UNIVERSITY OF KWAZULU-NATAL

Examination of green industries and its potential for job creation in Ethekwini Municipality

By

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Abstract

The global and the local interest in the 'green economy' has increased substantially since the 2008 economic downturn, thus, creating more and more green industrial development around the globe. This sector is slowly becoming more prevalent in South Africa because of the high levels of unemployment. An evaluation of countries considered as economic power houses has indicated that it is through an industrial revolution of various kinds that fast tracked job opportunities have been realised. It has been noted through research on the green economy, that this sector has for many years been dominated by the European countries and North America. However, the changing economic landscape forces some developing countries like South Africa to seriously consider the development of green industries and a viable green economy. This is more so because internationally, it has been proven that it creates a large number of job opportunities. Given this background information, this research has focused on the green industries that operate within the boundaries of the Ethekwini Municipality, with the aim of ascertaining the various categories of green industries that already exist and are thriving. Also, it investigated the required skills sets for the emerging green industries to survive and grow. Lastly, the study has provided feedback on the interventions that would maximise the growth of the businesses and create as many employment opportunities as is possible under these difficult economic times. To achieve these, a quantitative study was conducted utilizing a structured questionnaire. Questionpro, an online programme was utilised to conduct the survey. Furthermore, a manual survey was undertaken at a Green and Livable City event to improve the results of the survey. The results indicated five main categories of green industries that are prominent: manufacturing, energy, waste, professional services and infrastructure. Technical skills are in high demand, with product design and equipment maintenance. Given these findings, the following recommendations were made: an improved supply of environmentalists, finance and administration skills, might increase employment opportunities for the locals in these sectors. Government and other stakeholder support of the industry need to focus on legislating, incentivising the industry and, building up awareness of the environmental and economic benefits of such an industry in Ethekwini Municipality.

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LIST OF ABBREVIATIONS

SMME	Small, Medium and Micro Enterprise
IDP	Integrated Development Plan
DTI	Department of Trade and Industry
UNEP	United Nations Environment Programme
EERE	Energy Efficiency and Renewable Energy
SSA	Sub-Saharan Africa
ICT	Information and Communication Technology
CEDEFOP	European Centre for the Development of Vocational Training
ILO	International Labour Organization
NGP	New Growth Path
IDC	Industrial Development Corporation
NIPF	National Industrial Policy Framework
MEC	Member of the Executive Council
KZN	KwaZulu-Natal
GDP	Gross Domestic Product
PSIR	Policy, Strategy Information and Research Department
EDIPU	Economic Development and Promotion Investment Unit
NPO	Non-Profit Organisation
IT	Information Technology

CHAPTER 1: INTRODUCTION

1.1 Introduction

In South Africa, the dawn of democracy in 1994 brought about political liberation which did not automatically translate into economic prosperity for all citizens in an equally manner. The removal of the physical barriers that separated communities by racial lines had unintended consequences, with more pressure placed on cities and towns to economically cater for all citizens. Major cities like the Ethekwini Municipality, popularly known as Durban, received huge pressure to accommodate the population that moved from the surrounding rural areas into the big city. Most areas in the country, through industrial development, continue to embark on various economic activities locally and internationally, the aim being to support the development of the country and its growing population. Furthermore, it has been very important for South Africa as a country to re-enter the global economy as a serious player where business can take place. It has thus become important for the country to be economically relevant, locally and globally, so as to facilitate real economic development and growth. One of the ways to achieve this is through the green economy and the green industries (Ethekwini Municipality, 2013).

The aim of this chapter is to provide a holistic background to the study. This is done through a discussion of the background of the study, the rationale and the motivation for conducting this particular research. Furthermore, the aim and objectives of the study are clearly identified, followed by an explanation of the specific focus of the research. Lastly, it is important to lay out the delimitation of the study, as this would assist in maintaining objectivity within the study.

1.2 Background

The evolving societal needs and demands have necessitated changes and adaptation of the economic environment throughout the world. Davies (2011) indicates in her article that static economic systems and those that depends on a single economic sector are dealt with harshly from time to time, especially during bad economic climate conditions. This was evident in some of the first world countries during the 2008

economic recession. Countries like the United State of America and Greece almost completely crashed and are yet to fully recover from that period because of the then impact on their financial sector (Davies, 2011).

It is noted that the United Kingdom and Germany, whose economies were not badly hit by the recession, have economic activities in sectors that seem to be more diverse. One of the economic sectors that has contributed to the prosperous economic growth is the focus on the green economy. The Green Alliance report indicates that the government in the United Kingdom in particular, has invested heavily in the development and growth of green economic activities, providing incentives to stimulate sustainable green economic activities (Green Alliance, 2012). This has contributed too immensely on this country's resilience during the period of economic recession in 2008/9. Many countries are now following the same route in developing the green economy. This is largely because of the economic push to do so and also because of the environmental benefits that the countries receive from pursuing the green agenda.

The economic and environmental opportunities that come with greening the economy have been recognised globally. South Africa has not been immune from recognising the need to diversify the economy and promote greener activities. Green industries are slowly becoming a sector within the South African economy. This has been evident through various incoming government legislations, policies and strategies which recognise the importance of prioritising sustainability and growing a whole new economy based on some of the sustainable principles.

The United Nations has also played a role in redirecting the focus of both the first world and the developing countries towards setting a new agenda of sustainable green development which contributes to the reduction of harmful gas emissions (United Nations, 2015). The Green industrial revolution might assist South Africa in the reduction of the carbon footprint. Furthermore, it might assist in the creation of employment through the growth of green industries.

In 2014, the Ethekwini Municipality hosted the 17th United Nations Framework Conversion on Climate Change, COP17. This event raised the level of consciousness for many stakeholders, with regards to issues pertaining to climatic changes and various mitigation options that can be adopted by different countries to address and enforce sustainability issues. Ethekwini Municipality committed itself, through its

Integrated Development Plan (IDP), to investing more resources towards supporting green industries to stimulate and grow this economy (Ethekwini Municipality, 2014). Funds and other resources have been allocated at different levels of government, like the National government's green fund, the KwaZulu Natal's trade and investment in various areas and new departments set up to focus on promoting job opportunities that come from the green industries (Ethekwini Municipality, 2013)

