Assessing how best practice in Sustainable Procurement is reflected in the South African mining industry

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Abstract

This research is motivated by the unsustainable nature of activities in the mining industry, which exploits the non-renewable natural resources and generate negative impacts besides improving the national and local economy. Sustainable procurement can improve environmental, social and economic performance in the mining industry especially in developing countries. The research reports on an assessment of how sustainable procurement best practice is reflected in the South African mining industry. The aim of the research is to assess how sustainable procurement best practice is reflected in the procurement practices at the two South African mines understudy.

The objectives of the research include identifying sustainable procurement best practice factors contributing towards procurement practices in the South African mining industry, and to determine the extent of integration of sustainable procurement best practice factors into the procurement practices of the two South African mines understudy.

The research study used a mixed method approach to collect data that included a literature review, which aided in construction of questionnaire distributed to procurement managers, and an assessment carried out to determine the extent of sustainable procurement best practice factors integrated into the procurement practices of two South African mines understudy.

The findings of the research determined that the two South African mines understudy have fully embraced sustainable procurement best practice factors in their procurement practices even though environmental issues were still lagging compared to the social issues, which the mines are putting more efforts to implement through sourcing from local and small businesses and empowering local communities. The mines still need to improve other departmental relationships with the environmental management so that environmental inputs can be incorporated into the sourcing of goods and services. This can assist the mines at improving their environmental issues such as production of waste and cradle to grave principles of waste management. It is very important for the mines to re-think from a lifecycle perspective in the sourcing of goods and services that can reduce costs for the mines as well as protect the mines' from liabilities of compliance obligations. Therefore improving departmental relations and top management interventions in the procuring of goods and services is very critical for the mines in order for all parties/departments to participate. This will promote best practice in sustainable procurement resulting into sustainable development, which is the goal of the mines' to deliver a sustainable business.

Keywords: Procurement, Sustainable Development, Best practice, Sustainable procurement, the mining industry.

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God bless you all.

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List of abbreviations

Acronym	Description
BEE	Black Economic Empowerment
CIPS	Chartered Institute of Purchasing & Supply
DEFRA	Department for Environment Food & Rural Affairs
DTI SA	Department of Trade and Industry South Africa
DME	Department of Minerals & Energy
EC	European Commission
ECCJ	European Coalition for Corporate Justice
EFP	Earth Friendly Products
EU	European Union
GATT	General Agreement on Trade and Tariffs
GPA	Government Procurement Agreement
GPP	General Public Procurement
ICMM	International Council on Mining and Metals
KIN	Kellogg Innovation Network
OECD	Organisation For Economic Co-Operation And Development
PCA	Principal Component Analysis
PPPFA	Preferential Procurement Policy Framework Act
PSR	Procuring Socially Responsibly
RSA	Republic of South Africa
SD	Standard Deviation
SEED	Sustainable Energy & Environmental Development
SME	Small-Medium Enterprise
SPSS	Statistical Package for Social Science
UN	United Nations
UNCITRAL	United Nations Commission on International Trade
UNEP	United Nations Environmental Program
UNOPS	United Nations Operations
WSSD	World Summit on Sustainable Development
WTO	World Trade Organisation

CHAPTER. 1. Introduction

Sustainable procurement involves the acquisition of goods, services, and disposal practices that can maximize economy and stimulate economic development resulting in minimal or zero negative impacts to the environment and society (Ochieng et al, 2016). Sustainable procurement activities create value for money, spur innovation, open up new market possibilities and identify new products for the organisation. Procurement is very important as it puts the business at a more competitive edge with other organisations to gain trust of the public and its stakeholders in order to improve public image and be accepted by society (Furlotti M, 2014). With the current difficult economic challenges, most companies are striving very hard to improve their public image by complying with regulations and participating in social activities in the communities they operate. This is not good for the mining industry, which apart from being haunted by their own past catastrophic events are still challenged by huge environmental and social impacts due to the nature of activities it undertakes. The mining industry exploits non-renewable natural resources and supplies them to manufacturing and energy sector with considerable share to local and national economy besides the negative impacts it has on the environment and society (Yaylaci et al, 2017). The ever increasing competition of land use for other uses such as agriculture, tourism etc., use of energy and water resources are also putting more pressure on the mining activities legitimacy in many mining regions (Nurmi A, 2017). According to McCrudden (2004), sustainable procurement must be in line with the principles of sustainability ensuring a just culture that is strong and healthy, is living within their environmental limits, and promotion of good governance. Sustainable procurement is therefore one of the strategic functions done in a systematic way by procurement managers in the planning, management, and development of supply chain aligning with the strategic objectives of the organisation (Ball RL, 2005). Hence, the advocacy of sustainable procurement by leaders of World Summit on Sustainable Development (WSSD, 2002) is committed to promote sustainable procurement policies that can be used to facilitate development and integrate social and environmental aspects in the procurement of goods and services. Best practice, which is a set of leading edge principles and sustainable factors (Earth Friendly Products, 2016) can be adopted in the procurement practices of an organisation contributing towards sustainable procurement. Sustainable procurement best practice factors can turn over the business performance of the organisation by protecting and improving the mining industry's image through acquisition of environmentally friendly products and services. This will minimize pollution and generation of waste, and emphasize in value added activities, which include sourcing from the local communities and community upliftment through job creation and employee training, small business training skills and empowerment, and community health services (Illikainen M, 2017).

Sustainable procurement is still developing in most private and public organisations, which according to Brammer (2007) must be guided by principles of transparency and accountability in order to achieve value money. This research therefore seeks to assess how sustainable procurement best practice is reflected in the South African mining industry by analysing the extent of integration of sustainable procurement best practice factors in the South African mining industry.

1.1 Research aim and objectives

The aim of this research study is to assess how best practice in sustainable procurement is reflected in the South African mining industry.

In order to meet the aim, the following objectives must be achieved:
Objective 1: To identify the sustainable procurement best practice factors in procurement practices in the South Africa mining Industry.
Objective 2: To determine the extent of integration of sustainable procurement best practice factors in procurement practices at two of the South African mines understudy.

1.2 Significance of the study

Sustainable procurement has caught the eye of the academic community for the past decade and is still receiving a growing attention, (Walker H, & Wendy P, 2006). A body of knowledge and theory is still critical in the field to establish the buyer-seller relationship and its stakeholders including the environment and future projections. This study is expected to explore the extent of best practice in sustainable procurement and therefore adds to the body of knowledge especially to the mining industry in the South African context.

This will serve the purpose of this study with the aim to gain understanding of the extent of sustainable procurement best practice factors that have been incorporated into procurement practices in order to achieve sustainable development in the South African mining industry.

1.3 Structure of the mini-dissertation

This research is organized into five sections: 1) Introduction; 2) Methodology; 3) Literature review; 4) Results and Data analysis; and 5) Discussion and Conclusion. After the introduction, the methodology of the research is introduced where the key concept of sustainable procurement is

outlined. Chapter 3 contains the literature review, which forms part of data collection. The main focus is put on the sustainable procurement best practice factors in the procurement practices of the South African mining industry, and also enablers and barriers of sustainable procurement have been discussed. Chapter 4 is about results and data analysis presenting the findings on the extent of integration of sustainable procurement best practice factors in the South African mining industry. Finally, Chapter 5 presents conclusions on the assessment of the extent of integration of sustainable procurement best practice factors at two South African mines understudy.

CHAPTER 2: Research design and methodology

The intent of this research study is to assess how sustainable procurement best practice is reflected in the South African mining industry by using a mixed method research approach. Johnson and Onwuegbuzi, 2004 indicates that mixed methods research includes the use of both qualitative and quantitative data to yield a complete analysis in order to achieve the intended objectives understudy. Caruth, 2013 points out that a method validation can be enhanced through triangulation providing a more robust conclusion about the findings. In addition, triangulation according to Morrison et al, 2000 uses more than two methods of collecting data for a particular phenomenon in order to overcome biases or weaknesses and problems a single method can present. Mixed method approach therefore offers a robust and valid method for assessing the extent of integration of sustainable procurement best practice factors in the South African mining industry.

Therefore this chapter follows a structured process where a summary of the two methods is given, a short introduction with a brief description of the South African mine understudy and the method used to determine sustainable procurement best practice factors to achieve objectives 1 and 2 is presented in this research design. In addition, the limitations and ethical considerations in order to determine how they influence the results is explained.

2.1 Qualitative method of analysis

Denzin and Lincoln, 2005 define a qualitative method of data analysis as a natural approach of gathering information of a specific context in a real world setting in order to develop theory and understanding of a phenomenon. It is expected that a researcher must not be manipulative to obtain information but real world settings will let the information unfold naturally (Patton, 2003). Thus a researcher is accorded better understanding of self and the insight of a phenomena is promoted through qualitative research method providing the researcher with target audience perspective also supported by Bhattacherjee, A. (2012).

According to Creswell, 2003 qualitative research employs various methods of data gathering such as peer-reviewed journal articles, in-depth interviews, observation data, document analysis, which included procurement policy, sustainability policy and environmental policy of the two mines understudy, text analysis and so on. For this research design, peer-reviewed journal articles, theses and document analysis were used to answer objective 1 of the research, which is to identify sustainable procurement best practice factors in the South African mining industry.

Therefore, the outcomes of this qualitative review to identify sustainable procurement best practice factors in procurement practices where the previous research and existing body of knowledge is explored is presented in chapter 3.

2.2 Quantitative method of analysis

Quantitative method of analysis assumes objectivity of the reality from the relationship of variables identified linking to the phenomena understudy based on valid methods (Johnson & Onwuegbuzie, 2004:14). The methods of analysis test theories and facts, show relationships of variables in order to predict the outcomes so that objectivity and reality are ensured (Creswell, 2003:8-12). Quantitative method of approach has two main terms used which are validity and reliability of the instrument or method being used. Reliability refers to the confidence in a measuring instrument that it will give the same result if the measurement is repeated on the same object while validity is when the instrument is measuring the actual measurements it is supposed to measure (Delice A, 2010). Brink, (2000) explains that one way of gathering quantitative data is by survey studies through questionnaires, which contains a set of standardized questions relating to the research topic understudy sent to participants. Saunders, (2007) explained that a questionnaire is used in the study to explore the relationships between variables in a particular cause and effect scenarios. In the study, a method of assessing sustainable procurement practices need to be determined and a questionnaire designed to be sent to Procurement managers and Specialists in order to collect data. In order to get valid and reliable data, a target population representing the population need to be identified and the sampling technique to determine the target group of the population therefore becomes very critical. Therefore, the following section discusses sampling and what sampling technique was used in this study.

2.2.1 Sampling and sampling method

Sampling is a statistical analysis process where a predetermined number of observations are taken from a large population (Rai & Thapi, 2004). A population also known as “universe” is the whole group from which a sample is drawn. The main objective of sampling is to get a representative sample which if analyzed can produce the accurate generalization of the larger group or population. Another issue in relation to sampling that needs to be addressed is the sample size. Sample size is a crucial element in both quantitative and qualitative research process in order to get a valid and reliable relevant analysis (Patton, 2015). Getting too small of a sample can be risky as the people cannot be available or unreachable resulting in the study not being completed while a large sample

can also limit the study due to budget and time constraints (Fox, Hunn & Mathers, 2009). Before the discussion of sample representativeness and size can go any further, Windridge and Ockleford, 2007 argue that qualitative research is about "understanding and giving meaning" to a social process rather than quantifying, and that it would be inappropriate to use quantitative sampling techniques. The researcher therefore has to make sure that the sampling process is conducted in a meaningful way to get a minimum required sample, which can result in gathering enough data to give real meaning to the topic understudy. According to Ishak & Barak, 2013 a researcher plays an important role when conducting any kind of qualitative research. They have to ensure that every participant selected will provide valuable information to the research questions asked. Maxwell, 2013 explains that purposive sampling technique is a suitable method where the researcher plays a greater role and that the technique provides rich valuable information about the topic understudy. Purposive sampling is a sample selection approach, which is based on knowledge of the population, its elements that contain certain characteristics, and the phenomena understudy (Babbie, 2013: 129). Therefore, to answer objective 2, which is to determine the extent of integration of sustainable procurement best practice factors in the procurement practices of the two South African mines understudy, purposive sampling technique is used to obtain a required minimum sample in the collection of data as described in the section that follows.

2.2.2 Data collection

In this research study, a quantitative approach is used to gather primary data by sending a self-administered questionnaire and the researcher's observation to determine the elements of research study contributing towards achieving the research objective 2 (Makkonen, 2014). Using purposive sampling approach, a questionnaire was sent to a selected sample of 25 procurement managers (Population size of 28) involved with policy execution and implementation of sustainable procurement policy. Hanks et al (2008) and Brander & Olsthoom (2003) points out that expertise and knowledge in understanding sustainable procurement practices contribute a very specialized body of knowledge to the research study. Therefore, a selection of managers will contribute rich information to the study undertaken as these personnel are at the helm of the policy execution and implementation.

The questionnaire is divided into two stages. The first stage of the survey provides an overview of Company's procurement policy practices if the policy supports the implementation of best practice. Respondents were asked to rank from 1 – 8 whether the policy reflects best practice in procurement of goods and services. The Group procurement policy representing two mines is used in the questionnaire, and responders had to rank what is practiced at their respective business units. The

second stage of the survey asked the perceptions of the respondents on the extent of their agreement on a scale of 1- 5 on the organisation's involvement in the implementation of sustainable procurement best practice using an adapted method of Procuring Socially and Responsibly (PSR) containing four measurement dimensions hence known as PSR dimensions. A questionnaire survey is designed according to the PSR dimensions so that all the sustainable procurement best practice factors can be measured. The following subsection therefore describes the PSR method, its validity and reputability at collecting statistical reliable data.

