UNISA university of south africa

Questionnaire

TITLE OF RESEARCH PROJECT

An assessment of green procurement practices in selected South African metropolitan municipalities

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DETAILS OF RESPONDENT

1. Name:.....
2. Sex:.(Male/Female).....
3. Name of metro.....
4. In which year was the municipality declared a metro?.....
5. Section/Directorate.....

GREEN PROCUREMENT

6. How many inhabitants does this municipality/section cater for? .....
7. How many people does this municipality Employ?.....
8. How many poeple are employed in your department?.....

9. Does the metro have an environmental policy/statement? Please tick (√).

Yes	
No	
Dont know	

10. Does the metro have a policy/statement on green procurement? Please tick (√).

Yes	
No	
Dont know	

11. Can you give an estimation in Rands how much goods and services the metro purchases every year?.....

12. When purchasing goods and services, does the metro include environmental criteria into its calls for tender? Please tick (√).

Yes	
No	
Dont know	

13. If yes, please estimate the percentage of annual calls for tender which contain environmental criteria. Please tick (√).

<25%	
25-49%	
50-74%	
75%+	

14. Identify the key criteria used in the metropolitan procurement decisions. Please tick (√).

Preferential Procurement Policy	
Black Economic Empowerment	
Price	

Value for Money	
Services and products that are environmentally friendly	
Other (please specify)	

15. How often are performance based specifications used in the procurement process in the metro?

Always	
Often	
Sometimes	
Never	
Dont know	

Environmental criteria in specific services and products[5].

Please estimate how often purchases by the metro in the 2011 – 2012 financial year contained environmental criteria in the following services and products:

16. Did the metro purchase services or products concerning **live plants, animal material, accessories and supplies**

Yes	
No	
Dont know	

16 (a). Environmental criteria were applied in purchasing **live plants, animal material, accessories and supplies?** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

16 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

.....

.....

[5]Key for product groups is towards the end of the questionnaire.

.....

.....

.....

Did the metro purchase services or products concerning **mineral,textile, inedible plant and animal materials?**

Yes	
No	
Dont know	

17 (a). Environmental criteria were applied in purchasing **mineral,textile, inedible plant and animal materials?** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

17 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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17. Did the metro purchase services or products concerning **chemicals including biochemicals and gas materials?**

Yes	
No	
Dont know	

18 (a). Environmental criteria were applied in purchasing **chemicals including biochemicals and gas materials?**Please tick (√).

Strongly	Disagree	Not sure	Agree	Strongly agree

disagree				

18 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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.....

18. Did the metro purchase services or products concerning **resin, rosin, rubber, foam, film and elastometric materials?**

Yes	
No	
Dont know	

19 (a). Environmental criteria were applied in purchasing **resin, rosin, rubber, foam, film and elastometric materials** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

19 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

.....

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.....

.....

19. Did the metro purchase services or products concerning **paper materials and products?**

Yes	
No	
Dont know	

20 (a). Environmental criteria were applied in purchasing **paper materials and products.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

20 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

.....

.....

.....

.....

.....

20. Did the metro purchase services or products concerning **fuels, fuels additives,lubricants, petroleum products and corrosive materials?**

Yes	
No	
Dont know	

21 (a). Environmental criteria were applied in purchasing **fuels, fuels additives,lubricants, petroleum products and corrosive materials.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

21 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

.....

.....

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.....

21. Did the metro purchase services or products concerning **mining, oil, gas services, well drilling machinery and accessories?**

Yes	
No	
Dont know	

22 (a). Environmental criteria were applied in purchasing **mining, oil, gas services, well drilling machinery and accessories.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

22 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

.....

.....

.....

.....

.....

.....

22. Did the metro purchase services or products concerning **farming, fishing, forestry, wildlife machinery and accessories and wildlife contracting services?**

Yes	
No	
Dont know	

23 (a). Environmental criteria were applied in purchasing **farming, fishing, forestry, wildlife machinery and accessories and wildlife contracting services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

23 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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23. Did the metro purchase services or products concerning **machinery and accessories for building and construction?**

Yes	
No	
Dont know	

24 (a). Environmental criteria were applied in purchasing **machinery and accessories for building and construction.** Please tick (√).