1.3 The Problem Statement

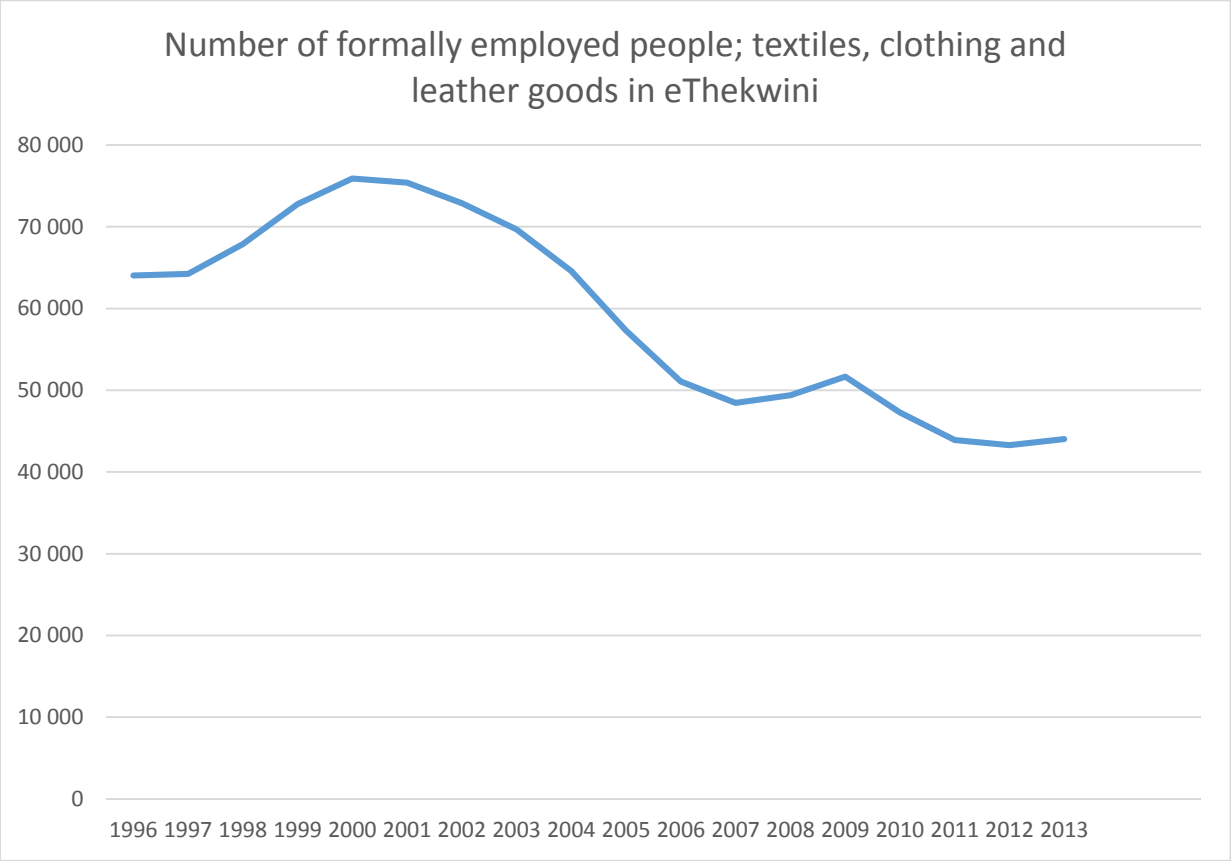
The Economic Development Strategy of Ethekwini includes various programmes and projects which are designed specifically based on green economy principles. These are projects and programmes that have a special focus on environmental sustainability, equity and social sustainability (Ethekwini Municipality 2013). Amongst other many municipalities in KwaZulu-Natal, Ethekwini is identified as a local leader in matters pertaining to the environment and climate change. This is demonstrated by the numerous awards that have been won by the municipality, the various successful environmental projects, as well as a few innovative policies that have been adopted by the municipality (Ethekwini Municipality, 2013). Despite all of these achievements, Ethekwini Municipality has many environmental and social problems which include an ever increasing unemployment rate, high failure rate of SMMEs, social inequality, poverty, infrastructure backlogs and many more. It is against this background that one of the solutions to solving these problems is to advance the green economic agenda in eThekwini, so as to address such and other challenges, while taking advantage of the presented opportunities to be able to access jobs through the development of green industries (Ethekwini Municipality, 2013).

1.4 The Rationale and Motivation for the Study

The Industrial Policy Action Plan (IPAP), is the Department of Trade and Industries's (DTI) Industrial development plan for South Africa, identifies the green industries as one of the new niche knowledge sectors that has a huge economic potential in South Africa (DTI, 2016). Currently, the perception is that there is a dramatic decline in the

economic contribution of the traditional economic sectors like clothing and textile, within the Ethekwini Municipality and this has contributed to many citizens losing their jobs. This perception is supported by the illustration in Figure 1.1, which indicates that employment within the clothing and textile sector, for example, has been steadily declining from 2001 right up to 2013 (PSIR, 2014). This motivates for the economic focus which has to shift from traditional industrial growth to the new niche sectors like the green industries, which can potentially reverse this scourge of slowing economic activities.

Figure 1.1 The number of the formally employed in Textile, Clothing and Leather Goods in Ethekwini.



Source: PSIR, 2014

It has been proven in some first world countries like Germany and the United Kingdom that diversifying the economy places countries in a better position to withstand the unexpected negative impacts on the economy (Green Alliance, 2012). This can be supported by countries investing in facilitating the necessary skills and support programmes for the emergence and the development of diversified economic sectors.

Ethekwini Municipality, having identified the green economy as one of the new economic sectors to support in its strategic economic development plans, and through the desk top research conducted, it was revealed that there is limited information regarding the kind of green industries already existing within the municipality. The motivation for this study has therefore been the need to determine the existence of green industries within the Ethekwini Metropolitan area, understanding the various categories of green economic activities that are existing within this new sector for the municipality. It is important to establish the facts, with regards to the necessary skills set required for this industry, as well as the kind of assistance that the government and other stakeholders need to provide towards the development and the growth of these green industries, especially with regards to supporting the development of the necessary skills development.

The outcome of this research would also be shared with the municipality and other specific industry bodies which might contribute in the designing of relevant local policies, projects and programmes that would support this new industrial sector.

1.5 The focus of the study

The focus of this study was on the emerging green industries which are formal green entities that have been operating for at least more than a year within the Ethekwini boundary. There are various unknowns and aspects that can be researched within a new economic sector like this, but specific important areas have been selected, which are deemed important in supporting the growth of a new sector, like the availability of the relevant skills and their development. Therefore, the need to focus on the skills set that are required by various subsectors within the green industries is crucial to inform the most elementary of intervention that might be necessary to grow this industry. Also, the research attempted to be as diverse as possible, by not focusing specifically on subsectors like clean energy generation and waste management, but treats all subsectors equally, since one of the objectives was to confirm the types of subsectors that are within the Ethekwini Municipality.

1.6 The Research Questions

- What are the existing categories of green industries within eThekwini Municipality?
- What are the skills set necessary for the green industries?
- What kind of support is needed to accelerate the growth and and the increase in the number of employment opportunities presented by this sector?

1.7 The Aim and Objectives

The overall aim of this study was to examine the emerging green industries within the Ethekwini Municipality. The specific objectives were:

- To establish the categories of green industries existing in Ethekwini Municipality.
- To establish the skills set required for these emerging green industries.
- To ascertain the required support for industry growth and an increased in the number of people employed in this sector

1.8 Significance of the Study

This research study will benefit not only the Ethekwini Municipality, but also the green industrial businesses themselves. The study aims to unpack the types of green businesses existing within the city, as well as the skills sets that are prominent in these type of industries. In this way, the study might therefore inform relevant stakeholders like policy makers to design policies that support the growth of this industry, as well as the institutions of higher learning, which could introduce relevant programmes which would equip, in terms of knowledge and skills, those who would want to venture in green industries. Most importantly, government and the municipal planning authorities might benefit from the feedback on the nature of support required by this emerging industry. Accelerated growth of this green economy sector would in turn absorb a lot more unemployed citizens of Ethekwini.

1.9 Definition of Key Concepts

Within this research there are important concept that will need to be clearly defined so as to provide a common understanding of this work. United Nations Industrial

Development Organisation defines green industries as those industries that are involved in economic activities that strive for a more sustainable model of economic growth (UNIDO, 2017). These involve initiatives and activities that are environmental friendly. Where as green economy is an economiy that comprises of economic activities, be it manufacturing, providing services, in a manner that does not degrade the environment (Brand, 2012)

Both the concepts explained are closely linked to sustainability or sustainable development as it is generally known. Sustainability development is defined as the kind of development in as area that meets the current needs of the people without compromising the needs of the generations to come (Samaad and Mansoor, 2015). It is a dynamic process which allows the citizens to impove the quality of life in a way that protects the environment.

1.10 Dissertation Outline

This research consists of 6 chapters. This first chapter highlighted the introduction, background as well as the rationale for this study. It further elaborated on the aim and the objectives of the study, as well as the research questions. Chapter 2 provides a detailed literature review on the subject matter. Chapter 3 outlines the methodology followed in conducting the research. Chapter 4 presents the results of the research. Chapter 5 discusses the results of the study. Lastly, Chapter 6 concludes the study by highlighting the summary of the study, conclusion and recommendations, as well as a presentation of areas for further research.

1.11 Chapter Summary

This study was intends to examine the potential of the green industries emerging within the Ethekwini Municipal boundary. The chapter has indicated that the green economy is one of the new important sectors within the economic development of the Ethekwini Municipality. Among other things, the green industries have a potential to extensively contribute towards the economy through the creation of new jobs thus, reducing the rate of unemployment within the municipality. However, it still has to be established as to the kind of skills set needed to accelerate growth in this sector.