2.2.3 Procuring Socially Responsible (PSR) method

In order to articulate or understand a method or technique of measurement, concepts need to be developed. Developing a concept, which is defined as a technique that treats concepts as groups or classes of objects, events, properties or relationships (Funer, 2004), to understand the interrelationships is essential. The concept is therefore needed to identify conditions that need to be specified and under which entity or phenomenon need to be classified. In this study, a PSR concept is used to assist in understanding how the dimensions adopted would work out to achieve the aims and objectives of the sustainable procurement best practice in the South African mining industry. Carter and Jennings (2004) developed Procuring Socially Responsible (PSR) method and it has five dimensions of sustainable development comprising of environment, diversity, human rights, philanthropy and safety. The advantage of using PSR dimension is that the method has been tested and the scale PSR uses has been proven, is reliable and valid (Brammer & Walker, 2011). PSR has interrelated dimensions that encourage responsible purchasing through procurement policies by firm leaders (Carter and Rodgers, 2008). What Carter and Jennings (2008) in their previous studies indicate is that managers who have implemented strategic policies in order to address the PSR dimensions achieved the goal of sustainable procurement. Therefore, use of the PSR dimensions can lead to the implementation of sustainable procurement of the organization through the organisations policy (Carter and Jennings, 2004). Carter and Jennings (2004) recognized that sustainable procurement is a multi-faceted phenomenon that encompasses a wide range of issues. PSR scale needs to take into account all the factors that can lead to sustainability. It is very important that PSR scale should address a wide range of sustainability factors depending on the type of the organisation and area where it is situated. Since the PSR dimensions were developed in the European context (Carter & Jennings, 2004; Brammer & Walker, 2012), environmental factors were given special consideration compared to other factors of sustainability. For this study, therefore the PSR dimensions were adapted according to the South African context, whereas per Section 217 for Preferential Procurement, a dimension for black and disadvantaged

groups/communities need to be empowered by sourcing from small and medium-sized enterprises with a Black Economic Empowerment (local SME/BEE) status is added. Other PSR dimensions considered are Procurement policy, Social and environmental attributes, and ethical supply. The PSR conceptual framework was therefore adapted to assess sustainable procurement best practice in this study contained four dimensions as is in the figure 1 below:

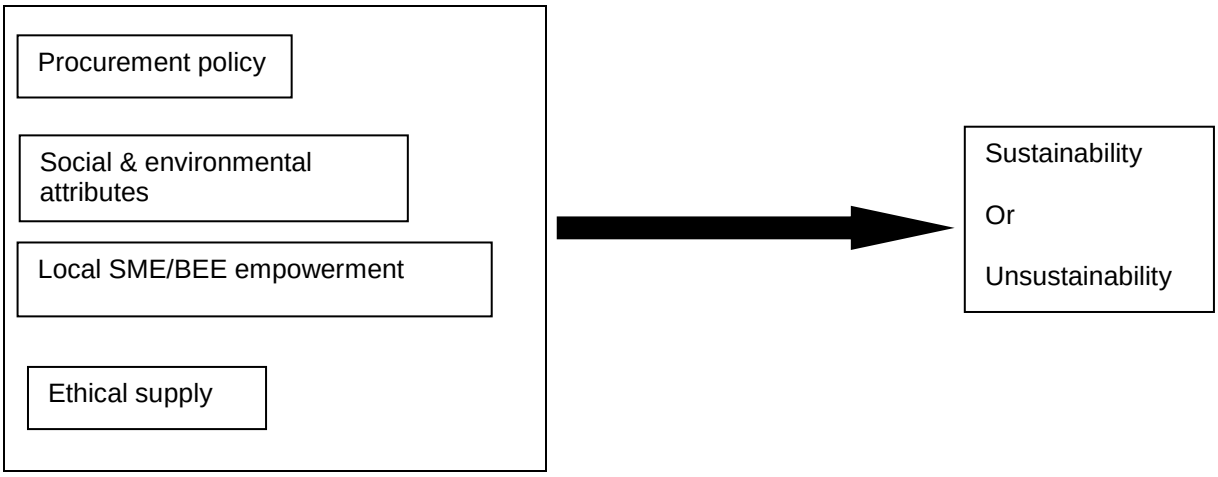

Figure 1: Conceptual framework for Sustainable procurement best practice in the South African mining industry

To best achieve objective 2 to determine the extent of integration of sustainable procurement best practice factors at two of the South African mines understudy, a questionnaire survey containing a modified PSR dimensions incorporated sustainable best practice factors as identified in the summarised literature review section. The questionnaire survey was administered to relevant target group at the two mines understudy. In this study, an international mining company having operations in South Africa is used in exploring sustainable procurement best practice in the South African mining industry. Therefore the section that follows known as “the survey” gives a brief description of the South African mine understudy including its procurement process and policies has been discussed.

2 .2.4 The Survey

This section presents a brief introduction of the mining organisation being investigated for sustainable procurement best practice in the South African mining industry. The mine’s Procurement policy and objectives, and the organisation’s sustainability practices are presented in this section. The method used to explore and identify the sustainable procurement practices are

presented in Chapter 3 and the data analysis method used on the data collected from “the survey” is described.

The survey investigates Anglo American, an international mining company which is considered to be one of the global leaders in the mining industry with various mining operations in South Africa, producing a range of mineral and metals, and this study will specifically look at the platinum and Iron ore mines. Sustainability is one of the strategic pillars of Anglo American, with the main focus on health and safety of its employees and the surrounding communities, resource optimization, local community empowerment in areas where its operations are situated. The company has adopted best practice through its policies in sustainable procurement in order to achieve its sustainable development goals it has put in place. The company participates in global initiatives and discussions that promote sustainability and that it is a member of various organisations that form part of the United Nations and International Council on Mining and Metals (ICMM) with the aim of continuous improvement on sustainable development. Due to the size of the operations in South Africa, the procurement department has been centralized for effective procurement of goods and services but also to cut costs of duplicating functions in various departments. The procurement process practiced is briefly represented as in the figure 2 below:

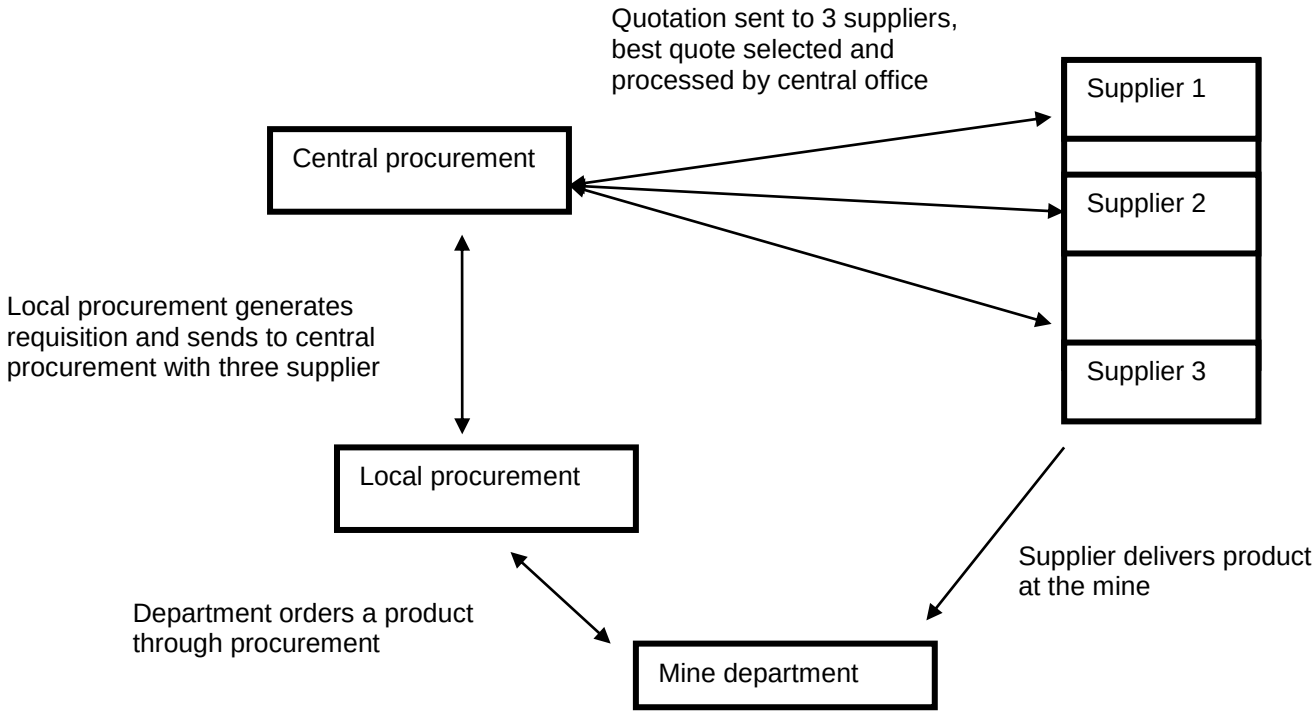

Figure 2: Process of procuring a product/service by the department at the mine

The process of procuring a product or service starts by placing a requisition made by the head of the department to the procurement department at the mine. The local procurement department then sends the requisition with at least three would be suppliers of the product to the central procurement, which approves the requisition. The three suppliers then respond by sending three quotations to the central procurement from which the order is created for the quotation that has been selected by central procurement department to provide the product or service. The supplier then delivers the product or services to the mine. Procurement managers use various criteria in choosing suppliers based on the Sustainable Procurement policies of the company, which is updated after every two years. In this study, the company's group Sustainable procurement policy, which has been implemented at both Platinum and Iron Ore mining operations, was analyzed. The key variables that were selected in the analysis included value for money, open and effective competition, ethical supply, accountability and reporting, fair dealing with suppliers, sustainable supply, transparency to the public and use of enabling technology. The questionnaire to be used is as described in section 2.2.2 to determine the extent of sustainable procurement best practice factors at the two South African mines understudy as a means of data collection. The section that follows therefore gives a brief description of data analysis to be used in order to achieve the objective 2, which is to determine the extent of sustainable procurement best practice factors in procurement practices at the two South Africa mines.

2.2.5 Data analysis

Descriptive survey research design was adopted in this study where quantitative data analysis involve analysis of validity and reliability of the method, and measuring data distribution and central tendency of the survey. Quantitative research involves collection of quantitative data using instruments that are reliable, structured and validated (Gaur & Gaur, 2009). Internal consistency is one of the factors that can be measured to prove the reliability and validity of measuring instrument or method being used. Internal consistency is indicated by Cronbach alpha coefficient to check if items that make that particular method do cling together and that it measures the same construct (Gaur & Gaur, 2009). Cronbach alpha is expressed as a number between 0 and 1 where acceptable values range from 0.6 – 0.95 and that high values indicates a stronger reliability of the method understudy (Tavakol M. & Dennick R. 2011). A Statistical Package for Social Science (SPSS) software was employed to aid in analysing descriptive data, which is the mean, median, mode and standard deviation of the data collected from the questionnaire distributed. In this study, the mean and standard deviation are used where the mean represents the integration while standard deviation the extent of integration. Standard deviation about the mean which indicates the extent of

integration is judged by a coefficient of variation (CV) obtained by dividing standard deviation by the mean (CV= SD/Mean). When CV is less than 1, it indicates that the standard deviation is less spread to the mean therefore stronger agreement while CV greater than 1 show more spread of standard deviation towards the mean indicating less agreement. SPSS, a software program is extensively used by social scientists to manage data and inferential statistics with large number of variables (Bronstad & Hemmesch, 2010). In this study, data was collected for a period of three (3) months from procurement managers based at central procurement department at head office and at the two mining houses respectively. Only managers were chosen in the study since they are responsible for implementing the sustainable procurement policy in order to ensure that the company's strategies with regards to procurement are achieved.

2.2.6 Concluding remarks on quantitative method of analysis

Quantitative method of analysis uses a self- administered questionnaire to collect data in order to determine the extent of integration of sustainable procurement best practice factors at two of the South African mines understudy. In order to get a required minimum sample for the survey, purposive sampling is used which is one of the best sampling techniques used in qualitative research. The data collected is statistically evaluated using SPSS software in order to achieve the objective 2 of the research design.

2.3 Limitations

The limitations to be encountered during the course of doing this research survey are such as access to information that has a direct impact to the accuracy and reliability of information as explained in the subsections that follow as below.

2.3.1 Access to information

The research survey employed a self- administered questionnaire, which was sent to a small number of participants (25 people) due to limited number of procurement personnel at the procurement department at the mines selected to participate in this survey. However, purposive sampling was used in order to get valuable information from each member who participated by selecting only procurement managers at the execution and implementation of sustainable procurement at the two mines of Anglo American. Purposive sampling was done to ensure the accuracy and reliability of the information is not compromised by selecting a sample that can

provide rich and valuable information with regards to sustainable procurement best practice at the mines understudy (Patton 2015, & Maxwell, 2013).

2.3.2 Ethical considerations

Permission to do the Sustainable procurement best practice research study was granted by the Group Head for Safety and Sustainability where a formal procedure was used to get approval from Heads of Procurement at the mines where the researcher had to sign the disclosure forms. All the participants were informed that permission has been granted for the sustainable procurement research survey to go ahead and the self-administered questionnaire sent to the participants also contained a paragraph disclosing how the data from the feedback of the survey will be used (please refer to annexure A).

This procedure of collecting data by a questionnaire survey was involuntarily admitted as it is one of the formal way of conducting research and that it has to be adhered to. Data collection was done in a transparent manner by sending the same questionnaire to all participants within a prescribed timeframe. Follow-up was done to remind those participants to complete the questionnaire within the set timeframe.

Due to concerns that the information will be in public domain, a conventional approach was adopted in the use of feedback obtained from the survey in order to protect the interests of the participants (no disclosure of names, direct comments and views). The accuracy, reliability or validity of data however is in no way affected by this, as the strategy applied in collection of data remains high.

2.4 Concluding remarks on research design and methodology

The aim of research to assess the sustainable procurement best practice in the South African mining industry is addressed by using a mixed method research, which takes into account both qualitative and quantitative research methods. Qualitative method of collecting data is by literature review that contributes a rich foundation of knowledge adding to a quality and validity of the assessment to answer objective 1 and through critical evaluation of quantitative data from a questionnaire survey distributed to the procurement managers' answers objective 2 of the research design.

CHAPTER 3 Literature Review

This literature review study takes a qualitative method approach to align with the research design in order to assess the extent of sustainable procurement best practice in the South African mining industry by providing a rich, extensive and relevant theoretical foundation of the research study to achieve objective 1 of the research design.

Qualitative method which is aimed at developing and understanding theories through published peer-reviewed journal articles, document analysis, participant observations to gain more background information of the research study explains the fundamental concepts of topic understudy and assist in identifying elements of research objective 1 (Wiid & Diggines, 2010). In this review study, the concept of procurement is explained, followed by how it is linked to sustainable procurement through sustainability. The study then further explores sustainable procurement factors and how sustainable procurement framework at an international and national level encourages the implementation of sustainable procurement, factors leading to sustainable procurement best practice, barriers and benefits, are also identified and explained. This chapter ends with what influences the adoption and implementation of best practice in the South African mining industry in order to determine sustainable procurement best practice and concluding remarks of the review conducted.

3.1 Understanding Procurement

Procurement is an old profession, dating back in the days of Roman Empire in 200BC (CIPS, 2003). The main objective was economic growth through trade. According to the Treaty of Rome, 1957 globalisation resulted into trade blocs formed under certain terms and conditions where procurement principles to regulate members states of those organisations were formed. Value for money was to be realized through use of the world resources and expanding the

production and exchange of goods at reduced or no tariffs while exercising non-discriminatory treatment in international trade (WTO, 1986). With these legal frameworks in place, regulating procurement activities based on transparent procedures warranted fair conditions of competition for suppliers in line with the rules. This resulted in governments spending enormous amounts of money in public procurement activities (EU, 2012). It is estimated that governments of the world contribute an average world Gross Domestic Product of 10 -15% which makes Public Procurement, a major risk area (OECD, 2012). Bribery is estimated at about 400 billion USD contributing 10-20% to total contracts (Transparency International, 2002). This can be identified as a gap in the policy where governments have limited or no intervention trying to fulfil the need for a greater degree of market

freedom. This way of doing business is a “Neo Classic economic approach” which assumes perfect competition markets with many suppliers and buyers, the price is determined by market conditions which does not consider whether a business takes social responsibilities into account or not (Rutherford, 2001). Economic rationalism prevails in this way, where business is conducted for profit to gain economic power with restrictions upon alternatives, which inevitably leads to natural resources depletion and environmental pollution (Hardin, 1998).

Another way of looking at the economy is by switching from “free markets” to “real markets”, where governments have put rules in place to regulate the market (Hvelplund and Lund 1998). This is an Institutional approach where non- market factors such as social issues, environmental related issues, value added and sunk costs are taken into consideration (Rutherford, 2001). This paves a way for social and environmental related laws and regulations to be integrated into Public Procurement policies. Therefore, business that deals not only with economic issues but also social and environmental issues into account offers a real opportunity to harness trade that generate revenue without jeopardizing its own viability in the long term. This concept is known as Green economy which creates a “shared value” by expanding its scope to internalize all externalities of the firm thereby re –inventing the wheel of capitalism into sustainable development (UNEP, 2011). The three pillars that hold sustainable development therefore are economic, social and environmental issues which can be implemented if all three pillars of sustainability are integrated into the Procurement Policy framework also known as Green/Sustainable Procurement. The next section therefore describes the linkage between procurement and sustainable procurement where the main objective is for companies to re-evaluate the way they do business in order to achieve sustainable development.