Strongly	Disagree	Not sure	Agree	Strongly agree

disagree				

24 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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24. Did the metro purchase services or products concerning **industrial production and manufacturing, processing machinery and accessories?**

Yes	
No	
Dont know	

25 (a). Environmental criteria were applied in purchasing **industrial production and manufacturing, processing machinery and accessories.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

25 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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25. Did the metro purchase services or products concerning **material handling, conditioning, storage machinery, their accesories and supplies?**

Yes	

No	
Dont know	

26 (a). Environmental criteria were applied in purchasing **material handling, conditioning, storage machinery, their accesories and supplies.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

26 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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26. Did the metro purchase services or products concerning **commercial, military, private vehicles, their accessories and components?**

Yes	
No	
Dont know	

27 (a). Environmental criteria were applied in purchasing **commercial, military, private vehicles, their accessories and components.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

27 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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27. Did the metro purchase services or products concerning **power generation, distribution machinery and accessories?**

Yes	
No	
Dont know	

28 (a). Environmental criteria were applied in purchasing **power generation, distribution machinery and accessories.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

28 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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28. Did the metro purchase services or products concerning **tools and general machinery?**

Yes	
No	
Dont know	

29 (a). Environmental criteria were applied in purchasing **tools and general machinery.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

29 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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29. Did the metro purchase services or products concerning **structures, building, construction, manufacturing components and supplies?**

Yes	
No	
Dont know	

30 (a). Environmental criteria were applied in purchasing **structures, building, construction, manufacturing components and supplies.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

30 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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30. Did the metro purchase services or products concerning **electronic components and supplies, electrical systems, lighting, accessories and supplies?**

Yes	
No	
Dont	

know	

31 (a). Environmental criteria were applied in purchasing concerning **electronic components and supplies, electrical systems, lighting, accessories and supplies.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

31(b). If your answer is 'Agree' or 'Strongly agree', please give further details

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31. Did the metro purchase services or products concerning **laboratory, measuring, observing and testing equippment?**

Yes	
No	
Dont know	

32 (a). Environmental criteria were applied in purchasing **laboratory, measuring, observing and testing equippment.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

32 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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32. Did the metro purchase services or products concerning **medical equipment, accessories and supplies?**

Yes	
No	
Dont know	

33 (a). Environmental criteria were applied in purchasing **medical equipment, accessories and supplies.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

33 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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33. Did the metro purchase services or products concerning **information technology broadcasting and telecommunications?**

Yes	
No	
Dont know	

34 (a). Environmental criteria were applied in purchasing **information technology broadcasting and telecommunications.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

34 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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34. Did the metro purchase services or products concerning **office equipment, accessories and supplies?**

Yes	
No	
Dont know	

35 (a). Environmental criteria were applied in purchasing **office equipment, accessories and supplies.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

35 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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35. Did the metro purchase services or products concerning **printing, photographic, audio, visual equipment and supplies?**

Yes	
No	
Dont know	

36 (a). Environmental criteria were applied in purchasing **printing, photographic, audio, visual equipment and supplies.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

36 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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36. Did the metro purchase services or products concerning **defense, law enforcement, security, safety equipment and supplies?**

Yes	
No	
Dont know	

37 (a). Environmental criteria were applied in purchasing **defense, law enforcement, security, safety equipment and supplies.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

37 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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37. Did the metro purchase services or products concerning **cleaning equipment and supplies?**

Yes	
No	

Dont know	

38 (a). Environmental criteria were applied in purchasing **cleaning equipment and supplies.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

38 (b). If your answer is ‘Agree’ ar ‘Strongly agree’, please give further details

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38. Did the metro purchase services or products concerning **service industry machinery, equipment and supplies?**

Yes	
No	
Dont know	

39 (a). Environmental criteria were applied in purchasing **service industry machinery, equipment and supplies.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

39 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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39. Did the metro purchase services or products concerning **sports, recreational equipment, supplies and accessories?**

Yes	
No	
Dont know	

40 (a). Environmental criteria were applied in purchasing **sports, recreational equipment, supplies and accessories.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

40 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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40. Did the metro purchase services or products concerning **food beverage and tobacco products**

Yes	
No	
Dont know	

41 (a). Environmental criteria were applied in purchasing **food beverage and tobacco products.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

41 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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41. Did the metro purchase services or products concerning **drugs and pharmaceutical products?**

Yes	
No	
Dont know	

42 (a). Environmental criteria were applied in purchasing **drugs and pharmaceutical products.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

42 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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42. Did the metro purchase services or products concerning **domestic appliances, supplies and consumer electronic products?**

Yes	
No	
Dont know	

43 (a). Environmental criteria were applied in purchasing **domestic appliances, supplies and consumer electronic products.** Please tick (√).