Chapter 2 presents the literature that is relevant for the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The green economy is a multi-million-rand industry that has taken the world by storm. This industry includes companies and businesses that focus on the production of green lifestyle and eco-friendly products, renewable energy and clean technology production, organic agriculture, water and waste beneficiation, natural resources and sustainable land management (Saxena & Khandelwal, 2012). Global warming issues have raised concerns and consciousness among the people, in terms of taking good care of the earth and the sustainable utilisation of resources, especially non-renewable resources. Even the business environment is being challenged to utilise resources in a sustainable manner hence, the emergence of the green businesses whose focus is running the green philosophy as the core of the business. It is indicated that in some countries around the world, the green business strategy is no longer an option, it has become a must and there are world organisations whose work focus on conscientising different industries that this is the only route that economic growth needs to take as the future of each country depends on in (Raworth; Wykes & Bass, 2014).

More and more companies are guided by a social responsible vision and strategy to gain a competitive advantage, as well as ensuring sustainable growth. There has not been a lot of research that has been conducted in the Ethekwini Municipality with regards to this phenomenon, but a lot of research findings from various studies around the world indicates that companies are more supportive of the idea of green industries and the green economy. The general indication is that customers are now willing to pay a little bit more for an environmentally friendly product, as compared to the opposite and this adds more credibility to companies which practice green philosophy (Saxena & Khandelwal, 2012). Furthermore, these firms are gaining an advantage with regards to profit margins which present a positive return on the investments which have been made by choosing a different route.

Firstly, the defining concepts related to the green is important so that there is a common understanding of the terms used. This chapter thus reviews the literature that

exists internationally and locally, with regards to the emergence and the growth of the green economies and associated green industries internationally, as well as in South Africa, with a view to link the information to Ethekwini Municipality. It discusses the legislation that facilitates the development and growth of green industries, especially in South Africa as this directly relates to Ethekwini. Furthermore, it identifies the growth of this industrial sector internationally, looking at the different types of green industries and focuses on those subsectors that seem to be making the most impact within the economy. Education and skills that have facilitated the growth of the industry are examined. It discusses the job opportunities that have emerged through green innovation. Lastly, the intention is to identify government input in facilitating the growth of these green industries locally and internationally.

2.2 Understanding the green industries

The green economy is made up of green industries and for the context of this research, the green economy entails a collective basket of green industries. There are various definitions that seek to define what type of industries are “green”. There are those industries that were historically considered brown, but have changed their practices that they are now operating under the green principles, while there are those industries that are founded on the green principles and agenda right from the start.

UNEP report has a few sections that focus on the green economy. The report defines green industries as “a system of economic activities related to production, distribution, define and consumption of goods and services that results in increased human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP, 2011). In relation to this research, this means that green industries are firms that have, as their core business, the production of products or provision of a particular service yielding economy benefits while reducing harm to the environment. It is further explained as when the ‘business-as-usual’ operations and associated technologies have been systematically altered to protect the environment and promote social goods while reducing risks. A case in point is an example of the production and the distribution of solar panels by a firm for energy generation, as opposed to the production and distribution of energy sourced from non-renewable resources like the fossil fuel. Another example of a green industry relates to recycling and up cycling

initiatives, where the innovation is associated with the waste resources. Certain types of plastics can be utilised to produce roof tiles and a gutter system, while recycled building rubble can be made into building blocks.

2.3 Theories of Green Development

It has been discovered that there are three main sources of the theory of green development (Hu, 2016). The first one, is the concept of “unity of nature and humanity” which in traditional Chinese philosophy it has bee in existence for over many of years. Secondly, it is the Marxist dialectics of nature, which was developed in more than hundred years ago; and lastly, it is the contemporary theory of sustainable development, and this is currently guiding the green industrial development (Hu, 2016).

2.3.1 The Unity of Nature and Humanity in Traditional Chinese Philosophy

Ragheb, El-Shimy, & Ragheb (2016) identifies the fact that the unity of nature and humanity together with the nature and humanity being inseparable as opposed to opposites. Second, the unity of nature and humanity specifies that humanity must be in congruence with nature (Ragheb, et al 2016). At the centre of this theoretical framework it means that humanity should strive to form a co-beneficiation association with nature, a connection of coexistence and collective prosperity (Ragheb, et al 2016). This approach seem not to be inline with the reality though, hence further theories have been developed since then.

2.3.2 Dialectics of Nature in Marxist Philosophy

Hu indicates that the theory of the dialectics is also based on a three stage level towards development (Hu, 2016). In the first stage, humanity is an inactive slave to nature, and all actions are subject to natural mechanism. In the second stage, humanity tries to become the principal of nature to gain resources from it. This would include the era of industrialization, urbanization as well as modernization. This stage sees a continuously increasing gap between humans who demands and consumes and the nature’s carrying capacity and its supplies, as well as the noticeable conflict between the environment and the development (Hu, 2016).

2.3.3 The Theory of Sustainable Development in Modern Times

According to Jacobs (2012), sustainable development indicates that since the industrial revolution, current development, with its consumerism as driving force, has been branded by extreme resource and energy depletion, ecological damage and pollution emissions and after the crisis has occurred, sustainable development is trying to fix this crisis (Jacobs, 2012). Although sustainable development demands less destruction of the environment for the benefit of the future generations, it has not changed and is unlikely to change the basic features of western capitalistic development and the high consumption, as well as high emissions. This provides a theoretical framework for the emergence and the growth of green industries.

2.4 The Emergence of Green Industries

Opportunities arise in the middle of a crisis. Steiner (2012) in his paper, indicates that the global financial crisis was devastating, but it presented various opportunities for various governments. Some of the leaders created various stimulus packages to boost the economy, while others looked at alternative economic opportunities to contribute towards economic recovery (Steiner, 2012). Some concur with Steiner in that the rise of the green industries in most first world and even developing countries was facilitated by the 2008 global financial collapse, which directed many countries towards the potential to kick-start economic development through the stimulation of investment in the green economic sector. This was confirmed by the UNEP's 2010 Green Economy report which laid out many opportunities in detail. It was further cemented by the United Nation's 2012 Conference on Sustainable Development (Raworth; et al. 2014).

The shift towards a greener industrial economy on an international platform has been driven by the following factors:

- The traditional economic paradigm, the neo liberal economic growth has been affected by the global economic crisis of 2008. This presented an opportunity to change the previous economic paradigm towards a more resilient paradigm of sustainability (Stiglitz; Sen & Fitoussi, 2010).

- The growing global terror of not being able to alter the environmental damage, in part, indicates the need for adaptating climate change programmes because of the increased risk and vulnerability.
- The change in the economic theory and the policies towards ‘resilience’, as opposed to growth. This translates to a shift towards greater social justice and equality, and “investing in the management of the environmental asset base” – with both contributing in the resilience of the economy (IIED, 2009, 4).

The United State (US) is ahead in many aspects of this sector. A tool has been developed that is used to measure and assess the impact made by green industries on employment and income, as compared to various traditional industries. The US, through this tool, has tested some of the industries that generate green energy and the impact made on jobs and income generated has been significantly higher, as opposed to the traditional industries that generate the same amount of energy (Scott; Roop; Schultz; Anderson & Cort, 2008).

Saxena and Khandelwal conducted an industrial study in India, which revealed that companies are not adverse in practicing a green philosophy. Firms understand that green would assist them towards gaining a competitive advantage and would support their endeavour in sustainable growth. The result of that study revealed that companies believe having the green image is always preferred over others and that would result in a distinctive advantage with the markets. Furthermore, by practicing the green philosophy, companies would be more sustainable in the markets, as opposed to non-green firms. Sustainable development is therefore more feasible through the development of green businesses (Saxena & Khandelwal, 2012).