3.2 Clarifying Sustainable Procurement

Sustainable procurement pursues the objectives of sustainability through the purchasing and supply process. Sustainability is one of the defining issues of this century and the future decades (UNEP, 2008: 6-10). Gordon Brown (2006) supports this statement in his speech at the United Nations Ambassadors summit where he was quoted saying that, “Sustainability is a necessity and not an option. World economies can only flourish when global poverty is banished, and that the world’s well-being of the people is enhanced not only for this generation but also the generations to come.” He therefore urged that the world of today have an urgent duty of the earth’s stewardship to take care of the natural resources and the environment on which the worlds, economic activities and social fabric solely depend. Sustainable development firstly defined by Gro Brundtland (1982) is about giving equal weight to economic development as well as social upliftment while preserving the

environment to ensure that our actions do not compromise the ability of the future generations to have equal quality of life. Gro Brundtland and the World leaders at the summit anticipated a sustainable use of natural resources and biodiversity in a way and at a rate that does not lead to a degradation of resources and biodiversity in order to maintain the potential needs and aspirations of present and future generations (United Nations, 2008:8).

Sustainability is therefore one of the greatest challenges of this century the world is faced with. Kofi Annan, former UN secretary General (United Nations, 2006) quoted that. "The reality of just culture, respect for natural systems and the international, national and local laws and regulations that protect core social and environmental values are far-fetched from being met". He further commented that businesses could only flourish only when the communities and ecosystems in which these businesses operate are healthy. The success of any business depends on good relations with communities in which they operate, as these businesses are an integral part of those communities (Hohnen, 2007).

Sustainable development has now become an important market force, which shareholders, customers and stakeholders look onto with increasingly differing demands (Chelangat B, 2015). It is expected that leading international companies need to look for suppliers that provide goods and services to address the major challenges faced by the World today, which include resource depletion, climate change, poverty, globalization and shifts in demographics (UN, 2011). Therefore, the objectives of sustainability for procurement are that man lives within environmental limits, ensuring a strong, healthy and just society, achieving a just economy, and that good governance is promoted (Walker & Brammer, 2009).

3.3 Systems theory in Sustainable procurement

According to Chandra and Tunmanyan (2005), the Concept of Sustainable procurement can be predicted by systems theory where you have different components such as inputs, mechanisms, processes, functions, outputs and the environment, which form part of the system to bring the intended result. Figure 3 below explains the concept on how different components in a system interact in order to achieve the intended result, which in this case is sustainable procurement.

Source: Chandra & Tunmanyan (2005).

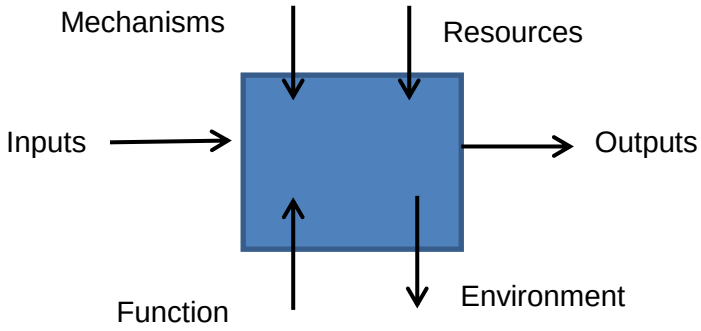

Figure 3: Components of a system, which interact together, to achieve sustainable procurement.

The terms in the system are explained below as follows:

INPUT - An input to the system is the raw material inform of physical item, service or information necessary to start the process of the system.

OUTPUT - The output is the desired outcome by the conversion of the input and other input in the process that can be inform of a physical item or service or information which is an accomplishment of a function that will add value to the company or business.

ENVIRONMENT-The environment provides the conditions where different elements of the system whether internal or external can interact within the system in order to produce the output.

RESOURCES- Resources in the systems theory include human resources, equipment such as computers, and the specific management roles such as CEOs, General Managers, which promote sustainable behaviour and management of suppliers in the process of producing the result.

MECHANISM- involves the main activities that take place to facilitate the process within the system in order to generate the output.

FUNCTION - is the aim, purpose or primary concern of the system in order to provide a desired output with a lower social and environmental burden and having maximum benefits.

Systems theory describes the relationship of how these different components feed into each other to achieve the intended outcomes, and it can present opportunities for improvement in sustainable procurement by allowing changes to be made on the components of the system (Walker & Salt, 2006). Making changes to the system components can lead to adaptive capacity of the system where the amount of disturbance is absorbed by the system in order to retain the same function and structure (Boons et al, 2013). Sustainable procurement can therefore be driven by interdependence of different system components (environmental, social and economic issues) which can act in a symbiotic relationship to improve the intended outcomes of sustainability while maintaining its

purpose which is the procurement of goods and services. Using a Triple Bottom line for example indicates that sustainable development depends on the inter relationship of economic, environmental and social issues (Elkington, 1998). Triple bottom line which is about economic development, is the generation of wealth; environmental protection where concerns of the activities impact on the natural and social systems need to be considered; and social inclusions which is about the distribution of income, health and opportunities (Mello, T. M., Eckhardt, D., & Leiras, A.,2017). Triple Bottom line concept as explained by Elkington, (1998) adapted by Griggs et al (2013) showing economic, social and environmental dimensions is presented in Figure 4 as below:

Source: Griggs et al, 2013

Figure 4: Triple Bottom line of Sustainable development

It is not evident how Systems thinking works in the Triple Bottom Line (TBL) concept as there is no any indication or comment how the three dimensions tie together showing lack of interdependence (Sridhar & Jones, 2012). The shortcomings observed in the Triple Bottom line concept has been addressed in the “Open Systems” concept model which points out that all elements in the model are open to the influences from external environment (Snider, 2008).

The figure 5 below explains how outputs in an “Open System” are affected by what is fed into the system and under what conditions and/or processes are carried out in order to achieve the intended result.

Source: Snider, 2008

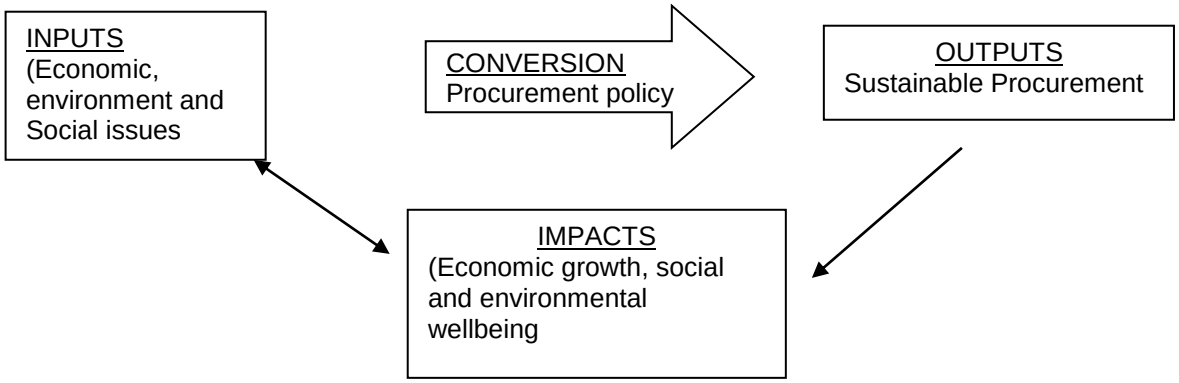

Figure 5: An “Open Systems” Model

The model explains that the outputs and the impacts that result are not only the functions of the conversion element but of all input factors, that also includes external flows from the environment. Sustainable development goes beyond perceptions in which structure they do exist (e.g. politically motivated or not) but also the environment in which they are allocated (pressures, insufficiency). This explains why sustainable development keeps on transforming in an ever – evolving environment and how difficult it is to achieve the intended outcomes (Snider, 2008). Performance of an organisation depends on external factors which include political, economic, social and technological which will effect the implementation of the sustainable procurement (Bolton, 2006). Systems theory exposes the potential influence of internal and external factors upon sustainable procurement. The agenda of sustainability is driven by recognizing that impacts caused in one part of the system will result in repercussions elsewhere within the system (Ghobadian and Holt, 2009). Therefore, Sustainable procurement is an instrument, which governments and organisations use to further various goals using policy which is affected by the way it is structured as well as how it allocates different inputs flowing from external influences of a constantly evolving environment (Snider, 2008).

3.4 Sustainable procurement policy framework

This section explains how procurement policy was founded and how it assisted in regulating the procurement process in order to further the goals of sustainable procurement at an international level. The section also explains how these proceedings has assisted to formulate the South African procurement regulatory framework.

3.4.1 International procurement regulatory framework

Procurement regulation was founded on Political grounds with the fundamental objective of economic efficiency by members of different world bodies, but there are a lot of other objectives like opening up public markets to international trade, equal treatment and so forth, as covered in the first principles (Treaty of Rome, 1957), which includes the four freedoms (movement of goods, workers, provision of services and of establishments) and non-discrimination on the ground of national identity (Smith, 2010). This was followed by General Agreement on Trade and Tariffs (GATT) for members belonging to the world body to level the ground for free trade where the basic conditions were equal treatment for all suppliers, effective competition, and technical efficiency (WTO, 1986). The main focus of legislation was to regulate the procedures through which public procurement is executed to achieve its objectives and ensure accountability in all procurement decisions that are made. Thus in general, Public Procurement has had a very big impact on National and International legal Frameworks such as the United Nations Commission on International Trade (UNCITRAL) model law or Government Procurement Agreement (GPA) from World Trade Organisation (WTO) and in Europe, General Public Procurement (GPP) Directives which are known to be one of the most elaborate legislative framework in the world (European Comission, 2008). While the implementation of Public procurement regulations are done by different public departments such as Environment, Commerce, Industry, Finance in different countries, Public Procurement authorities remain the custodians in developing Public Procurement legislation and Acts (EC, 2008). The government is the caretaker of the regulatory framework; the state must therefore act in a responsible manner by embedding social and environmental concerns in its procurement practices in order to secure trust by private sector (McCrudden, 2009). Procurement policies should address the perceptions of financial viability of green/socio-economic production methods in order to make sustainable procurement cost effective (Brammer, 2007). The organization needs to understand the concept of sustainable procurement and what the government regulatory framework stipulates on sustainable procurement in order for the organization to have the necessary tools to implement Sustainable procurement. Government purchasing should stimulate innovation in the supply of goods and services to support environmental and socio-economic objectives, and promote domestic markets (McCrudden, 2004; Brammer, 2007). Governments have the power of the purse to influence the markets but can also shift the private sector in the direction of sustainable procurement through Sustainable procurement regulations and other legislation, which promote social upliftment and environmental protection (McCrudden, 2004). Promotion of policies in sustainable procurement of goods and services among the World leaders was to ensure a strong, just and healthy society that lives within the bounds of its environmental limits through good

governance (WSSD, 2000; Brammer, 2007). This bestows two roles on the governments to act as a role model by including sustainable initiatives as a purchaser while at the same time regulating procurement to promote social justice and environmental initiatives in procuring goods and services by the private sector (Brammer, 2007; DEFRA, 2005). The World Trade Organisation whose aim is to promote world trade restricting discriminatory policies of using domestic markets suppliers also came to the table in the implementation of sustainable development and environmental protection through national legislation by its signatories (Bolton, 2008). Sustainable development in the European Context, which started from the Treaty of Amsterdam (1997), and four years later at the council of European Union heads of State, was an integration of environmental protection requirements which included climate change , nature and biodiversity, environment and health, and lastly resource management into procurement policy (Bolton, 2008). Non- European countries such as United States of America, Canada, Japan etc., procurement regulation was going beyond environmental protection by promoting market creation where environmentally friendly goods and services could be sourced. Countries like Canada had taken further steps by implementing procurement as a tool for reporting sustainable development initiatives. Sustainable Procurement is mainly concerned with environmental issues in the developed countries compared to under developed world where poverty alleviation is on the top agenda (Walker & Brammer, 2010).

3.4.2 South African procurement regulatory framework

In South Africa, government procurement has been accorded the constitution status provided by Section 217 of the Constitution 1996 (Act 108 of 1996) which makes provision to use procurement as a policy tool (Bolton, 2008). The Preferential Procurement Policy Framework Act, 2000, is the foundation of procurement activities aimed at advancing small to medium businesses and previously disadvantaged people, local women and physically handicapped individuals as well as supporting locally made products thereby creating jobs for the local people. Procurement's strong relevance is also demonstrated in its local government to achieve the objectives of the Constitution, 1996 (Act 108 of 1996) Section 152 (1) which deals with sustainable service delivery, economic and social development in order to enhance a safe and healthy environment (SEED, 2012). Quite different from the European context where preference is given to environmental conditions integration, implementation of South African Preferential procurement policy targets the provision of employment and business opportunities to the previously disadvantaged individuals and communities (Bolton, 2008). The objectives of the policy are to achieve social objectives in order to alleviate poverty and empower the communities economically. Section 217 of South African Constitution 1996 (Act 108 of 1996) is read with other provisions specifically Section 24 of the

Constitution, which gives the right to the environment that is not harmful to human health or well-being and to have the environment protected through pollution prevention and ecological degradation, promotion of conservation, and promote justifiable economic and social development (Bolton, 2008). Section 24 of the Constitution therefore gives effect to use procurement in promoting environmental practices and social justice falling into the scope of current legislation framework. Regulating the procurement process is therefore very important and there is a need to understand the concept of sustainable procurement framework as explained in the section that follows.

3.5 Sustainable Procurement framework Description

Sustainable procurement framework can be best described in three conceptual paradigms according to Gerderman, Ghijsen, & Brugman (2006) in Brammer, (2007) which are Stakeholder perspective, resource-based and power-dependence perspective.

3.5.1 Stakeholder perspective

Stakeholders are the people who affect or get affected by the organisation's activities, objectives and policies (Thwala & Didibhuku, 2016). Stakeholders include shareholders, employees, trade unions, government departments, suppliers, local communities, customers and vendors etc. According to Frederick (1992), the business should consider the needs, influences and concerns of all its stakeholders who affect or are affected by the business policies. The business can achieve its objectives by thoroughly evaluating each stakeholder's interests and assess how it will impact the business interests, as it becomes easily managed (Eskeroid & Hueman, 2013). Stakeholder analysis is very important for every business if sustainable development is to be achieved as the company need to discern different stakeholder beliefs, values and expectations and how it will affect the business needs (Thwala & Didibhuku, 2016)

3.5.2 Resource-based perspective

Resource based perspective was crowned by Barney (1991) which deals with core competencies and resources which the organisation must take time to identify, develop, nurture and maintain. Barney (1991) defined resources as the company's assets, the capabilities, processes, attributes, knowledge and information the company controls in order to implement its strategies that can improve the effectiveness and efficiency of the company. Resources becomes a strategic investment for the organisation once the management have understood and classified the key

competencies and resources which cannot be imitated or substituted, giving the organisation a competitive advantage over other organisations. Adopting from the systems theory, an organisation will be influenced by external factors driving them towards acquiring power over other organisations to control vital resources (Ulrich & Barney, 1984). Survival and continued success of the organisation becomes uncertain which leads to dependence and interdependence of organisations on others (Hillman, Withers &Collins, 2009).