Strongly	Disagree	Not sure	Agree	Strongly agree

disagree				

43 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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43. Did the metro purchase services or products concerning **apparel, luggage, personal care products, timepieces, jewellery and gemstone products?**

Yes	
No	
Dont know	

44 (a). Environmental criteria were applied in purchasing **apparel, luggage, personal care products, timepieces, jewellery and gemstone products.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

44 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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44. Did the metro purchase services or products concerning **published products?**

Yes	
No	
Dont	

know	

45 (a). Environmental criteria were applied in purchasing **published products.**
Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

45 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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45. Did the metro purchase services or products concerning **furniture and furnishings?**

Yes	
No	
Dont know	

46 (a). Environmental criteria were applied in purchasing **furniture and furnishings.**
Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

46 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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46. Did the metro purchase services or products concerning **musical instruments, games, toys, art and crafts, educational?**

Yes	
No	
Dont know	

47 (a). Environmental criteria were applied in purchasing **musical instruments, games, toys, art and crafts, educational.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

47 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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47. Did the metro purchase services or products concerning **maintenance services for the building industry?**

Yes	
No	
Dont know	

48 (a). Environmental criteria were applied in purchasing **maintenance services for the building industry.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

48 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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48. Did the metro purchase services or products concerning **industrial cleaning services**

Yes	
No	
Dont know	

49 (a). Environmental criteria were applied in purchasing **industrial cleaning services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

49 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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49. Did the metro purchase services or products concerning **transportation, storage and mail services?**

Yes	
No	
Dont know	

50 (a). Environmental criteria were applied in purchasing **transportation, storage and mail services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

50 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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50. Did the metro purchase services or products concerning **management, business professionals and administrative services?**

Yes	
No	
Dont know	

51 (a). Environmental criteria were applied in purchasing **management, business professionals and administrative services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

51 (b). If your answer is 'Agree' ar 'Strongly agree', please give further deatils

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51. Did the metro purchase services or products concerning **engineering, research and technology based services?**

Yes	
No	
Dont know	

52 (a). Environmental criteria were applied in purchasing **.engineering, research and technology based services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

52 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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52. Did the metro purchase services or products concerning **editorial, design, graphic and fine art services?**

Yes	
No	
Dont know	

53 (a). Environmental criteria were applied in purchasing **editorial, design, graphic and fine art services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

53 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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53. Did the metro purchase services or products concerning **public utilities and public sector related services?**

Yes	
No	
Dont know	

54 (a). Environmental criteria were applied in purchasing **public utilities and public sector related services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

54 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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54. Did the metro purchase services or products concerning **financial and insurance services?**

Yes	
No	
Dont know	

55 (a). Environmental criteria were applied in purchasing **financial and insurance services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

55 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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55. Did the metro purchase services or products concerning **healthcare services?**

Yes	
No	
Dont know	

56 (a). Environmental criteria were applied in purchasing **healthcare services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

56 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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Did the metro purchase services or products concerning **education and training services?**

Yes	
No	
Dont know	

57 (a). Environmental criteria were applied in purchasing **education and training services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

57 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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Did the metro purchase services or products concerning **travel, food, lodging and entertainment services?**

Yes	
No	
Dont know	

58 (a). Environmental criteria were applied in purchasing **travel, food, lodging and entertainment services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

58 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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56. Did the metro purchase services or products concerning **personal domestic services?**

Yes	
No	

Dont know	

59 (a). Environmental criteria were applied in purchasing **personal domestic services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

59 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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57. Did the metro purchase services or products concerning **national defense, public order, security and safety services?**

Yes	
No	
Dont know	

60 (a). Environmental criteria were applied in purchasing **national defense, public order, security and safety services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

60 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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58. Did the metro purchase services or products concerning **politics and civic affairs services?**

Yes	
No	
Dont know	

61 (a). Environmental criteria were applied in purchasing **politics and civic affairs services.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

61 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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59. Did the metro purchase services or products concerning **organizations and clubs?**

Yes	
No	
Dont know	

62 (a). Environmental criteria were applied in purchasing **organizations and clubs.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

62 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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60. Did the metro purchase services or products concerning **sale of redundant or obsolete items and scrap?**

Yes	
No	
Dont know	

63 (a). Environmental criteria were applied in purchasing **sale of redundant or obsolete items and scrap.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

63 (b). If your answer is ‘Agree’ or ‘Strongly agree’, please give further details

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61. Did the metro purchase services or products concerning **consultants?**

Yes	
No	
Dont know	

64 (a). Environmental criteria were applied in purchasing **consultants.** Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

64 (b). If your answer is 'Agree' or 'Strongly agree', please give further details

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62. In your opinion, which fivepoints (1-5) rank as top that are obstacle(s) in understanding and implementing green procurement in the metro? Please note that the other points might be stretching to the next page.