Hamdouch and Depret (2010) argue that in many countries, the development of the green economy over the recent years has been associated with the implementation of various government strategies of consolidating the public policies and linking them up with the environment. Legislation and policy integration strategies are necessary conditions towards encouraging viable development of environmental technologies, as well as competitive green sectors (Hamdouch and Depret, 2010). In some areas like the United States of America and some parts of Europe, building a new economy based on green fundamentals, which focused on energy efficiency, diversification,

waste minimisation as well as the sensible utilisation of natural resources, was a must (Steiner, 2012). The global crisis presented an opportunity to really make profound moves towards low carbon and green economy which delivers multiple opportunities and benefits for the governments internationally. It addressed the energy, food and the water security issues, which are linked to the sustainable achievement of the Millennium Development goals (Steiner, 2012).

2.5 Green Innovation

Innovation is another newer concept in the economy and governments which seek to improve their countries' outlook are incentivszing innovation, especially in green technology, in countries around the world. In the case of California in the US, Chapple; Kroll; Lester; & Montero (2011) argued that green innovation disrupts the traditional models of innovating and its value in the economic development space. Different types of green innovation and the role it plays varies widely from sector to sector. Mostly, environmentally challenged companies trying to change models of operations are more inclined to innovate utilising new processes, whereas the totally new green innovative companies would lean towards responding to local and the regional markets that are present at that time, and this presents a much higher return. It is further argued that innovation on its own does not necessarily stimulate sustainable growth, but usually gives a minimal boost to traditional companies. Whereas, green emerging companies stimulate growth while they may require additional support and tools within the local networks to transform these innovative products and ideas to the new markets (Chapple; Kroll; Lester; & Montero 2011). Ethekwini Municipality needs to fastrack its economic growth and therefore, innovation around greening the industry and developing a totally new green economy is imperative.

According to the Conference Board - Global Economic Outlook for the year 2016, it has been forecast that the global economic outlook is likely to continue on a slow growth path like it has been in the past five years (The Conference Board, 2016). It further indicates that although technology and the green innovation have continued to inspire new opportunities around the world, it may be offset by persistent constraints which include slow investment growth and lower productivity. The expectation is that the new technology, as well as the green innovation, improve global growth to above

2.8% in 2016 (Barbier, 2010). The prediction indicated in Barbies' book is that growth will then remain steady in the next ten years, with an average of 2.1% during 2016-2020 and 1.8% in 2021-2025 (Barbier, 2010). Surprisingly, the Sub-Saharan Africa (SSA) performance has managed to avoid the commodity growth stagnation better than the other economic regions. (The Conference Board, 2016). These statistics also speak to the need for focusing on growth sectors for Ethekwini's economy and the green economy is one of them.

2.6 Green jobs

Borel-Saladin indicates that there is currently no common definition of a green job. A strict definition indicates that a green job is a type of a job in the industry sector that produces goods or services that has environmental benefits, whereas the broader definition only considers the wider impact of the green growth policy and it includes indirect, as well as induced jobs (Borel-Saladin & Turok, 2013). When counting the number of jobs created, it is useful to consider the entire value chain of the product or the service. Indirect jobs are counted as employment opportunities that are located within the supply chain of a product and what is termed as an induced job opportunity entails those employment opportunities that are created when there is a higher spending power in other sectors from those employed within that particular industry being supported by a green policy (Borel-Saladin & Turok 2013).

In the US, green jobs are easily identifiable. Results of a particular survey indicated that about 176, of nearly 1000, jobs in the US involves green activities. Most of the Green intensive jobs in the US are sustainable jobs that are on full time bases and pays beyond the minimum wage, and in addition includes a medical insurance. These green jobs are both accessible to inexperienced job seekers with limited experience as well as education, and also educated job seekers (Peters, 2013).

Various economies are currently being restructured to focus on activities that would assist them gain a cleaner, efficient economy, an environment that is climate-resilient, with the aim of growing an environmental sustainable economy that provides decent working conditions. These economic activities sometimes require the reduction of some traditional jobs which are replaced by some new and exciting jobs established

in the green economic sector (Pavlova, 2012). Asia Business Council anticipates the estimated number of green jobs that would be developed by year 2030 would reach about 100 million throughout the world. This translates to 2% of the workforce in the entire world. This concept of green growth is new in the economic development arena Some jobs specifications have changed to accommodate green technology and require the associated skills. It is thus imperative for countries to have an understanding of what type of skills, attitudes and capabilities are targeted for the prosperity of green industries (Pavlova, 2012).

2.7 Types of green industries

There are specific green industries that have succeeded in proving that it is economically viable and smart for companies to enter this space. Greening key sectors in an economy of a country have the potential of bringing long term benefits to people living in abject poverty. This can be done through the stimulation of the economic via supporting diversification of the economy as well and facilitating the creation of jobs in an environmental restoration process (Raworth *et al*, 2014).

Raworth et al argue that strategies pertaining to green economy are usually focused on three main greenhouse gas intensive sectors because of their importance within the economic growth agenda, they relate to the established climate change policies and these three are able to attract climate change funds. These are:

• **Energy –** has the potential to promote low-carbon and renewable energy, a system which is energy efficient
• **Transport**- with an opportunity to expand affordable, as well as improving the accessibility of the transit networks, also the promotion of fuel-efficient vehicles, cycling and more walking
• **Infrastructure –** through the provision of resource-efficient services with regards to water, healthcare, sanitation, education and decarbonising urban and settlements

Countries are not homogeneous when it comes to focus areas, some strategies also include natural resources like primary industrial sectors, or any other that present interest to developing nations with less resources and these are:

• **Agriculture-** with the generation of higher-value, lower-impact sustainable agriculture and promotion of the ecosystem, water and land rehabilitation
• **Forestry:** with the promotion of reforestation and the preservation of biodiversity, through giving more value to the forest ecosystems
• **Fisheries -**Programmes that promote restoration of fish production to manageable and sustainable levels
• **Manufacturing –** projects and programmes that promote low-carbon, as well as resource-efficient style of production, with the benefit of capturing green additional value along the supply chain.
• **Waste management –** the reduction of waste to land fill and the increased recycling rates, as well as utilising waste as feedstock for energy or compost.

An economical insignificant country like Uganda has made remarkable contributions towards the sustainable development of green industries (Nabudere, 2013). The government of Uganda adopted organic farming standards and policies to promote sustainable agricultural growth in 2004. Within the first 5 years of this policy, the number of certified organic farmers improved by 359% and reduced greenhouse emissions (Nabudere, 2013). It is further stated that the conventional farming methods were contributing to the emission of about 64% more per hector. The countries certified organic exports increased from 3.7 million US Dollar to 22.8 million US Dollar in almost 4 years (Nabudere, 2013). A green principle into the agricultural sector has turned things around for the country.

An investigation into the number of clean jobs renewable energy generated revealed that all renewable energy and low carbon sources of energy generate additional jobs, as opposed to the fossil fuel energy generation sector. The types of employment differ between technologies (for example manufacturing versus resource extraction). The timing and the locality of employment also differ in all given countries or geographical locations. This information is useful to policy makers, especially those who design future energy policies, or it might be useful to short term government programs as well, in the provision of economic stimulus for direct employment opportunities. Embarking on an energy efficiency agenda offers a higher payoff in what is known as induced jobs and presents the least cost that is often the most easily implementable approach.

Energy efficiency can reduce the requirements for additional fossil fuel plants as well as the renewable energy sources (Wei et al. 2009).

2.8 Skills requirements in an emerging economic sector

An empirical research conducted in Botswana by Mutula and Brakel (2007) proved the necessity of aligning the skills development programmes of the country, with the ambitions of growing a new economic sector. The purpose of that research was to investigate the skills needed in the emerging ICT sector in that country, for the purpose of empowering this emerging digital economy. The findings suggested that there was an extremely high shortage of the high skilled and technical personnel required to steer the emerging digital economic sector in both the first world and the developing countries, including Botswana. Furthermore, in Botswana, there was a major skills gap for certified specialists to assist the development of sophisticated applications which were necessary to empower the digital sector (Mutulo & Brakel, 2007). This indicates that local skills unavailability can affect and negatively impact on the growth of a new industry.