3.5.3 Power dependence perspective

Emerson (1962) describes power as a property of social relation and not what is expected from the actor exercising it, and that social relations entails links of mutual dependence between the parties. Therefore, power and mutual dependence are closely related concepts with social relations common to both concepts. In mutual dependence concept, either party can grant or refuse, hinder or facilitate the other gratifications where power to influence or control solely relies onto things of value. Thus, dependence concept between two parties contains demand and supply by either of the parties. According to Emerson (1962), an organisation's dependence on a supplier gives power to the supplier and vice versa. On the contrary, due to an organisation having a choice of suppliers for its products, the organisation becomes independent and ultimately exercises high power and might even attempt to exploit its suppliers (Caniels & Roeleveld, 2007). This kind of power if not abused by the organisation, provides the organisation an effective coordination of exchange relationships as its distribution of power becomes legitimized over time (Svensson, 2001). Therefore, power becomes one of the organisational structure, position, and control over people, resources and information. Carney, Cuddy & Yap, (2010) further explain power being an integral aspect that informs decision making, allocation of resources and choice of suppliers to provide services of value to the organisation. According to Maloni & Benton (2000) which is also supported by Hingley (2005), the organisation's acquired power can be used to promote supply chain by incorporating sustainability initiatives in its supply chain networks with suppliers and achieve high performance levels through supply chain.

These paradigms explain the pressure an organization receives due to external factors, organization's disposal capabilities, skills and knowledge, and collaboration with its suppliers and regulatory bodies (Worthington et al, 2007). Procurement policies and practices should go beyond the boundaries of the organisation to incorporate all the activities of supply chain (Bryde D & Meehan J, 2017).

3.6 Governance

Sustainable procurement should have a strategic direction in ensuring that good governance is achieved (R Roos & S de la Harpe, 2008). Governance is about using tools and instruments that contribute to the performance and delivery of goods or service while conforming to requirements of the standards, laws, regulatory bodies and community expectations (Commonwealth of Australia, 2007). Good governance entails that you have a well-functioning regulatory system and an institutional set-up that is well designed with a capacity to meet the identified objectives (UNEP, 2008). In South Africa, King IV concept on good governance to achieve sustainable development is by having an organisation being an integral part of society, taking up the status of corporate citizen and meeting its stakeholders needs, expectations and interests (Institute of Directors Southern Africa, 2016). King IV governance code connects three paradigms in the corporate world which have got solid foundations in the United Nations which are company's migration from financial capitalism to inclusive capitalism, moving away from short-term capital markets to long-term sustainable capital markets, and lastly encourage integrated reporting from siloed reporting (Institute of Directors Southern Africa, 2016). Sustainable procurement should therefore ensure that transparency and accountability, non-discriminatory practices, an effective and efficient procurement system that achieves better value for money. This can only be achieved by strategic procurement approaches that incorporate best practices and build capacity in order to develop good governance practices.

It is now very clear to policy makers that sustainable procurement plays a strategic role in contributing to sustainable development goals achievement. Governments and the private sector can reduce greenhouse gas emissions, and improve on the water and energy efficiency while supporting recycling which can lead to environmental protection. Social upliftment through poverty alleviation, and enhancing equity and respect for human rights and labour standards. Sustainable procurement generate income at reduced costs while at the same time support the skills and technology transfer for the businesses (UNEP, 2012:10-35.)

3.7 Sustainable best practice factors in the procurement process

Best practice is a methodology or process that has been identified by the organisation and recommended to be used as a model inside and outside of the organisation (UNEP, 2008). Best practice utilize the leading edge standards and sustainable factors efficiently and effectively that can be replicated successfully (Earth friendly Products, 2016). Best practice should act as guidelines to encourage procurement personnel in making decisions that incorporate environmental, social and

economic elements in all procurement processes. Basic principles leading to sustainability that the mining industry need to include in its procurement policy are as listed below:

- Best value for money
- Transparency to the public
- Accountability and reporting.
- Ethical supply
- Fair dealing with suppliers exercising an open and effective competition
- Use of enabling technology and sustainable supply.

There must be a change in the organizational culture towards sustainable initiatives in procurement practices especially by top management in support of sustainable procurement (Cox, Chicksand, Ireland, 2005). It is very important that all parties involved partaking sustainable procurement processes, a brief description of each of the principles listed above is given as below understand basic principles:

3.7.1 Best value for money

Organizations procure goods and services in order to achieve value for money which is the core of any procurement practice (UNEP, 2008). Value for money by procurement activities must be undertaken in a cost effective way whether located centrally or devolved in individual departments (SEED, 2012). The goal of sustainable procurement is to acquire goods and services on best possible terms in order to carry out the organisation's activities to achieve value for money (World Trade Organisation WTO, 2011). This goal can be achieved by ensuring that goods and services procured are suitable for the task in question, securing of goods/services at best possible terms do not mean the lowest price and that the supplier delivers on agreed terms and conditions (Helen Davies, Oshani Perera, &Jonathan Hank, 2008). The price of the services or goods should not be the only sole determining factor in assessing value for money (Onwuegbuzie A, Leech N, Collins K, 2012). The best possible terms should include creation of jobs for the disadvantaged communities and upliftment, and that environmental protection should be considered in all decisions of procuring goods/services (World Trade Organisation WTO, 2011). Value for money should be determined based on financial and non-financial costs and other benefits which should reflect the wellbeing of economy, community livability and environmental integrity (Australian government, 2013).

3.7.2 Open and effective Competition

Competitiveness offers force to the suppliers to compete with other suppliers resulting into a better outcome for the winning supplier which gives an advantage to the purchaser to achieve better value for money from the outcome for the goods or services procured (UNEP, 2008). Organisations should aim at maximising the competition which will also result in value for money. Open and effective competition significantly decreases the prices of green environmental products while at the same time adding value for money for the services rendered (Vagstad. S, 1995). Transparent procurement policies which are readily accessible to all parties must be encouraged. There must be openness in the procurement process and that potential suppliers must be provided with access to procurement opportunities. Bias and favouritism should be eliminated from the procurement process and that the cost of bidding should not be used to deter other competing suppliers (UNOPS, 2014).

3.7.3 Accountability and reporting,

Transparent and accountable systems constitute a central pillar of sustainable procurement which ensures if the objectives of sustainability are being met (UNEP, 2008). Procurement systems must be monitored which can avoid the practices of corruption between the procurement officers and the bidders during awarding of tenders (World Trade Organisation WTO, (2011). Corruption practices always compromise the procurement systems resulting into value for money not being realised (UNOPS, 2014).

3.7.4 Fair dealing with suppliers

The objective is to ensure that all procurement activities are done in a standardized and consistent manner. The organisation should behave with independence, impartiality, fairness, integrity, openness and professionalism (Corporate Responsibility Association CRA, 2015). The principle of equal treatment should be applied across all the participants in the procurement process. Equal treatment will enhance competition in tender process which can result in obtaining goods and services at best possible terms which do not only achieve value for money but also fair access to the provision of goods and services by all suppliers participating in the procurement process (UNOPS, 2014). Equal treatment can also further other procurement objectives as explained by Dekel in Arrowsmith (2010) who explained: “Procuring entities can determine who will benefit from the economic advantage inherent in the contractual agreements by selecting its business partners.” This can further the objectives of sustainable procurement policy of the organisation’s by

incorporating clauses in the tender documents that can integrate social aspects such as sourcing from the disadvantaged communities, and empowering of local communities (Forum for the future, 2007). Awarding tenders in such ways justifies the principle of equal treatment as stated in EU, (2004) Fabricom case: “The principle of equal treatment should not treat comparable situations differently while at the same time, different situations should not be treated the same way unless objectively justified”. This principle prohibits the awarding of tenders in terms of economic advantage where small firms which are struggling financially and with no capacity can be discriminated (European Union EU, 2004).

3.7.5 Ethical Supply

Ethical responsibility is about doing what is right, just and fair and avoiding to do harm (Razzaque, M., & Hwee, T., 2002). Ethics is about the moral principles and standards which guide the behaviour of people towards the procurement, use and disposal of goods and services (Razzaque, M., & Hwee. T, 2002). An individual's or group of people’s everyday consuming behaviour is an important enhancement towards ethical and sustainable business practices (Wood, G, 1995). Individuals/people are more interested to know where a particular product is made, and what kind of reputation the company producing the product has towards sustainability matters (UNOPS, 2014). With technology and access to information, people are well informed and educated, about various certifications, company's compliance requirements, sustainable procurement requirements, environmental impacts, reporting and transparency (Matthews, 2013). Therefore, individuals/ people are more aware of what products to buy from reputable companies taking sustainability factors into consideration (Roberts. S, 2003). Therefore, individuals/group of individuals or society expresses themselves by evaluating, investigating, purchasing, avoiding or boycotting or by strikes according to their norms and values (Clarke, 2004). How procurement can result in value for money based on quality and whole life cycle basis of the product or services in order for the product to be fit for purpose to meet the requirements of the organization (HM Treasury, 2000). At the same time, the organization should be in compliance with sustainability principles of transparency and accountability (World Trade Organisation, 2002).

3.7.6 Sustainable Supply

Sustainable supply deals with evaluating the efficient in quality of product or service, delivery and the cost with regards to profitability (Makkonen, 2014). While achieving the economic conditions, sustainable supply has to create a positive social impact and prevent or reduce environmental

impacts in order to increase business activities to be more sustainable (Furlotti M, 2014). Sustainable procurement practices should support the development of local businesses by sourcing goods and services locally (Furlotti M, 2014). Sourcing of goods and services from local business must be extended to processes which identify if the companies from which these goods and services are sourced uphold human rights towards the communities in which they operate and also the employees that work for those companies (UNEP, 2008). The procurement functions must also look into eliminating gender disparities by increasingly sourcing from women businesses in order to empower women (UNOPS, 2014). Suppliers once identified must be supported to meet for aspects of sustainability to ensure that they meet environmental and social qualities as translated in the sustainable procurement policy (Sustainable Procurement Guide, 2013)

3.7.7 Use of enabling technology

Innovative initiatives in areas of making profits can be identified and systems thinking can be incorporated into the procurement system (Gattiker et al, 2008; Lyons, 2002). The organization need to be unique in order for the company to survive in the rapidly changing environment The organization need to consider its resources which include human, financial, physical, technological, and information which enable the organisation to remain competitive in the market (Todd et al, 2008). Technological improvements can lead to effective resource use involving reduction of raw materials and its packaging, reduction of the amount of waste produced saving costs of buying more raw materials and waste disposal (UNEP, 2008). Reducing use of more raw materials in the production process also reduces the amount of energy and water used during the process. Reuse and recycling is promoted (UNEP, 2008). Innovative initiatives can improve resource efficiency, which looks at how important resources are to the organisation and their influence, and competitive advantage they have on the market.

Collaboration with suppliers in order to share and engage suppliers in sustainable objectives and strategies can also promote sustainable initiatives in the goods and services suppliers render to the organization (Fritzgerald et al, 2007). Supplier assessment is always important in order for them to offer more sustainable goods or services. They can be encouraged if social and environmental criteria can be used in the tendering evaluation and suppliers can be checked by audits, questionnaires, scorecards and standards (Lippman, 1999). Identification of sustainable goods and services or initiatives from suppliers by organisations is very important for the implementation of sustainable procurement (Brammer, 2007:4-10). Use of enabling technology encourages innovative ways of procuring goods and services in order to find the solution that best meets the demand in terms of costs and performance (Tepper et al, 2009).

Apart from the above sustainable procurement best practices, Organisations and companies are working at other elements of sustainability that they need in their sustainability reporting. According to the Commission on Sustainable Development CSD (2001), some of the common sustainable procurement best practice factors, which are considered according to the Global Reporting Initiatives (GRI), are as tabulated in Table 1 below:

Socio-economic factors	Environmental factors
Promoting health, safety and equality in the community	Environmentally preferable materials
Increasing employment and skills and developing local communities and their physical infrastructure.	Use of energy-efficient appliances, computers and lighting
Sourcing products and services from local communities	Discriminate in favour of products made from recycled goods
Support socially inclusive practices, such as employment and training focused on disadvantaged groups	Reducing waste to landfill, saving water and reducing greenhouse gas emissions
Support suppliers who are socially responsible and adopt ethical practices	Reducing air and water pollution
Support the use of local and emerging small businesses	Reducing consumption of both natural and processed resources
Improving social inclusion and cohesion through creating employment and business opportunities for disadvantaged or marginalised groups	Factored in whole-of-life cost considerations when making your final decision
Influencing purchasing decisions to support issues such recognising equality.	Specified disposal methods that will ensure the maximum percentage of materials are recycled

Table 1: Table above for Sustainable procurement factors contributing to sustainable procurement of organisation

According to Paul et al (2008), environmental considerations can assist an organization specify the environmental friendly products, processes and services by a selection, development and management of suppliers who have the capabilities and commitments towards protection of the

environment. Efforts must be made to reduce waste of resources, minimize pollution and generation of waste and safe disposal of unavoidable waste throughout within the sourcing cycle (Paul et al, 2008)

3.8 Barriers and enabling factors of sustainable best practice into procurement.

To reap the full benefits of sustainability, it is important to understand the perceptions of different people, culture, organization and countries (Hasselbalch et al, 2014:387). This determines why an organization will consider certain best practice factors more important than others in the procurement process (Hasselbalch et al, 2014:387). Including factors that can either aid (enabler) or impede (barrier) the integration of certain sustainable best practice factors than others into the procurement process of an organization is therefore also very important as it can assist procurement managers and practitioners to strategize what to use or avoid (Pinkelman, 2015:171). Most known best practice factors that can encourage/discourage the adoption of sustainable procurement are such as

- Procurement personnel expertize
- Community pressure
- Compliance to current government legislation
- Threat to future government legislation

3.9 Benefits of Sustainable procurement

Procurement has the ability to influence external organisations to embrace sustainable practices (Seuring, 2004; Green et al, 1996). Sustainable procurement benefits can be threefold, to the organisation, supplier and the stakeholders or local communities in numerous ways. The main goal of sustainable procurement is to secure value for money through efficient use of natural resources for the organisation which comes along with environmental benefits such as energy efficiency, reduction of waste disposal through packaging, reuse of materials and products which lowers the cost of the product over its life cycle which eventually results in
financial gain for the organisation (Tepper et al, 2009). The public image of the organisation is improved through procuring and using environmental friendly products and services sourced from communities. The market also benefits from sustainable procurement through an increase in sustainable products and services obtained at a most effective prices and that there is an expansion of sustainable goods and services through purchasing from local business which also reduces

transport costs. Sustainable procurement supports the development of capacity to operate in a sustainable economy and encourages innovation (Commonwealth of Australia, 2013). In case of mining operations, environmental impacts related to air pollution, water pollution, safety and health, and equality which impact the local communities are prevented or mitigated and reduced. Surrounding communities are empowered through skills and employment, community development and physical infrastructure thereby creating wealth for the disadvantaged or marginalized through employment and business opportunities (Mineral Metal and Sustainable Development, 2002).