Lack of national support	
Inefficient management systems	
Party politics	
Lack of knowledge about the environment and how to develop green procurement knowledge criteria	
Lack of Money(its costly)	
Lack of Environmental and green procurement Knowledge	
Lack of green procurement policy/guidelines and/or regulations	
Concerns about legality of green procurement	
Lack of interest from procurement departments	
Lack of information	
Proudly South African Drive (Local procurement)	
Lack of knowledge from suppliers	
Lack of interest from suppliers	
Lack of capacity from local suppliers	
Lack of capacity from international suppliers	
Perception that environmentally friendler products would be more expensive	

Perception that environmentally friendler products would not be readily available	
Other (please specify)	

63. In your opinion,(please rank in order of most important: 1-5) which of the following points may assist in developing green procurement activities in the metro? Please tick (√).

Advice from external consultants	
Training workshops for municipal procurement officers	
Access to written information (manual, procurement guidelines)	
Awareness raising and training to municiapl tender commitee	
Other (Specify)	

64. In which key area at the Metro's activities do you think green procurement could have the most impact?

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65. Procurement personnel in the metro receive green procurement training. Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

66. If you strongly agree, how often per year?.....

67. Has environmental education and training for all employees been conducted? Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

68. The Metro has environmentally friendly E-Waste disposal facility? Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

69. I have adequate understanding of the following concepts. Please tick (√).

Concept	**Strongly disagree**	**Disagree**	**Not sure**	**Agree**	**Strongly Agree**
Renewable Energy					
Energy Efficiency					
Climate Change					
Green Procurement					
Mitigation					
Adaptation					
Clean Technology					
Carbon Footprint					
Sustainable Development					
Green Economy					
Solar Water Heating					

70. My metro has fully embraced the going green concept. Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

71. My metro has put into practice the going green concept. Please tick (√).

Strongly disagree	Disagree	Not sure	Agree	Strongly agree

Product Groups

Short name	Product group
Catering,Food Products and beverages	Agricultural, horticultural, hunting and related produc Food products and beverages Hotel and restaurant services
Textile, Clothing and footwaer	Textiles and textile articles Clothing and accessories Leather, leather products and footwear
Wood or wood products	Forestry and logging products, Wood, wood products, cork products, basketware and wickerwork
Paper, printed matter, printing, publishing and relatedservices	Various types of pulp, paper and paper products Various types of printed matter and articles for printing Printing, publishing and related service
Transport equipment	Motor vehicles, trailers and vehicle parts andTransport equipment
Fuels and Petroleum products	Fuels and Petroleum products
Office machinery	Office and computing machinery, equipment and supplies
Electrical machinery and co Medical devices mmunication apparatus	Machinery, equipment, appliances, apparatus and associated products Electrical machinery, apparatus, equipment and consumables Radio, television, communication, telecommunication and related equipment and apparatus
Medical devices	Medical and laboratory devices, optical and precision devices, watches and clocks, pharmaceuticals and related medical consumables
Furniture and other manufactured goods	Manufactured goods, furniture, handicrafts, special-purpose products and associated consumables
Energy	Electricity, gas, nuclear energy and fuels, steam, hot water

	and other sources of energy
Construction work	Construction work, including building installation work, repair, maintenance, installation services, architectural engineering, construction and related technical consultancy services?
Cleaning services	Cleaning services
Gardening and horticultural services	Gardening and horticultural services
Real estate services	Real estate services
Education, health and recreational services	Education services Health and social work services Recreational, cultural and sporting services
Sewage- and refuse-disposal services, sanitation and environmental services	Sewage- and refuse-disposal services, sanitation and environmental services Sewage and refuse collection and disposal services Cleaning and sanitation services in urban or rural areas, and related services Environmental and ecological services

Appendix F: Interview guide

Interview guide

1. Which Department in the metro is or should be the custodian of green procurement?
2. How best can the metro's green practices be promoted in the metro?
3. Has the Metro identified any national/provincial environmental laws that are relevant to it? If yes what is being done to adopt the law?
4. Are you aware of any existing national/Provincial law, regulation or measures in place to promote green procurement?
5. What do you know about sustainable development?
6. In your opinion, how sustainable is the Metro?
7. What has the metro done to promote environmental issues among staff members? If nothing please give some suggestions
8. What has the metro done to promote sustainable environment in its communities and schools? If nothing please give some suggestions.
9. What can you tell me about King III reporting?
10. What aspect of King III report do you incorporate in the municipal annual report?
11. What do you suggest that South African metropolitan do to achieve sustainable development?