Another study was conducted in the United States and this was not about the technical skills but the existence of management skills. There are all elements of skills sets that are required for a new industry to take off. The aim of the study was to ascertain the opinions of random Marines with regards to leadership development in various new Naval bases. The researcher conducted an analysis with regards to the content of the leadership education and training courses. The information was then compared to the contemporary leadership theories and a few relevant models of leadership. The results of the study indicated that the leadership development that was provided was adequate. There can be improvement through particular areas of skill development, skills application and developing a value system. The existing Professional Military Training (PME) provided relevant leadership education to the personnel at the Navals, but do not necessarily meet the expectations of the Marine officers (Page and Miller, 2002).

2.9 Skills in green industries

When the innovation in information technology emerged all around the world, a specific skills set and knowledge were suddenly a requirement, which resulted in the

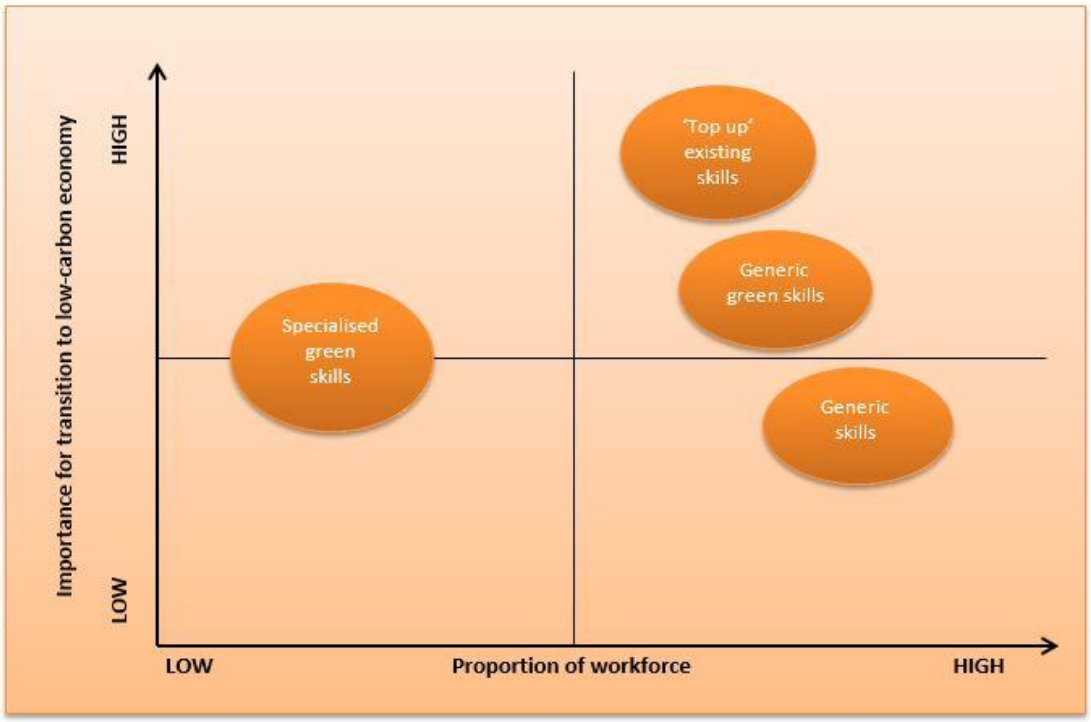
development of even new courses and curricula in almost all institutions, as well as throughout the education hierarchy. This resulted in the constant retraining and upskilling of the educators, as well to be able to use and teach the new technology. The technopolis report indicates that in contrast, the new development of the green sector industry does not require a complete change in the education system, but it largely requires the updating and, in specific few cases, an overhaul of the existing ways of learning (Technopolis, 2016). Similar to the Information technology boom, however, the responses that are provided by the education system to the development and growth of the green economy would require a thorough understanding of the type of labour requirements from the industry to be able to maximise the benefits of green industries.

It is important to acknowledge that different types and levels of development guides the level and the amount of change required in the skills levels to accommodate the new green economic sector. Different levels of economic growth also influence how the technology and education could add value to the green industrial growth (Pavlova, 2012). Pavlova continues to indicate that in many countries, decent work created in areas such as renewable energy, wastewater management, retrofitting existing buildings, biomass transportation, as well as environmental conservation, continue to grow. This necessitates a change in the skills development agenda of an area to accommodate the green industries sub sectors. Various countries are now designing their own tailor-made education programmes and relevant training towards equipping the job seekers for a green economy (Pavlova, 2012).

Figure 2 presents the importance of specialised skills; ‘top-up’ skills and generic skills for greening economies. The CEDEFOP research indicates that the retraining, which is necessary for workers to shift to an employment opportunity which has been presented in a greener industry, would not take place on a large scale in various countries. The results of the research presented indicate that the necessary skills relate to up-skilling and adding knowledge and training to existing main skills to allow workers to fulfil the requirements of new occupation. For example, a trained electrical engineer would require to top up his knowledge with regards to the generation of electrical power through various mediums that are more sustainable and renewable. Topping-up the skills maybe company or industry specific, especially for structured

economies, as well as job-specific for informal economy and should be addressed via the existing education system (CEDEFOP, 2010).

Figure 2.1: Green skills and their importance in the transitioning to a low carbon economy



Source: CEDEFOP, 2010

The research that was conducted by the ILO on green jobs and green skills provided a good reminder of the importance of the basic skills in an effort to prepare labour for the demands of the green economy, particularly within the developing economy context. According to that 2011 report, "while being environmentally sensitive and living in harmony with nature, in a traditional sense might not require literacy and numeracy skills, participation in a green economy that relies on a wide range of modern technologies to shift current ways of production and consumption to more sustainable forms certainly does" (ILO & CEDEFOP, 2011). It is then understood that the literacy, as well as numeracy skills in industry, including the green industry, are a foundation for additional learning and training, especially technical skills. There would still be a challenge that would need to be tackled in developing countries where there

are low levels of literacy and numeracy when preparing the population for green industrial opportunities.

Bowen & Kuralbayeva (2015) state in their report that to accommodate a new green industry, the education system needs to provide for the green technical and a few core skills. This report indicates these as specific engineering, building, installation, management and auditing for the green industry. There are a few technical schools that emphasise innovation and that have had some of their campuses turning into green campuses right across the continents. The green campus initiatives contain components within the activities that are performed, which raise awareness amongst all students, and an example of this are the recycling programs that these campuses are involved in. At the core of a green campus is an education system that is geared towards exploring and promoting innovations in knowledge and technology that relate to green industries.

Skills transfer through experiential learning are faster and a recommended alternative to consider empowering a workforce for a sustainable green growth. This is illustrated in one of the bilateral programmes the South African Government has with the German government. In this programme, the South African government committed to an exchange programme that sends interested entrepreneurs and targeted officials to Germany for various experiential learning programmes towards technological innovations. (Maia; Giordano; Kelder; Bardien; Bodibe; Du Plooy; Jafta; Jarvis; Kruger-Cloete; Kurn & Lepelle, 2011). These are then adaptable for a greener economy such as efficient waste disposal methods, solar water heaters and facilitating resource efficiency in the production processes (Maia *et. al.*, 2011)

2.10 Green industries and jobs in South Africa

The interest in green economy and the associated green industries has gone outside the boundaries of the environmental economics, but also into politics and businesses, even in South Africa. All the readings indicate that the green economy agenda would fastrack a sustainable environment, economic and facilitate employment growth. South Africa is battling the ever-growing unemployment rate which is currently sitting at an average of 26% (Statistics South Africa, 2016). The advantages of green growth for South Africa relates to the types of jobs that it facilitates, which tends to utilise

higher appropriate local resources than the traditional mainstream economic activities. To illustrate, an energy efficient activity such as retrofitting buildings with appropriate lighting, would be location specific and would require local labour. Energy efficient firms seem to require more labour than the carbon intensive firms.