3.10 Challenges of sustainable procurement

Traditionally, procurement is seen as a vehicle that focuses on value for money for goods and services procured where the price of goods and services is considered in making a decision to procure such goods or services by the organisation. Cost is the leading barrier to sustainable procurement as most companies top management support cheaper goods and services in order to save money (Brammer, 2007). With this in mind, to integrate environmental and social considerations into the process of procurement with the aim of reduction adverse impacts on human health, social, and environmental conditions with the goal of achieving value for money from the process for the organisation and community at large is seen as a challenge in most private organisations (UNEP, 2008). Another factor is that the specification and relevance of social and ethical conditions in the procurement process contributing to the final product is very difficult to measure since social behaviour cannot be quantified (Walker H and Phillips, (2006). Verification and benchmarking of social and ethical issues therefore becomes very difficult in the evaluation of tenders for most companies (UNOPS, 2014). Other challenges that surface when sustainable procurement has been adopted by the company are such as:

- Lack of commitment from management
- De-centralized purchasing
- Lack of motivation to improve senior performance
- Lack of transparency
- Lack of knowledge, skills and capacity
- Non-compliance to sustainable procurement policies

3.11 Sustainable procurement in the South African mining industry

The mining industry is perceived to be unsustainable due to the damage caused by the mining operations and also in the past, the industry has failed to eliminate or mitigate the impacts caused

by the operations making the negative impacts outweighing the economic benefits. The industry has negative publicity now faced with increasingly socio-economic and environmental pressures and non-compliance to regulations as mining companies are blamed for disposal of harmful waste which affects aquatic life, and also contaminating land and air particulates coming from tailings dumps (Irina N and Stückelberger C, 2013). Therefore, Sustainable Procurement is a challenging issue to the mining industry given the pressures between economic responsibility and social/environmental responsibility the industry have to manage and balance in order to achieve good corporate social responsibility. According to Friedman (1970), the firm has to make profits for its shareholders which also include the society. Freeman (1984) in Irina, Stückelberger,(2013) stated that the firm has to make profits, but its responsibility does not apply not only to the shareholders but also its stakeholders which is any group or individuals who affect or is affected by the achievements of the organisation's objectives. The industry has been continually targeted by pressure groups at all levels, local, national and international challenging its legitimacy and its licence to operate due to the industry's catastrophic impacts to the environment and surrounding communities (Walker & Howard, 2002). Therefore, the mining industry maintains its social licence to operate as well as the company's reputation by reporting its social responsibility initiatives it does to the local communities and its stakeholders in order to improve its awareness of sustainability (Kellogg Innovation Network KIN, 2014). By encouraging sourcing from local communities promotes social cohesion and reduces the unemployment and achieve the acceptable living standards alleviating poverty as stipulated in agenda 21 (Brammer, 2007). Sustainable procurement therefore opens up a platform of debate between the mining industry and its stakeholders both internally and externally thereby improving co-operation with different departments and service providers. Departments and suppliers can become more transparent contributing towards a more competitive local industry that is efficient, improving not only local conditions by generating more wealth to the community and employment but also protecting the environment thereby reducing harmful emissions and generation of waste, improving water and air quality and reducing natural resource use (DME, 2007:37). The industry can easily meet compliance conditions requirements expected from the national and international community. The mining industry can also give assurance that it is assisting in alleviating global environmental problems such as global warming, ozone depletion and poverty to the international community improving the reputation of the mining industry. Sustainable procurement therefore will be able to steer the industry into the direction that is more efficient and use the available resources sustainably (CIPS, 2012). In order to advance sustainability, the mining industry has to apply best practice which has to look into incorporating social and economic issues, innovative and technological advances, ethical supply and also considering how these issues of sustainable procurement can be measured (Walker H & Phillips W, 2009:42). Corporate

management of environment where more focus is on the internal environmental practices is changing where attention shifts more towards managing the organisation's impacts outside the firm's boundaries (Holt D & Ghobadian A, 2009). Lambert et al, 1998; and Olivier & Webber, 1982) indicated that globalisation through advanced technology has reshaped the competition platform where individual businesses cannot survive as separate entities but as supply chains where the success of businesses depend on the ability of management to integrate their organisation into a business relationship network. The industry need to redress imbalances in communities and societies by buying from local communities from minority owned small businesses and if globally, suppliers from developing countries must be chosen (Phillips & Walker, 2006). The government should be committed to Sustainable procurement framework and ensure that sustainability is achieved through development of policies and interventions to further assist the mining industry in adopting sustainable procurement best practice (Brammer, 2007).

3.12 Concluding remarks on Literature review

Sustainable procurement plays a very important role in fulfilling the organisation's strategic goals through integration of sustainable best practice factors into the procurement processes. According to the theory presented, an assessment of sustainable procurement best practices has been identified which includes socio-economic and environmental factors, which can assist the mining industry to make profits for its stakeholders while living within the environmental limits. It has also been demonstrated how Sustainable procurement framework legislation has shaped sustainable procurement best practice in the mining industry in order to maintain its social licence to operate and corporate image through the integration of sustainable procurement best practice factors in its procurement process. This assessment has identified a range of socio-economic and environmental factors that contribute towards sustainable procurement best practices in the procurement process in the South African mining industry achieving objective 1, and is summarised as below:

(i) Sustainable procurement policy

a) Value for money
b) Open and effective competition
c) Ethical supply
d) Accountability and reporting
e) Fair dealing with all suppliers
f) Sustainable supply
g) Transparency to the public

h) Use of enabling technology Support the use of local and emerging small businesses.

ii) Local SME/BEE empowerment

a) Support socially inclusive practices, such as employment and training focused on disadvantaged groups.
b) Sourcing products and services from local communities
c) Improving social inclusion and cohesion through creating employment and business opportunities for disadvantaged or marginalised groups.
d) Increasing employment and skills and developing local communities and their physical infrastructure.

(ii) Ethical supply

a. We encourage our existing suppliers to become more sustainable
b. Cost of product play a more important role than sustainability criteria
c. It is difficult to persuade our current suppliers to become sustainable
d. We set social and environmental criteria that suppliers must meet.
e. Sustainability plays an important role in our search for suppliers
f. Support suppliers who are socially responsible and adopt ethical practices

(iii) Social & Environmental attributes

a. Support the use of local and emerging small businesses
b. Support socially inclusive practices, such as employment and training focused on disadvantaged groups
c. Reducing waste to landfill, saving water and reducing greenhouse gas emissions.
d. Reducing air and water pollution
e. Reducing consumption of both natural and processed resources
f. Use of energy-efficient appliances, computers and lighting.
g. Discriminate in favour of products made from recycled goods

In addition to the above dimensions, the factors that can also enable best practice in sustainable procurement have also been investigated. Barriers to sustainable procurement include Procurement personnel's view of procurement as a profession, Capacity of procurement personnel, government regulation (current and future) and community pressure. The following sustainable procurement

barrier/enabling factors, which could encourage best practice in procurement of goods and services investigated, were as below:

iv) Barriers and enablers of sustainable best practice factors into procurement practices.

a. current government legislation
b. threat of future government legislation
c. Community pressure
d. Capacity of procurement personnel

The sustainable procurement best practice factors identified in this literature review were used in constructing a questionnaire (Annexure A) using the method in subsection 2.3.1 in order to collect quantitative data to answer objective 2, which is to determine the extent of integration of sustainable procurement best practice factors at two of the South African mines understudy. Therefore in Chapter 4 that follows is the results and data analysis that is obtained from the research questionnaire.

CHAPTER 4. Results and data analysis

This chapter presents objective 1 results, which is a summarised outcome of the literature review which was an assessment of sustainable procurement best practice factors in the South African mining industry. Objective 2 is then presented which is an analysis of results from the outcomes of questionnaire survey of the research as below.

4.1 Objective 1 results: Identification of sustainable procurement best practice factors in the South Africa mining industry

The literature review done aided in understanding procurement, and sustainable best practice factors that contribute towards achieving sustainable procurement. Sustainable procurement best practice factors in the South African mining industry identified were the following as the main contributing factors; Procurement policy, social and environmental factors, local and/BEE empowerment, ethical considerations, and lastly sustainable practice. These were the main factors used in the qualitative research survey to generate quantitative data for the determination of sustainable procurement best practice factors at the two South African mines.

4.2 Objective 2 results: To determine the extent of integration of sustainable procurement best practice factors at two of the South African mines understudy.

To determine the extent of integration of sustainable procurement best practice factors in the procurement processes at the two South African mines is objective 2 of this research study. Analysis of quantitative data obtained from the questionnaire survey (Refer to annexure A) using SPSS descriptive data analysis calculated Cronbach alphas, means and standard deviations as presented below. Cronbach alphas checked the reliability and validity of the adapted method (refer 2.2.3) to measure the internal consistency of the constructs as in Table 2 below:

Variables	No. of items	Cronbach's alpha
Procurement policy	8	0.989
Local SME/BBEE empowerment	5	0.962
Social & Environmental attributes	8	0.767
Ethical Supply	5	0.881

Table 2: Reliability and validity of adapted PSR dimension using Cronbach alphas. as above

As in Table 2 above, all the dimensions in the adapted PSR construct had values of Cronbach's coefficients that were more than 0.6, which is the acceptable level of validity and reliability (Nunnaly, 1978). This is an indication that accurate and reliable results were produced from the adapted PSR dimensions constructed.

The means calculated checked the integration of the sustainable procurement best practice factors while standard deviation of the mean indicates extent of agreement/disagreement among participants on a Likert scale of 1 -5 (1- strongly disagree, 2- disagree, 3- neutral, 4- agree, 5- strongly agree). To get an overview of procurement as a profession from participant, mean scores were calculated for the following factors affecting decision makers in Procurement as in table 3 below: Procurement is a high status and professional occupation in the industry (4.04), Attracting new graduates in the public procurement industry is very difficult (2.0), Experienced and qualified personnel in procurement profession is very difficult to retain them (4.09), Procurement profession is well paid compared to other professions (1.96), Recruiting procurement professional is very difficult (1.91). Please refer the text above to Table 3 below and a graph is presented as in Figure 7 as below:

Procurement profession	Average	SD
Procurement is a high status and professional occupation in the industry	4.04	0.21
Attracting new graduates in the public procurement industry is very difficult	2	0.3
Experienced and qualified personnel in procurement profession is very difficult to retain them	4.09	0.29
Procurement profession is well paid compared to other professions	1.96	0.21
Recruiting procurement professional is very difficult	1.91	0.28

Table 3: How procurement is perceived as a profession by Procurement personnel.

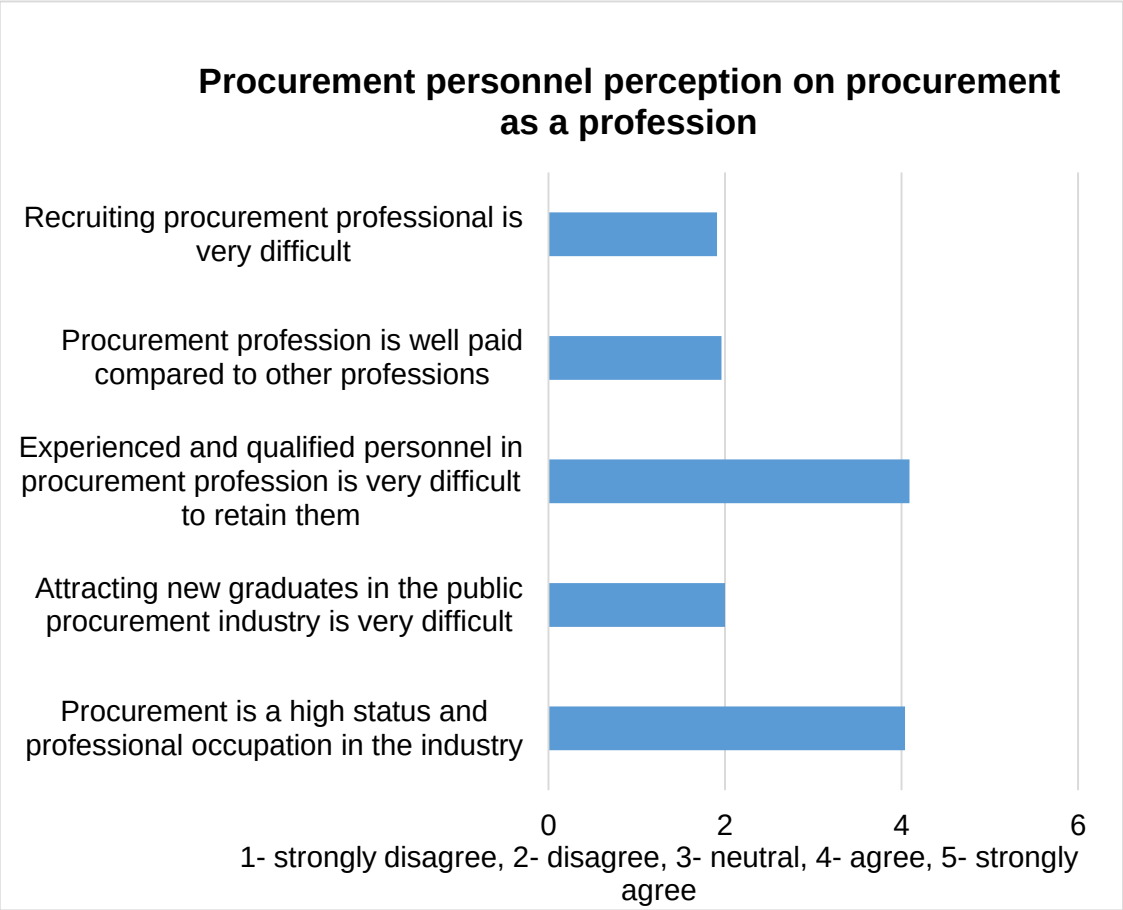

Figure 6: How procurement is perceived as a profession by Procurement personnel.

With reference to Figure 6 above, it can be said judging from the mean that respondents regard procurement as a very high profession and that retaining experienced and qualified personnel within the industry is very difficult (average of 4 for these two factors). Respondents agree that procurement personnel do not work for a long time due to not being paid well compared to other professions in the organization (average of 2). This can have an impact on retaining experienced and knowledgeable personnel within the organization (average of 2). This can also have an influence on the incoming graduates (average of 2) to join the organization. The standard deviation of the means for these sustainable procurement best practice factors are very small (Coefficient of Variation CV<= 1, CV = SD/Mean) which is an indication that participants strongly agree that these factors have been integrated into the procurement process of the two mines understudy.

The participants were then asked about the type of procurement system which is being exercised at the organization. The figure 7 below gives the responses by participants with regards to the procurement system.

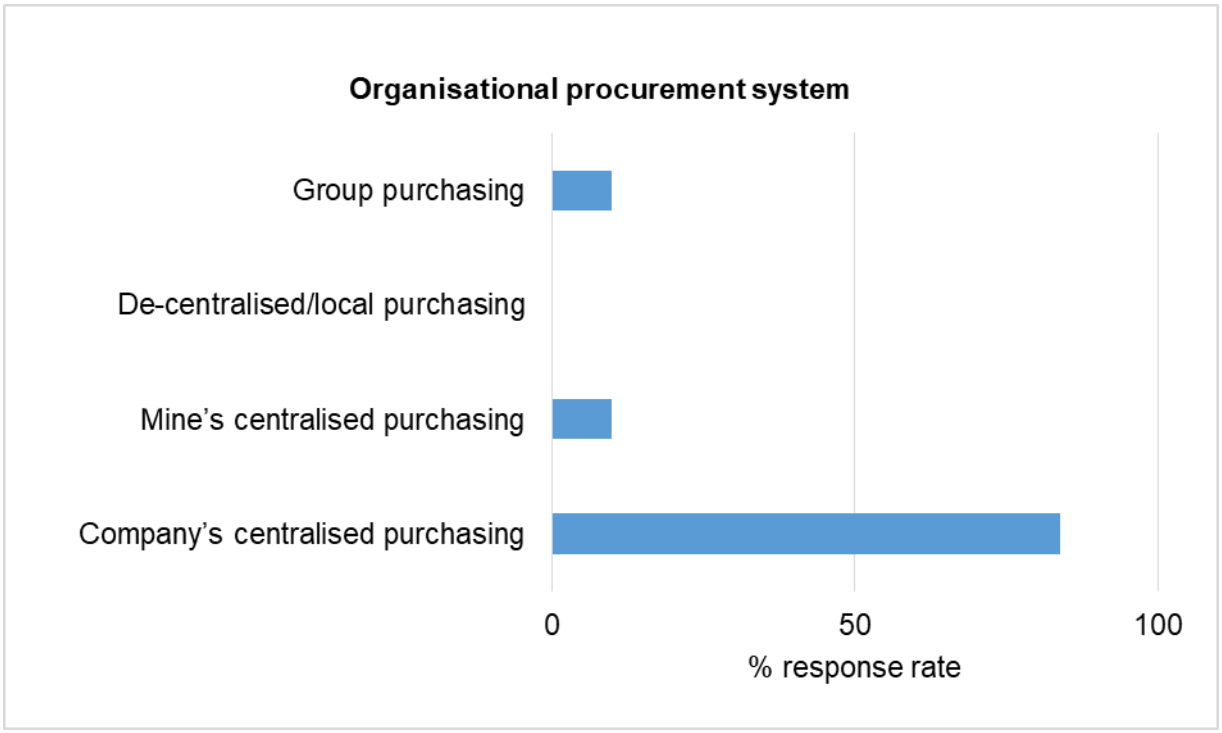

Figure 7: Organization's procurement system.