The key aim of the National Growth Path (NGP) is to drive economic development and growth towards labour intensive industrial development opportunity such that South Africa achieves that five million additional jobs by the year 2020. The Green Economy Accord was also signed in 2011 by the representative of the four stakeholder groupings which are the government, the private sector, labour unions and civil society. The main objective of this Accord was to facilitate the development of a minimum of 300 000 jobs within the space of the green the economy by year 2020 (Borel-Saladin, Turok 2013).

In alignment to the NGP, the Industrial Development Corporation (IDC) has facilitated the establishment of the Green Industries Special Business Unit in the year 2011. Closed to R22 billion were plans for investment in green industries in the following five years. This illustrates the seriousness that the government of South Africa is taking the role of supporting and the promotion of green industries. This special fund is targeting industries that have a special focus on the generation of clean energy, streamlines and cleaner manufacturing methods, waste reduction activities, mitigation of pollution and development of biofuels (Borel-Saladin, Turok 2013). The government has spent on the general economic activities and labour in 2011, about R19.1 billion and a further R7.9 billion on fuel and energy. It is therefore noted that the IDC's fund is a substantial investment into green economy of the country. All this investment is done by the government in the motivation that these industries would contribute towards the lowering of the unemployment rate in South Africa and create more employment.

Table 2.1.: Direct employment potential which is estimated for the 4 types of activity, as well as their respective segments in the long term in South Africa.

Green economy category		Segment	Technology/product	Total net direct employment potential in the long-term
ENERGY GENERTAION	**Renewable (non-fuel) electricity**	**Wind power**	Onshore wind power	5 156
			Offshore wind power	
		Solar power	Concentrated solar power	3 014
			Photovoltaic solar power	13 541
		Marine power	Marine power	197
		Hydro power	Large hydro power	272
			Micro-/small-hydro power	100
	Fuel-based renewable electricity	**Waste-to-waste energy**	Landfills	1 178
			Biomass combustion	37 270
			Anaerobic digestion	1 429
			Pyrolysis/Gasification	4 348
			Co-generation	10 789
	Liquid fuel	**Bio-fuels**	Bio-ethanol	52 729
			Bio-diesel	
ENERGY GENERATION SUB-TOTAL				**130 023**
ENERGY & RESOURCE EFFICIENCY		**Green buildings**	Insulation, lighting, windows	7 340
			Solar water heaters	17 621
			Rain water harvesting	1 275
		Transportation	Bus rapid transport	41 641
		Industrial	Energy efficient motors	-566
			Mechanical insulation	666
ENERGY & RESOURCE EFFIECIENCY SUB-TOTAL				**67 977**
EMMISIONS AND POLLUTION MITIGATION		**Pollution control**	Air pollution control	900
			Electrical vehicles	11 428
			Clean stoves	2 783

		Acid mine water treatment	361
	Carbon capture and storing		251
	Recycling		15 918
EMMISIONS AND POLLUTION MITIGATION SUB-TOTAL			**31 641**
NATURAL RESOURCE MANAGEMENT	**Biodiversity conservation & eco-system restoration**		121 553
	Soil & land management		111 373
NATURAL RESOURCE MANAGEMENT SUB-TOTAL			**232 926**
TOTAL			**462 567**

Source: Technopolis Group, 2016

2.11 Legislation and Policy Framework in South Africa

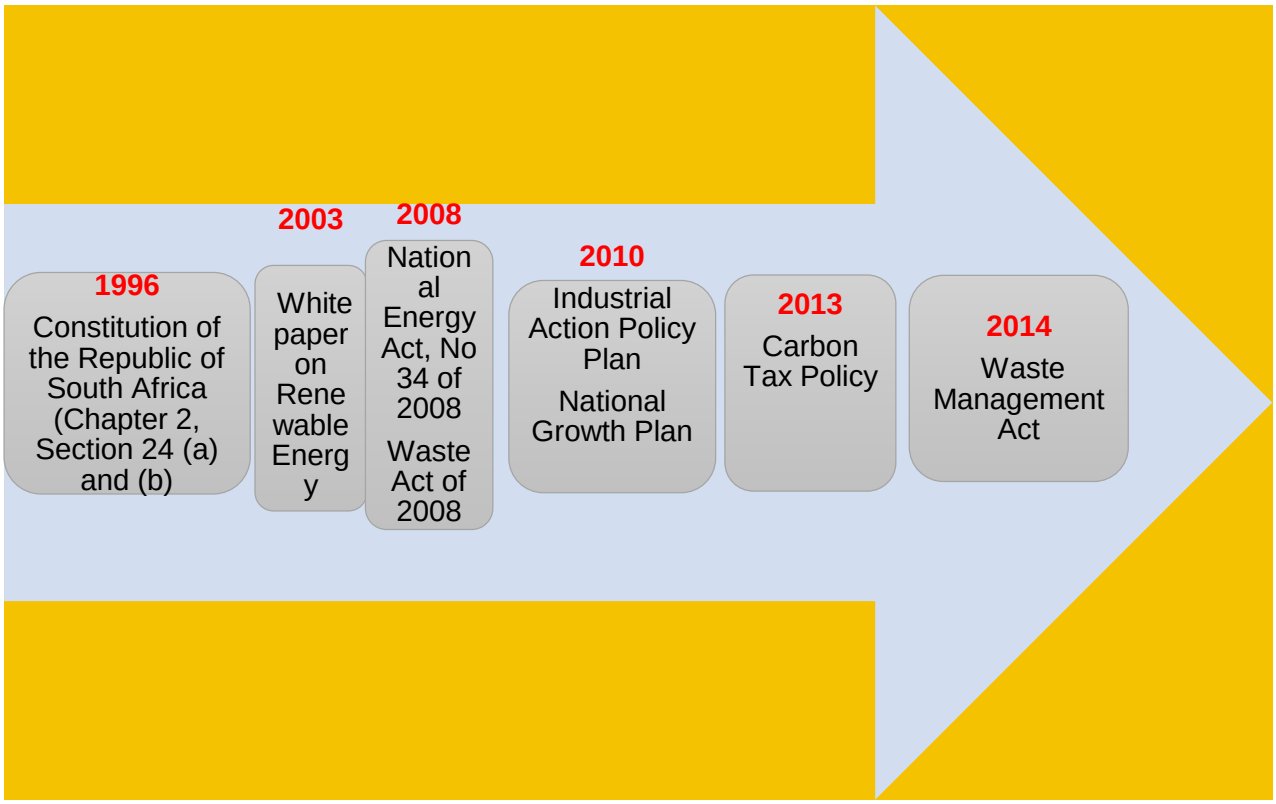
Policies and legislation are very important in the facilitation of the development and growth of a new and prioritised industry in any country. Sometimes the current laws of a country might not facilitate positive engagement, or might be silent with regards to a particular industrials sector and needs adjustment such that they do not hinder positive economic growth of a sector. Green industries are important in South Africa as there are high levels of unemployment rate, as well as the high carbon emissions which impact on the economy (Borel-Saladin, Turok 2013).

Green economic activities are important as a contributor to the Sustainable Development Goals, where South Africa, like many countries around the world, is a signatory to this agreement facilitated via the United Nations. In 2015, member countries had adopted 17 goals that are aimed at ending poverty**,** protection of the planet earth and ensuring economic development and prosperity as part of the plan. Each of these 17 goal consists of special targets that should be achieved within the coming 15 years (United Nations, 2015). These goals can only be achieved if the governments, the civil society, the private sector and everyone actively participate and a green economy is an ideal contributor towards these sustainable development goals.

Green Industrial growth and development in South Africa is supported by various legislation. The illustration in Figure 2 indicates some aspects of the legislative journey

that support green economic development in South Africa, as well as in Ethekwini Municipality.

Figure 2.2 Legislation timeline for Green Industries in South Africa



Source: Msweli, 2014

The most basic legislation in the country refers to the Constitution of the Republic of South Africa, states clearly in Chapter 2, Section 24 (a) and (b)-1996, that everyone has the right:

"(a) To an environment that is not harmful to their health or well-being; and (**b)** to have the environment protected, for the benefit of the present and future generations, through reasonable legislative and other measures that:
(i) To prevent pollution and ecological degradation;
(ii) To promote conservation; and
(iii) To secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development" (Republic of South Africa, 1996)

This clause of the constitution has set the tone for a green development agenda, even in the country and in particular, the Ethekwini Municipality. Considering that this was set out in 1996, progress has been slow.

The White Paper of 2003 on Renewable Energy was developed to supplement the White Paper on Energy Policy and these recognise the significance of the immediate medium, as well as the long-term potential of engaging in renewable energy as the country. The energy crisis in South Africa has, in a positive light, encouraged the government, businesses and the society at large to look at other alternatives to coal base energy in the country. The Paper outlines the government's vision, policy, the strategic goals, as well as the aligning objectives which are set to promote and implement the renewable energy programme in South Africa. It aims to inform all the stakeholders, including the international community, the South African government's vision and how it plans to achieve these objectives. This legislation directs the agencies and some organs of state of their roles and responsibilities towards achieving the set objectives. This White Paper's position is based on a particular set of criteria called the integrated resource planning that aims to ensure an equitable level of resources is invested in the renewable technologies, given their potential and compared to investments in other energy supply options (Department of Minerals and Energy, 2003). All of this contributes towards a supportive environment for green industries to flourish in Ethekwini, as well as the rest of the country.

Another government legislation that supports the growth of green industries in the energy sector is the National Energy Act, No 34 of 2008. This act ensures that diverse energy resources are available, in sustainable quantities and at an affordable price, to ensure the support of economic development and poverty alleviation. The interactions amongst the economic sectors and environmental management requirements are taken into consideration through the requirements on the act. Among others, the following, particularly as it relates to and recognises the renewable energy: "Provision for energy planning, increased generation and consumption of renewable energies, contingency energy supply, holding of strategic energy feedstock's and carriers, adequate investment in, appropriate upkeep and access to energy infrastructure" (Republic of South Africa, 2008).

Within the area of waste management, the relevant legislation that supports the development of green industries within the waste recycling activities is the Waste Act of 2008. This act aims at providing the law that regulates waste management in the land so as to protect the citizens' health and the country's environment (Republic of South Africa 2009). This would be achieved by the provision of a reasonable measure towards the prevention of the pollution and the ecological degradation, as well as securing ecologically sustainable development. Furthermore, this act provides for the requirements with regards to waste management measures and remedial measures for contaminated land.

Industrial Action Policy Plan 2010

The National Industrial Policy Framework (NIPF) is designed as a framework that maps out the government's approach to industrialisation utilising the Industrial Policy Action Plans, which are produced every year by the Department of Trade and Industry to guide the implementation of this strategy. The objectives the framework are to facilitate the diversification beyond current reliance on traditional commodities, as well as non-tradable services, which for a long time were rated as a higher contributor to the growth-less economy. This means the promotion of increasing value addition, which is characterised by moving into new tradable goods and services that can compete in the export markets and supersede imports (The Department of Trade and Industry, 2010). Many of these new green industries produce goods and services that are new and innovative in the market and can be exported, since sustainability is now a universal language.

Another South African government policy that is aimed at enhancing equity, growth and employment creation is the Framework of the New Economic Growth Path (NEGP). The policy's main target was to facilitate the creation of five million jobs over a period of ten years since its inception. The government is committed to facilitating employment opportunities and this framework illustrates this commitment. The framework has identified areas that would propel South Africa to grow into a more inclusive and equitable society, while providing a development agenda. The green economy is among the six priority sectors of the NGP, mainly because of it's potential for job creation (New Growth Path Framework, 2014). Attention is drawn to the fact that the NGP was developed in 2008 and this was after the global economic downturn.

The New Economic Growth Path is driven at its core, by opportunities for big investment into infrastructure as it provides massive opportunities for jobs across the economy**.** The framework identifies investments in five key areas namely: energy, housing, transport, water and communication.

The **Carbon Tax Policy of 2013** was relatively phased in to permit for a smooth transition into a low carbon economy. This gradual approach is aimed at sending the necessary policy and to potential and existing investors and consumers in the country, of the need to ensure that investments are greener and also climate resilient. This would minimise the requirements for retrofitting old equipment and facilities with more efficient processes and infrastructure that can capture and store carbon (National Treasury: Republic of South Africa).

The **National Environmental Management: Waste Act, 2008** was amended in 2014 to exclude the National Department of Environmental Affairs, as well as the Provincial Departments of Environmental Affairs, from the sphere of government that are also required to prepare an integrated waste management plan (Republic of South Africa, 2014). It was amended to include the respective MECs responsible for waste management in different provinces of the country to act in concurrence with the National Minister when requesting certain companies or institutions to compile and submit their industry waste management plans. Each and every industrial sector is required to prepare a waste management act as this would tangibly provide action steps towards contributing to the reduction of the emissions and towards sustainable industrial development within the country, where waste to places like landfills is minimised.

2.12 The Economic Climate of Ethekwini Municipality

The growth of the Ethekwini economy has largely centred around the activities stimulated by the port, since the dawn of industrial development in this region in 1920. The Ethekwini Municipality's Economic Development Strategy indicates that the manufacturing sector contributes about 30% towards the local economy. It is followed by the tourism sector, which is concentrated along the coast and contributes about 24% towards the local economy. Finance and Transport are the other major economic sectors within the municipality. The Ethekwini's economy accounts for about 60%

towards the Gross Domestic Product (GDP) of the Province of KwaZulu-Natal (KZN) (Ethewini Municipality 2013). Growth in the green industries has not been clearly accounted for in the municipality.

The municipality's economy has been declining over the past years, following the tread with the rest of the South African economic climate (Ruffin, 2013). Ruffin continues to indicate that there was once a period where the municipality was the fastest growing metropolitan region in the whole of South Africa and now it is deemed the slowest growing in the country. The unemployment rate is estimated to be between 26%-30% and has not shown signs of declining (Statistics South Africa, 2016). This provides a fertile ground for more people to consider the different ways of enterprising, which wouldsupport the growth of a more promising sector like the green economy.

What used to be the significant employer bases in Ethekwini, the clothing and textile sector, the food and beverage industries, have been shedding jobs over the years due to the decline in the economy. This has had a rippling negative effect in households, especially as most of these sectors absorb a larger number of women who are in most instances, heads of their households (The IHS Global Insight, 2010). Formal jobs within the manufacturing sector have been declining at a rate of about 10 000 per annum in Ethekwini over the past 5 years. This has been measured against a projected target of 15 000 job creation per annum for new employment opportunities within the next 10 years (Small Business Monitor, 2010), which indicates a decline in employment opportunities by a third of the projected target. With the benefits of green industries elsewhere in the world, this would positively contribute in the job creation numbers of the municipality and may contribute towards the reduction of unemployment.

EThekwini Municipality is one of the 9 metropolitan areas within South Africa and it is an innovative city. Innovative projects are being undertaken in the areas where the city's limited resources are being utilised. These are the areas of water conservation, environment and transport, waste management and beneficiation (PSIR, 2015). Most of these projects are driven through the Economic Development and Investment Promotion Unit's (EDIPU), Sector programmes Department, as well as initiatives undertaken by the Policy, Strategy Information and Research Department (PSIR). The

establishment of industrial clusters initiatives and the municipality's active engagement with industries through workshops, forums and steering committees indicates the municipality's commitment to growing its economy in a more proactive rather than a reactive manner.

The Edge Quarterly bulletin of the Municipality indicates that there is constant research and the implementation of catalytic projects that occurs in prioritised sectors and this enables the industry together with EDIPU, to exploit innovation initiatives in all aspects of industry to contribute towards development and growth of the economy (PSIR, 2015). Special innovations in eThekwini include The Green Hub, a green technology and an environment demonstration building (Durban Green Corridor, 2013). Durban Solid Waste has embarked on an award winning project where there is a conversion of methane gas in all the landfill sites of the municipality into energy that is connected back to the Grid and this contributes to the city's emissions reduction target, as well as providing the much needed energy in the city (PSIR, 2015).