According to Figure 7 above, 84% of the participants responded that company's centralized purchasing is the procurement system being practiced by the organization.

For the adapted PSR dimensions, mean scores and standard deviations were calculated for each variable of each dimension within the PSR construct in order to examine to what extent the sustainable procurement best practice factors have been embedded within the organization's procurement practices.

The following were the findings of each dimension in the PSR construct as is below.

1. Procurement policy

Procurement policy dimension had 8 factors which were explored by a ranking scale of 1-8, where 1- not important at all, 2- slightly important, 4 – no opinion, 5 - important, 6 – more important, 8- most important were used. Mean scores were calculated to establish to what

extent sustainable best practice factors within the procurement policy have been integrated

into the procurement policy. The mean scores for the following factors within procurement policy dimension according to Table 4 below were: Value for money (7.0), Open and effective competition (4.87), Ethical supply (5.87), Accountability and reporting (6.22), Fair dealing with all suppliers (5.35), Transparency to the public (1.57), Use of enabling technology (2.09), Sustainable supply (3.00). Based on the scale used for measuring the dimension, the average score for the scale is 4 and moving toward the right hand side of mean represent factors that are important and therefore fully implemented in the procurement policy. The factors below 4 are not important to the company meaning they have not been implemented fully in the sustainable procurement process. A graphical representation of Table 4 that contains means and standard deviations showing to what extent sustainable factors in the procurement policy have been implemented is also plotted as in Figure 8 below:

Procurement policy	mean	Standard deviation
Value for money	7.0	1.4
Open and effective competition	4.9	1.3
Ethical supply	5.9	1.4
Accountability and reporting	6.2	1.5
Fair dealing with all suppliers	5.4	1.6
Sustainable supply	3.0	0.8
Transparency to the public	1.6	0.8
Use of enabling technology	2.1	1.5

Table 4: Extent of sustainable practice in procurement policy

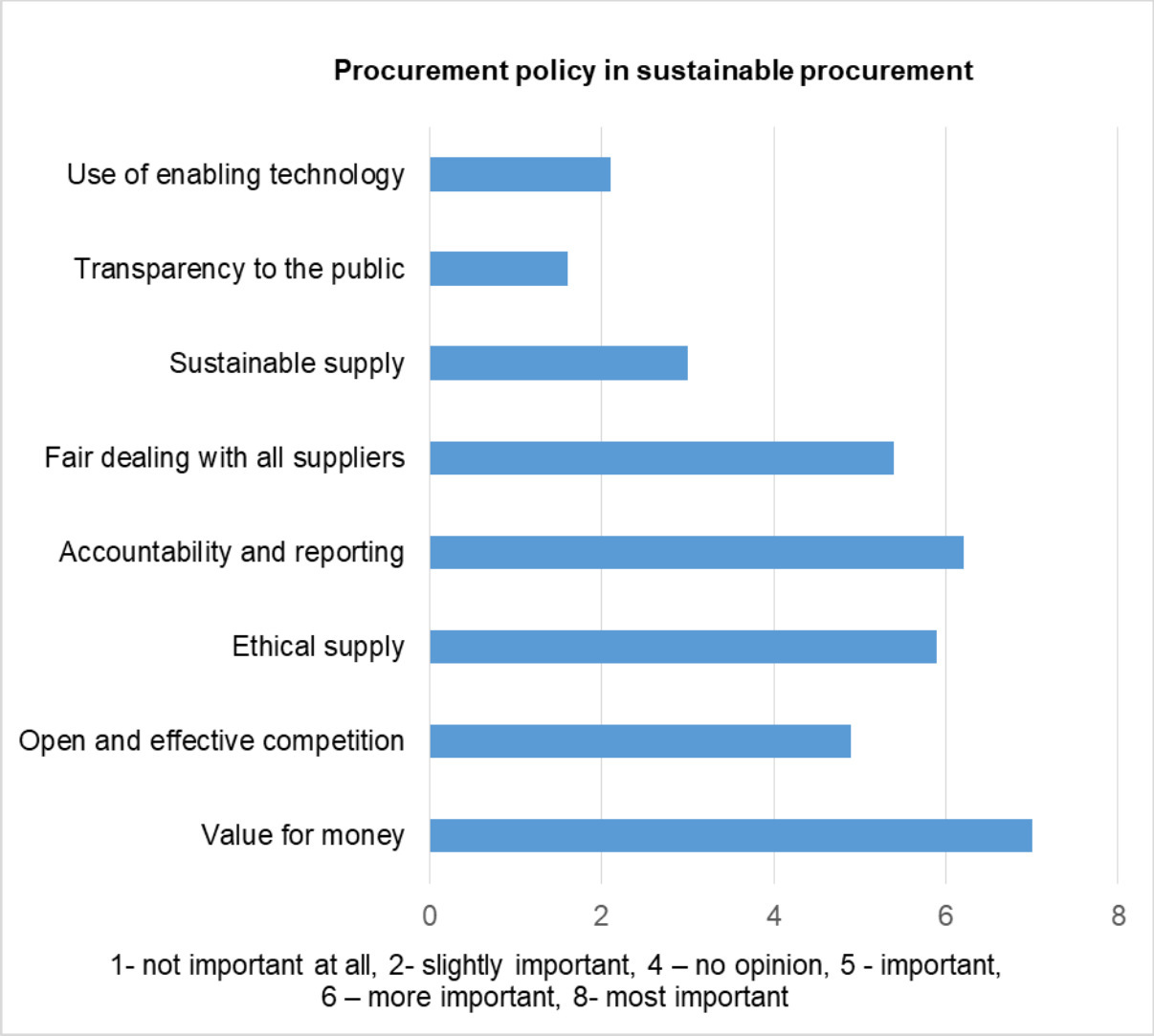

Figure 8: Extent of sustainable practice in procurement policy in the implementation of sustainable procurement

From the graph in Figure 8 above, value for money, accountability and reporting are above 6 which represents sustainable procurement best practice factors more important to the company while transparency to the public is just above 1 which represent sustainable best practice factors not at all important and therefore not fully integrated into the procurement process. Other sustainable best practice factors which are still not fully integrated are use of enabling technology with a mean of 2 and sustainable supply with a mean of 3 which participants have responded negatively, therefore not integrated into the procurement process. Sustainable supply with a mean of 3 is also considered

of little value. The remaining variables such as Open and effective competition, Ethical supply, and Fair dealing with all suppliers are just above 4, therefore considered important to the company.
The standard deviation of the means obtained are small which will give a CV <= 1, an indication that participants strongly agreed on the integration of the sustainable procurement best practice factors assessed under this dimension.

2 Local/ small –medium enterprise/Broad based black empowerment equity

Supporting local/ small –medium businesses and empowering disadvantaged marginalized people is another dimension that has been added to the adapted PSR construct. This dimension is composed of 5 sustainable best practice factors. The calculated means as in Table 5 below were; Supporting the usage of local emerging small and medium businesses (4.26), Supporting inclusive socially practices, such as training focused on disadvantaged groups and employment (3.91), Sourcing of products and services from local communities (3.87), Improving social cohesion inclusion through creating business opportunities for disadvantaged and or marginalized groups and employment (3.83), Increasing employment and skills and developing local communities and their physical infrastructure (3.91). On a Likert scale of 1 – 5, the average value for this scale is 3 which is a neutral. Any value above 3 is in agreement with the extent the company sources and empowers the local communities.

Sustainable practice	**Mean**	**Standard deviation**
Supporting the usage of local emerging small and medium businesses	4.26	0.45
Supporting inclusive socially practices, such as training focused on disadvantaged groups and employment	3.91	0.29
Sourcing of products and services from local communities	3.87	0.34
Improving social cohesion inclusion through creating business opportunities for disadvantaged and or marginalized groups and employment	3.83	0.39
Increasing employment and skills and developing local communities and their physical infrastructure	3.91	0.29

Table 5: Sourcing from local communities/disadvantaged and marginalized.

A graph representation of the sustainable practices involving sourcing from the local community is as in the figure 9 below:

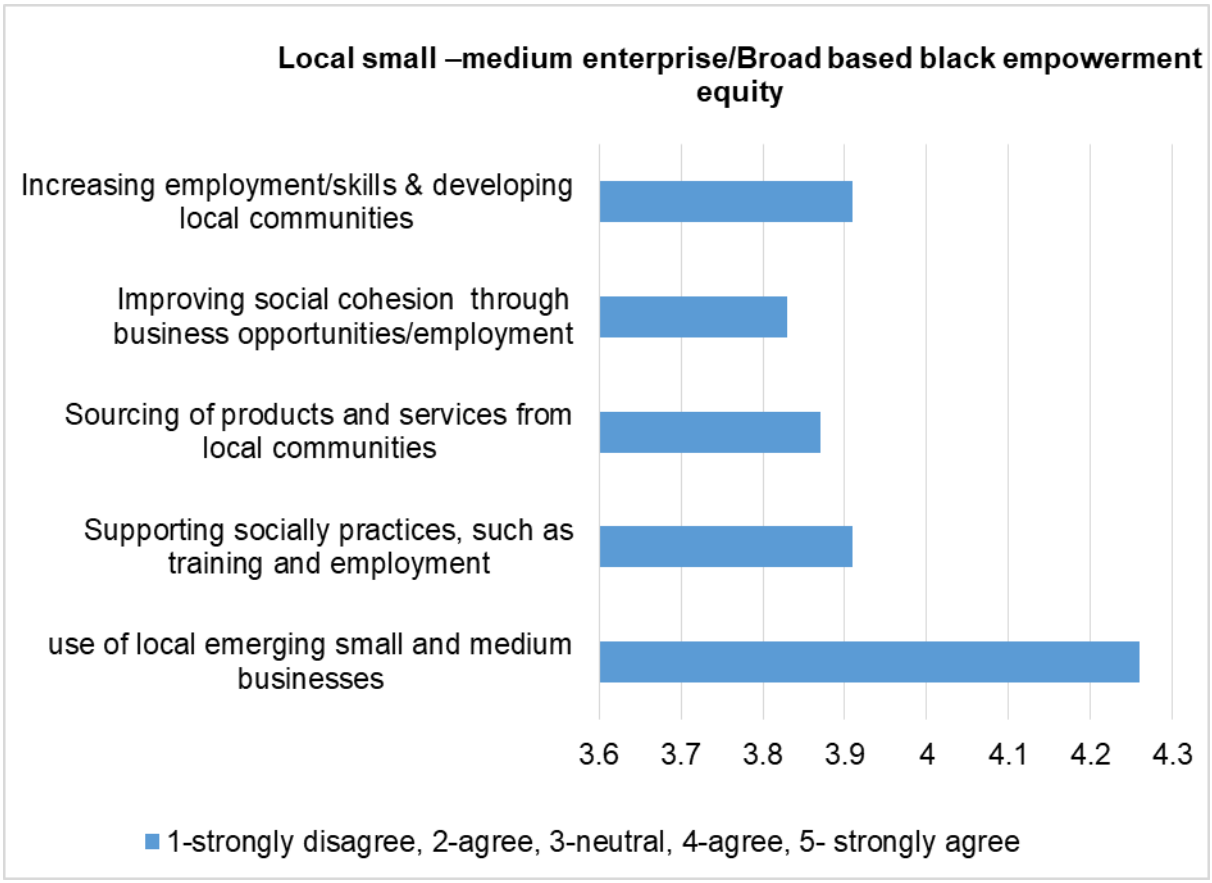

Figure 9: Extent of sourcing from local communities/disadvantaged and marginalized people

From Figure 9 above, it can be seen that all the sustainable practice factors under this dimension are above 3.5 which indicates that the mining company is busy procuring some of the good and services from the local communities. The company is doing exceptional well at supporting local and emerging businesses (mean score of more than 4.2) in the communities it operates. The standard deviation of the means obtained are much less (< 0.5) giving very small coefficient of variation to show how strong participant perceive the extent of integration of these sustainable procurement best practice factors.

3 Ethical supply

Another dimension of the PSR construct under study is ethical supply. The sustainable best practice factors under this dimension after calculating the means as in Table 6 were as follows: Existing suppliers are encouraged to become more sustainable (4.0), the cost of product or service is more important than a developed sustainability criteria (3.96), Persuading current suppliers to become more sustainable is difficult (4.13), Environmental and social criteria is set for the suppliers to meet (4.04), Sustainability has an important role to play in our search for suppliers (4.61), We give support to suppliers that have adopted ethical practices and are socially responsible (3.91).

Ethical supply	**mean**	**Standard deviation**
Existing suppliers are encouraged to become more sustainable	4.0	0.302
the cost of product or service is more important than a developed sustainability criteria	3.96	0.475
Persuading current suppliers to become more sustainable is difficult	4.13	0.458
Environmental and social criteria is set for the suppliers to meet	4.04	0.209
Sustainability has an important role to play in our search for suppliers	4.61	0.499
We give support to suppliers that have adopted ethical practices and are socially responsible	3.91	0.479

Table 6: Sustainable factors for ethical supply dimension of the PSR construct

The graphical representation for Table 6 showing the mean of the sustainable factors is also displayed as below

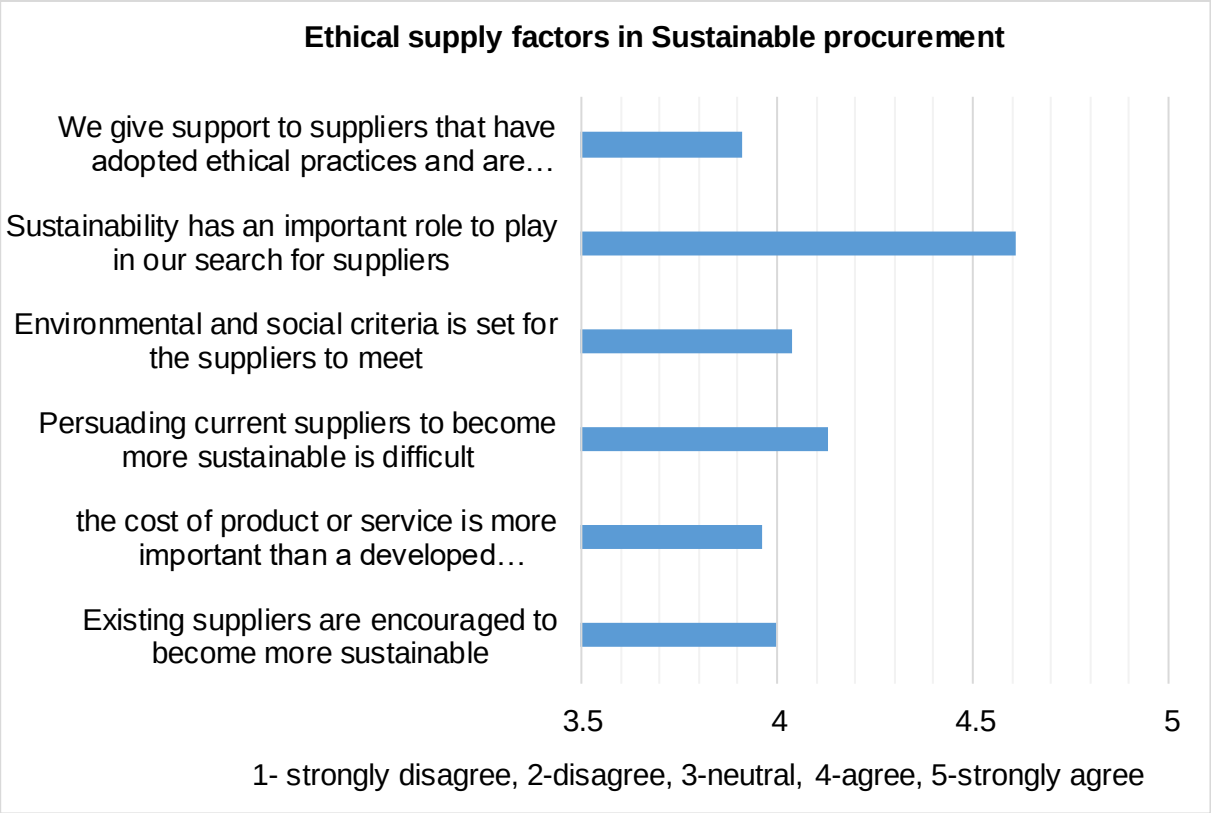

Figure 10: A graph showing ethical supply factors for sustainable procurement

Figure 10 above show that all the means of the sustainable factors for ethical supply are above 3.5 which indicates the extent of integration in the sustainable procurement process. But the company is focusing more on sustainability is the most important one with a mean of more than 4.5. The standard deviation are also very low which will give a much lower CV indicating a stronger agreement of the extent of integration for these sustainable procurement best practice factors

4 Social and environmental attributes

The last dimension on the PSR method is Social and environmental attributes containing eight (8) sustainable factors and the calculated means results on using the Likert scale of 1-5,were as follows from table 7 below: Support the use of local and emerging small businesses (4.48), Support socially inclusive practices, such as employment and training focused on disadvantaged groups (4.30), Reducing waste to landfill, saving water and reducing greenhouse gas emissions (4.52), Reducing air and water pollution (4.48), Reducing consumption of both natural and processed resources (1.92), Use of energy-efficient appliances, computers and lighting (4.44), Reduce environmental and

social impacts arising from procurement decisions (4.84), Discriminate in favour of products made from recycled goods (1.87).

Social & Environmental attributes	**mean**	**SD**
Support the use of local and emerging small businesses	4.48	0.37
Support socially inclusive practices, such as employment and training focused on disadvantaged groups	4.3	0.35
Reducing waste to landfill, saving water and reducing greenhouse gas emissions	4.52	0.493
Reducing air and water pollution	4.48	0.37
Reducing consumption of both natural and processed resources	1.92	0.16
Use of energy-efficient appliances, computers and lighting	4.44	0.36
Reduce environmental and social impacts arising from procurement decisions	4.84	0.4
Discriminate in favour of products made from recycled goods	1.87	0.14

Table 7: The means and standard deviations of social and environmental factors contributing towards sustainable procurement.

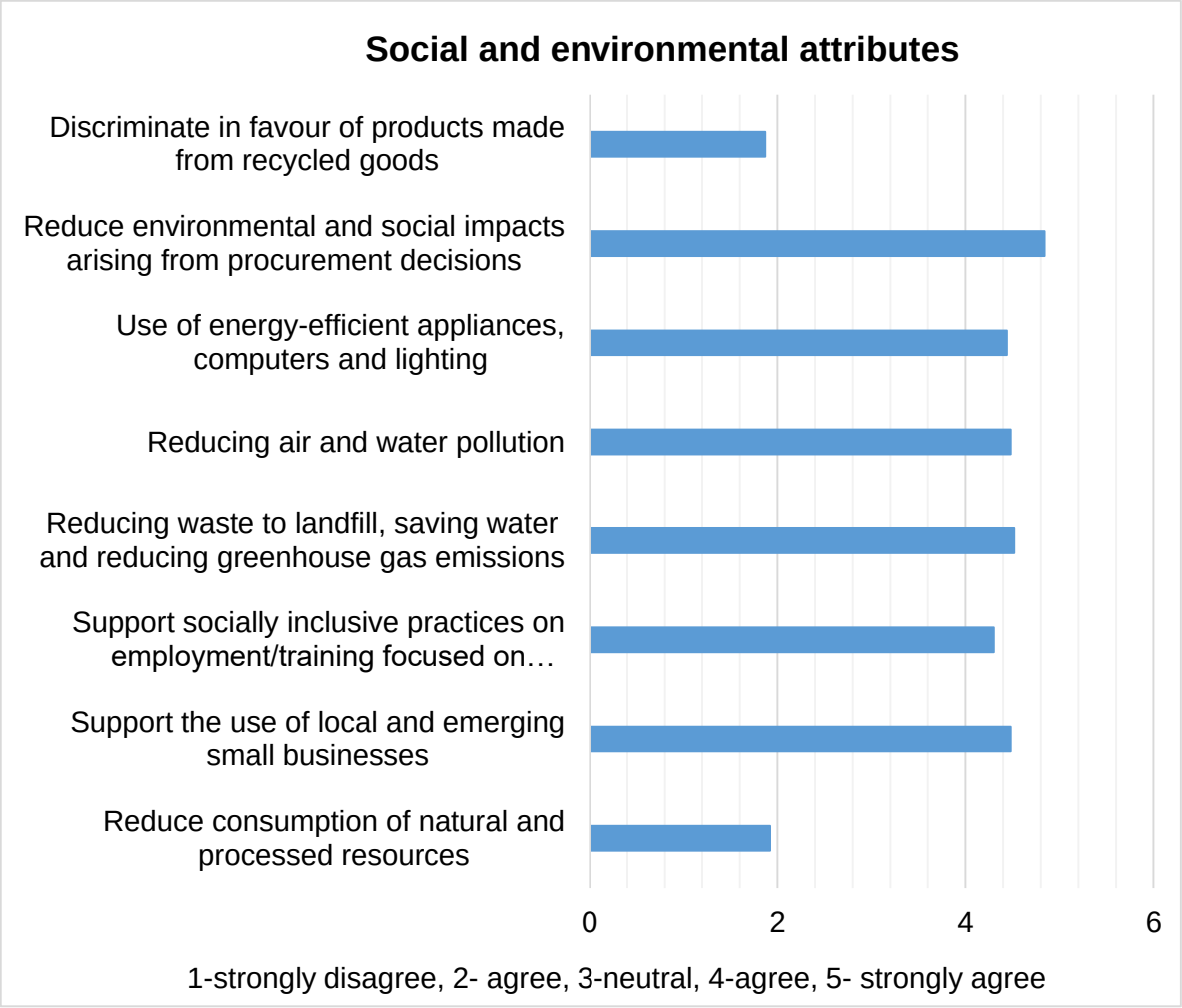

Figure 11: The social and environmental attributes in a graphical form as below:

From the graph in Figure 11, sustainable procurement best practice factors such as social attributes supporting the use of local and emerging small businesses, support socially inclusive practices on employment/training focussed on disadvantaged people have been fully integrated into the sustainable procurement process. With regards to environment, the mine does not still discriminate products in favour of recycled packaging and also not much has been done to reduce consumption of natural and processed resources (mean of less than 2). However, other environmental attributes such as reducing waste to landfill, saving water, and reducing greenhouse emissions has been fully integrated in its sustainable procurement processes. The standard deviations obtained for the means of these sustainable procurement best practice factors are also very small which will give low values of less than 1 for the coefficient of variance (CV<= 1) indicating a strong agreement by participants.

5 Barriers and enabling factors of sustainable best practice in procurement

Barriers and enablers of sustainable development play a very important role in shaping sustainable procurement practice. Respondents were asked a “yes” or “no” question to identify
what are the current drivers of sustainable practice as provided from literature that having an impact on the mining business. The sustainable procurement drivers were; Capacity of procurement personnel, current government legislation, threat of future government legislation and Community pressure. The graph as provided below were respondents’ perceptions with regards to the factors provided.

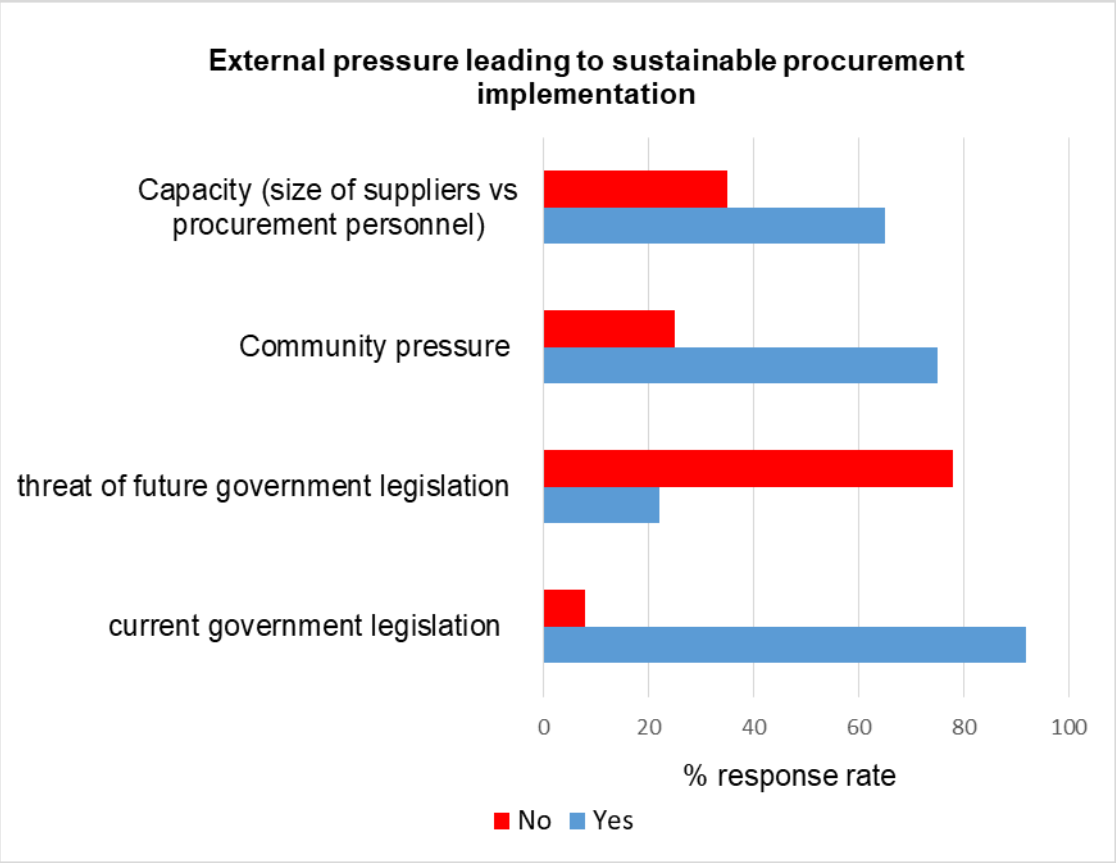

Figure 12: Respondent’s views on external pressure leading to sustainable procurement

According to figure 12 as shown above which required a Yes or No, respondents agreed that current government regulation and community pressure are the main drivers of sustainable procurement practice with 70% of respondent who said ”Yes” followed by capacity of procurement personnel with 60% respondents who said Yes. Threat of future government legislation did not pose as a threat with more than 75 % of Procurement managers who responded “No” to this factor.

Chapter 5.0 Discussion and Conclusion

This chapter explores the extent of integration of sustainable procurement best practice factors in the procurement process at the South African mines understudy. The main findings from the results are reflected on in this discussion followed by the conclusion.

5.1 Discussion

There are many studies conducted on sustainable procurement, grounded with mathematical formulas on which criterion to use for the correct method of data analysis both in public and private sector (Khaled, 2011). This research explored sustainable procurement best practice factors, which were compared, to current procurement practices at the two South African mines in order to get the broad picture of extent of sustainable procurement best practice in the mining industry in South Africa. The reliability and validity of the adapted PSR dimension by Carter and Jennings (2004) was tested using Cronbach alphas. The average Cronbach alpha of 0.889 was obtained which was acceptable (more than cut-off point of 0.6). This proved that the method used to assess and determine the sustainable procurement best practice factors in procurement process in the South African mining industry was valid and reliable.

The main findings of the study are summarised as follow according to the results presented. Procurement personnel were asked how they perceive procurement as a profession, on the current system of procurement being practiced at the mining industry understudy. On a Likert Scale of 1 -5 (where point 1- strongly disagree, and point 5- strongly agree),and point 3 is the middle point of the scale, the respondents perceive that procurement is a high profession (mean above point 4) and procurement personnel is well paid (mean 1.9 which is below point 2) which they strongly disagree. As a result, experienced and qualified procurement personnel are not staying for long on their jobs (mean of 4) because they feel that they are being underpaid compared to the other departments, which leads to loss of experienced and knowledgeable people to the company when these personnel leave. With regards to the current procurement system, the mining organisation is using centralized procurement system (84% of respondents) and there was zero respondents on de-centralized procurement system which encourages existence of fraud and favouritism during procurement processes.

To assess the extent of sustainable procurement best practice factors, using a Likert scale, mean scores were calculated for each sustainable factor within each dimension of PSR. Mean

scores within the range between point 3 and point 5 (neutral – strongly agree) of the scale were perceived as well implemented and embedded in the procurement process of the organisation.

Mean scores ranging from point 1 – point 3 (strongly disagree – neutral) of the scale were perceived to be poorly implemented or incorporated in the sustainable procurement process of the organisation. The following findings were established with regards to the adapted PSR dimensions:

5.1.1. Sustainable procurement policy

Procurement policy dimension had eight (8) individual aspects of sustainable procurement, best practice factors. This was the only dimension, which used a ranking scale where respondents measure the order of preference, importance or effectiveness hence more superior to rating, which is about perception. The ranking scale of 1 -8 was used, with a low ranking between 1 and 4, not important to the organisation which means no integration happened. An average ranking between 4 -6 are perceived as important which means these aspects were partially implemented in the procurement process, and then lastly aspects ranking high between points 6 - 8 were perceived to be very important aspects by respondents which means the aspects were fully integrated and embedded into the procurement process. Five of the aspects were perceived by the respondents to have been fully embedded in the procurement policy as follows; value for money, accountability and reporting ranking very high between point 6 and 8 of the scale. Fair dealing with all suppliers, ethical supply and open and effective competition, which were partially, embedded in the procurement process ranking between point 4 and point 6. Transparency to the public and use of enabling technology were the least aspects ranking the lowest between point 1 and point 3 of the scale. Transparency to the public is a very critical aspect to the mining industry and business at large in order to maintain the license to operate. Participants perceive that there is no transparency in the procuring of goods and services with regards to the public in general which is very concerning. However, accounting and reporting which also involves stakeholders is ranked very high above 6 as well as factors such as fair dealing with suppliers and, open and effective competition, which also deals with procurement of goods and services involving the public.

5.1.2 Sourcing from Local small/medium enterprise(SME)/Black empowerment equity (BEE)

The dimension of sourcing from local SME/disadvantaged and marginalized had five (5) individual aspects contributing towards sustainable procurement. All the aspects under this dimension were perceived to be fully integrated in the sustainable procurement process as they fell on the point scale between 4 and 5 of a 1-5 Likert scale. This is expected so that the mining company can comply with regulatory requirements with regards to social responsibility and good public image.

5.1.3 Ethical supply

The individual aspects falling under ethical supply were all clustered around point 4 on the Likert scale apart from one aspect which was, ‘sustainability play an important role in the search for suppliers,’ falling on point scale between 4.5 and 5 of the 1-5 Likert scale. Even though the cost of the product still plays an important role in selecting the desired supplier (mean score - 3.96), most respondents perceive that sustainability is very important when searching for suppliers to provide services and products for the mining company (mean score - 4.61).

5.1.4 Social & environmental attributes

The dimension had 8 individual aspects with two (2) environmental aspects not implemented at all with mean scores on point scale of less than 3 of 1-5 Likert scale. The individual aspects under question are; Discriminate in favour of products made from recycled goods and reduce use of natural and processed resources. It is not surprising that procurement officials did very little to implement these factors as they do not deal much with environmental management. This indicates little collaboration from other departments with procurement department in relation to environmental and other factors that can contribute towards sustainable procurement.

The remaining six (6) individual aspects were perceived to be fully integrated and embedded (on a point scale 4 - 5) into the sustainable procurement process. As discussed in other dimensions, there is lack of collaboration between procurement department and other departments as a result there is lagging in incorporation of environmental issues compared to social factors in the procurement process.

5.1.5 Barriers and enablers of sustainable procurement.

Lastly, the study also looked at the barriers and enablers of sustainable procurement from the four factors that were identified which were; current government regulation, future regulation, community pressure and capacity of procurement personnel versus the size of the company that need to be serviced. Legislation was the main force driving sustainable procurement followed by pressure from the community according to respondents’ perceptions.

5.1.6 Summary of the findings

The findings of the results discussed mainly centred on the two objectives, as follows: Objective 1 was to identify the sustainable procurement best practice factors in the South Africa mining Industry This study identified 26 sustainable procurement best practice factors consisting of 9 environmental, 7 economic and 10 social factors of the procurement process in the South African mining industry.
Objective 2 was to determine the extent of integration of sustainable procurement best practice factors in the procurement process at two South African mines understudy. Using the adapted PSR dimensions, the extent of integration of sustainable practice factors were explored. For Sustainable procurement policy, out of eight (8) factors that were assessed, five sustainable procurement best practice factors chosen were fully embedded in the procurement process. Transparency to the public had an average of less than 2 viewed by participants as not important to the company and therefore not integrated at all in the procurement process. However, within the same dimension, fair dealing with suppliers, an open and effective competition, and accountability and reporting are factors that have been fully integrated and they have to do with the public image of the company. The other aspect that needs to be clarified is how different respondents interpret value for money. Value for money scored very high (mean of 7) within the dimension of Procurement policy compared to sustainable supply (mean of 3). However, in the Ethical supply dimension using a Likert scale of 1-5, sustainability is perceived to be highly important (mean score - 4.16) when searching for suppliers. This is an indication that sustainable supply plays a very important role in the company's procurement process. For the remaining dimensions of PSR which are local or small enterprise/BBEE employment equity and Social & environmental attributes, all the sustainable factors within these dimensions were fully embedded into the procurement process apart from few which related to environment. There is a mixed perceptions with regards to integration of other sustainable factors such as transparency to the public and sustainable supply in the procurement process but the integration of these factors are supported by other factors within the same dimension or in other dimensions of the construct. These factors require some expertize from other departments like environmental management. This is an indication that there is no collaboration between procurement department and other departments in relation to the sourcing of goods and tender evaluations. In terms of factors that enable sustainable procurement, it was determined, that compliance to regulations remains the driving force behind sustainable procurement seconded by community pressure.

5.1.7 Concluding remarks on discussion

An assessment carried out identified 28 sustainable procurement best practice factors in the procurement process in the South African mining industry achieving objective 1. An evaluation of the PSR dimensions incorporating the sustainable procurement best practice factors identified indicated a full integration of socio-economic and environmental best practice factors with an exception of a few environmental factors that were partially/not integrated. This evaluation achieved objective 2 which was to determine the extent of integration of sustainable procurement best practice factors at two of the South African mines understudy.

5.2 Conclusion

This research study was aimed at assessing how best practice in sustainable procurement is reflected in the South African mining industry. Objective 1 identified sustainable procurement best practice factors in procurement practices of the South African industry. Then the extent of integration of sustainable procurement best practice factors in procurement practices at the two South African mines understudy was determined using PSR method was done which is objective 2 of this research study:

5.2.1 Objective 1: To identify the sustainable procurement best practice factors in procurement practices in the South Africa mining Industry.

Existing body of knowledge was explored through peer- reviewed journals, theses, and document review to identify sustainable procurement best practice factors. The major sustainable procurement best practice factors identified were Procurement policy, SME/Black empowerment equity, ethical supply, and social & environmental attributes. These major factors of sustainable procurement best practice were identified in the procurement practices in the South African mining industry achieving objective 1.

5.2.2 Objective 2: To determine the extent of integration of sustainable procurement best practice factors in procurement practices at the two South African mines understudy

From the results and discussion, most of the sustainable procurement best practice factors incorporated into the PSR dimensions were fully integrated into the procurement practices of the two South African mines understudy. All sustainable procurement best practice factors in PSR

dimensions for ethical supply, and local/small/BBEE employment equity were fully integrated into the procurement practices of the two South African mines understudy. But for Sustainable procurement policy and Social & environmental attributes, sustainable procurement best practice factors such as transparency to the public and other environmental attributes were partially or not integrated at all in the procurement practices of the two South African mines understudy. Some of the reasons were found to be poor communication, and lack of participation of other departments with the procurement department in the sourcing of goods and services. Despite some factors that are lacking, most of sustainable procurement best practice factors were determined in the procurement practices at the two South African mines understudy achieving objective 2

5.2.3 Concluding remarks on objectives 1 and 2

The objectives remained focussed at providing sufficient information and guidance in identifying and then determining the extent of integration of the sustainable procurement best practice factors into the procurement practices at the two South African mines understudy. Therefore, the aim of the research study, which was to assess how sustainable procurement best practice is reflected in the South African mining industry, was achieved. From the results and discussion, it is evident that the mine has to a wider extent, incorporated a variety of sustainable procurement best practice factors into its procurement practices, which is a reflection of best practice at those particular mines understudy. It was explored that sustainable procurement plays a very important role by the procurement of goods and services from locally communities thereby empowering these communities to improve the industry's public image. The company has put a lot of emphasis in implementing social issues especially sourcing from local small and medium enterprise and marginalized or disadvantaged people. With regards to the adapted PSR dimension, almost all factors within the dimensions were fully implemented and embedded in the procurement practices, except some of environmental factors dealing within the social and environmental attributes dimension.

5.2.4 Recommendation

This research study to assess how sustainable procurement best practice is reflected in the South African mining industry used a mixed method approach which utilized qualitative research survey approach and purposive sampling. The self-administered questionnaire was only piloted to 25 senior procurement managers while the ideal would be all the levels from senior managers to supervisors and other procurement personnel. Again, a broad spectrum of mining industries in

South Africa need to be investigated to ensure that short comings with regards to sampling approach used and number of mines participating in the survey be addressed by using other sampling approaches and different mining companies. Lastly, sustainability is not fixed but an evolving topic (Sniders, 2008) such that the environmental conditions would have changed when the research could be repeated at another time. Therefore, the method could not yield the same results hence another method of testing reliability and validity of the method need to be investigated.

With regards to the South African mining industry understudy, it has been indicated that there is a disjuncture between the Procurement department, environmental department and other departments. This has led to some mixed perceptions about the integration of other factors including environmental factors into the procurement process as it cannot be expected from procurement personnel to have all the knowledge with regards to sustainability. Sustainable procurement cannot be achieved if all the parties concerned are not involved in the procurement process. But there is still room for improvement if the mine understudy can improve its departmental relations with regards to sustainable procurement. Therefore it is recommended that communication among the departments involved in implementing sustainable procurement be enhanced.

5.2.5 Concluding summary on the Aim of the study

From the assessment that has been carried out, the South African mine understudy has integrated most of sustainable procurement best practices in its procurement practices. Therefore, it can be concluded that the aim of this research to assess how sustainable procurement best practice is reflected in the South African mining industry has been achieved.

6.0 References

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7.0 Annexure A: Sustainable procurement best practice questionnaire

SUSTAINABLE PROCUREMENT BEST PRACTICE QUESTIONNAIRE

This questionnaire is intended to inform "Best Practice in Sustainable Procurement" at Anglo American which gives effect to Sustainable Development which Anglo American and the world is striving to achieve for a better world.

Please email the completed questionnaire to: andrew.nkhoma@angloamerican.com

NOTE: All information will be treated confidentially and used as background information to assist in establishing best practice in procuring of goods and services at Anglo American which is the world leader in the mining sector in South Africa and around the world. Please feel free to distribute this questionnaire to any person or department which may have relevant information contributing to the achievement of sustainable procurement.

GUIDING NOTES

This questionnaire consists of two sections (Section A and B) followed by a brief closing section as below:

Section A: Details of your department and the Business unit you working

Section B: Views, definitions and feedback on the existing procurement practice at Anglo American including your knowledge and experience relating to procurement of good and services and how procurement impact your performance in achieving Anglo American Sustainable Development policy.

SECTION A

DEPARTMENT	
BUSINESS UNIT	

SECTION B

Please tick where appropriate the questions that follow:

1.0 Which of the following best describes the role of procurement in your section? (Please tick).

a) Administrative function, to deliver compliance with regulations	☐
b) To deliver value for money	☐
c) An integral part of company's capability to deliver its policies.	☐
d) Other (please specify)	

2. Company's Objectives and Management Involvement

2.1 Procurement is closely integrated with broader company's objectives beyond value for money or cost minimisation

	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
Management see procurement as increasingly important	☐	☐	☐	☐	☐
Transparency in procurement is increasingly important	☐	☐	☐	☐	☐
Procurement is recognised as a lever for reform.	☐	☐	☐	☐	☐
Ethical issues in procurement in are increasingly important	☐	☐	☐	☐	☐
Sustainability in procurement is increasingly important	☐	☐	☐	☐	☐

3. Structure and organisation

Tick one dominant structure that best describes procurement within your organization

a) Company's centralised purchasing	☐
b) Mine's centralised purchasing	☐
c) De-centralised/local purchasing	☐
d) Group purchasing	☐

2. Policy, Performance, Innovation and Capacity

2.1 Our procurement **policy** is centred on the following principles (please ranking scale of 1-8, where 1- not important at all, 2- slightly important, 4 – no opinion, 5 - important, 6 – more important, 8- most important)

Value for money	
Open and effective competition	
Ethical supply	
Accountability and reporting	
Fair dealing with all suppliers	
Sustainable supply	
Transparency to the public	
Use of enabling technology	

3. Procurement personnel attitude towards sustainable procurement

Please tick the appropriate box that best describes your current status

	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
Procurement is perceived as a professional, high status occupation	☐	☐	☐	☐	☐
We have great difficulty in attracting recent graduates into public procurement	☐	☐	☐	☐	☐

We have great difficulty in retaining qualified, experienced personnel.	☐	☐	☐	☐	☐
Relative to the sections, our procurement professionals are well paid	☐	☐	☐	☐	☐
We have great difficulty in recruiting procurement professionals	☐	☐	☐	☐	☐

4. Compliance with Regulatory Framework

4.1 Has your organisation ever received a noncompliance or formal notice from Department of Environmental Affairs or been in breach of any other environmental legislation or regulation**?**

Yes ☐	No ☐

If yes, please provide details and corrective action taken:

4.2 My department's involvement in socially responsible purchasing has been motivated by

a) current government legislation	☐
b) threat of future government legislation	☐
c) Community pressure	☐

5.0 Supplier commitment

5.1 Please indicate how you agree or not with the following statement concerning supplier commitment.

Tick appropriate box	Strongly	Agree	Don't	Disagree	Strongly

	agree		know		disagree
We have a strong sense of loyalty to our suppliers	☐	☐	☐	☐	☐
We are continually on the lookout to replace our suppliers	☐	☐	☐	☐	☐
Our relationships with suppliers are long term alliances	☐	☐	☐	☐	☐
We are not very committed to our suppliers	☐	☐	☐	☐	☐
We don't expect to do business with our suppliers for a long time	☐	☐	☐	☐	☐

5.2 Please indicate how you agree or not with the following statements on suppliers and sustainability.

Please tick appropriate box	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
We encourage our existing suppliers to become more sustainable.	☐	☐	☐	☐	☐
Cost of product play a more important role than sustainability criteria	☐	☐	☐	☐	☐
We actively consider switching to more sustainable suppliers.	☐	☐	☐	☐	☐
It is difficult to persuade our current suppliers to become sustainable	☐	☐	☐	☐	☐
We set social and environmental criteria that suppliers must meet	☐	☐	☐	☐	☐
Sustainability plays an important role in our search for suppliers.	☐	☐	☐	☐	☐

6.0 Best practice factors in sustainable procurement

6.1 What are the Environmental and Social Initiatives and Principles related to Procurement currently implemented by Management in your organisation

	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
Environmentally preferable materials	☐	☐	☐	☐	☐
Use of energy-efficient appliances, computers and lighting.	☐	☐	☐	☐	☐
Discriminate in favour of products made from recycled goods	☐	☐	☐	☐	☐
Sourcing products and services from local communities	☐	☐	☐	☐	☐

6.2 Choose the appropriate statement in the procuring of best Goods or services for your business unit

	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
Support suppliers who are socially responsible and adopt ethical practices	☐	☐	☐	☐	☐
Considering human health impacts	☐	☐	☐	☐	☐
Support the use of local and emerging small businesses	☐	☐	☐	☐	☐
Support socially inclusive practices, such as employment and training focused on disadvantaged groups	☐	☐	☐	☐	☐
Ensure compliance with relevant regulatory requirements	☐	☐	☐	☐	☐

6.3 Which statements contributing to Sustainable procurement apply to your business unit you are working. Please tick appropriate box

	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
Reducing environmental and social impacts arising from procurement decisions	☐	☐	☐	☐	☐
Reducing waste to landfill, saving water and reducing greenhouse gas emissions	☐	☐	☐	☐	☐
Reducing air and water pollution	☐	☐	☐	☐	☐
Promoting health, safety and equality in the community	☐	☐	☐	☐	☐
Influencing purchasing decisions to support issues such recognising equality and diversity;	☐	☐	☐	☐	☐
Improving social inclusion and cohesion through creating employment and business opportunities for disadvantaged or marginalised groups.	☐	☐	☐	☐	☐
Identified information from tenderers to make robust decisions based on life cycle costs?	☐	☐	☐	☐	☐

7.0 What needs to change in the current procurement system in order to improve services and goods in your section/department?

8.0 Please use the space below to tell us of any difficulties you encountered whilst completing the questionnaire, or any comments you would like to make about its design.