2.13 What is known about green industries in Ethekwini Municipality?

The municipality's Integrated Development Plan (IDP) is a strategic document that guides the development and provides a 5-year plan of action for the municipality. The municipality's IDP is centered on an 8-point plan and plan number 2 speaks to the need for developing a prosperous and a diverse economy. Under plan 2, the promotion of sustainable development and the promotion of green economy as one of its strategic focus areas is clearly identified (Ethekwini IDP, 2014). Its shortcoming though, is that there are no further details on how this wouldcome about or executed.

The municipality's Economic Development Strategy of 2012 also emphasises the sustainable growth path and the promotion of green industries. There is no clear implementation plan that would facilitate the green economic growth from the municipality side, however, the Economic Development and Investment Promotion Unit of the city developed a database in 2014, of various industries (the green industry included) within the city. The gap that exist is the detailed information on the industries that are on the database, such that the government and the city are able to monitor

and support the green economic development within the city (Ethekwini Municipality, 2012).

Durban Chamber of Industries set up an environmental sustainability committee that focuses on encouraging businesses on the benefits of greening their industrial processes and the resources that are currently available to support brown industries trying to turn green, as well as the new industries within the municipality. The Durban Chamber of Industries run a lot of programmes that promote cleaner production methods as well (Durban Chamber, 2015).

2.13 Chapter Summary

This chapter on literature review has indicated that some countries around the world have notably embraced the growth of green industries, making up a new knowledge economy sector in the green economy. The literature also proved that South Africa is not far behind in recognising the need to expand the direction of economic development from a traditional industrial development to include the green economy, which comes with the benefits of the diversity of green industries. It also demonstrated that there has not been much proper examination conducted to assess green industries and their value add in the economy of Ethekwini Municipality. The thread that is coming through is that government support in green industries has not only been through legislation and policies that facilitate the development of green initiatives, but also through the incentives that are presented to companies and organisations that have adopted the green focus.

This literature review explored the concept of green innovation as an important element which contributes to diversified job opportunities. Job and the skills development goes hand in hand in any new economic sector. This is proven during the emergence of the Information Technology as a new economic sector and the green economy is no different. Although green industries do not require totally new skills set, they largely require top up skills to the existing basic technical skills. The desk top research established very little written information that describe the green industry of Ethekwini and therefore, this gives the researcher the impression that Ethekwini would be no different, if the aim is to investigate the potential of the green industry in the

municipality. Therefore, this research is important in the provision of details into the body of knowledge with regards to Ethekwini Municipality's green industries. In the area of developing appropriate legislation and developing guiding policies, the South African national government has progressed well, especially in the areas of waste and energy. It is acknowledged that regions, towns and cities, do not all have the same make up that would support a homogeneous type of development. The type of green industries that thrive in an area may differ from city to city and therefore, the need to understand the Ethekwini context and not assume that statistical information on the green industries would be similar throughout the country. The next chapter reviews the methodology, the research design and data collection methods that were utilised in conducting this research.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The aim of this chapter is to provide an overview of the methodology that this study has employed in order to answer the research questions. The chapter thus discusses in detail, the research methods and design, sampling and target population, the data collection methods, as well as the analysis procedures. Furthermore, this chapter also discusses the limitations and the ethical considerations. Prior to doing so, it is important to reiterate that the main aim of the study was to exemine the green industries of Ethekwini Municipality and their potential for job creation. The main obectives being as follows:

- To establish the categories of green industries existing in Ethekwini Municipality.
- To establish the skills set required for these emerging green industries.
- To ascertain the required support for industry growth and an increased in the number of people employed in this sector

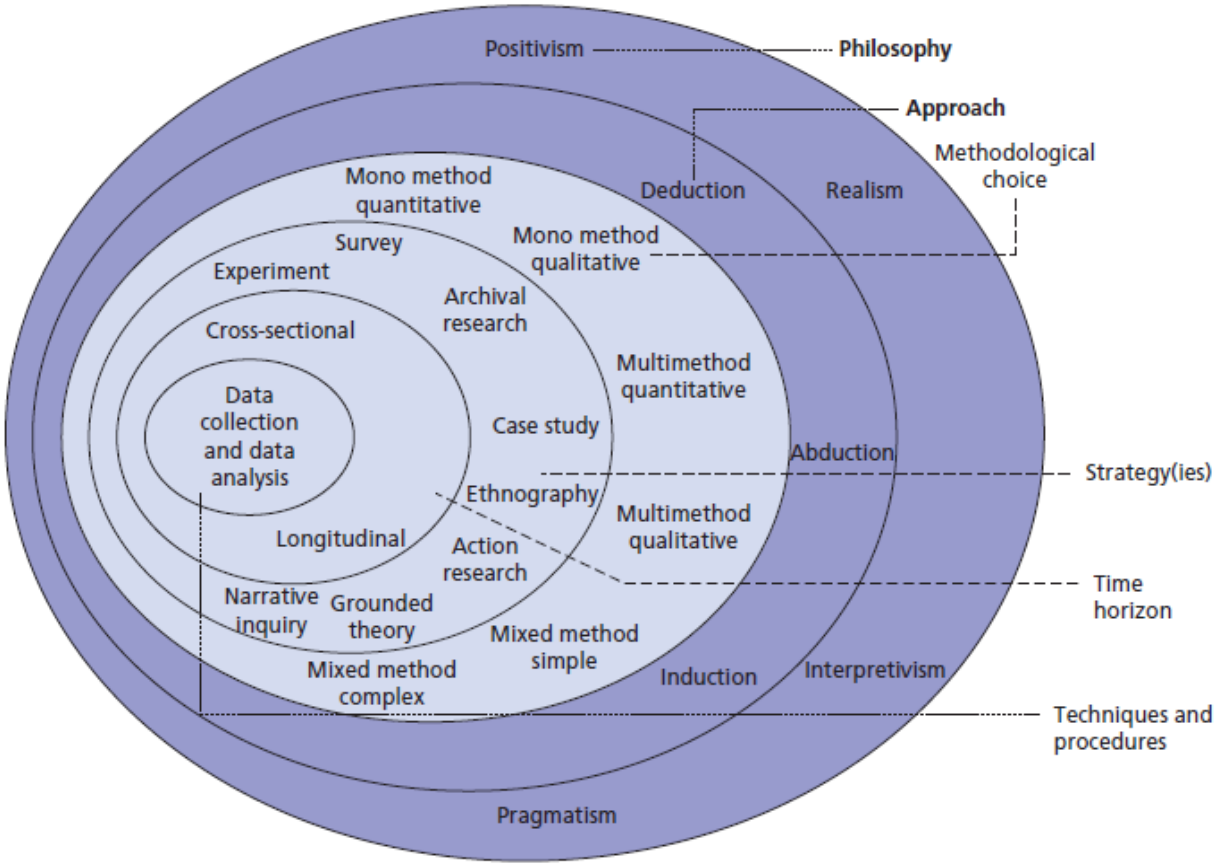
3.2 Research Philosophy

Research philosophy speaks to the source, the nature as well as the development of knowledge when conducting a research. Each stage within the research process is based on assumptions about the sources and the nature of knowledge. Saunders, Lewis, & Thornhill, A. (2012) indicates in Figure 3.1 below that the research philosophy is positioned at the outer layer of a research process. In what is termed a “research onion” when illustrated, it indicates the entire research process and identifies the relationship between each step in the process (Saunders et al, 2012). The philosophy of this research reflects the researcher’s important assumption that there are at this point in time existing green industries within the boundaries of Ethekwini and there are likely to be involved in varing activities and these assumptions serve as base for the research strategy.

There are four main research philosophies and these are the pragmatism, positivism, realism and the interpretivism (Ormston, Spencer, Barnard & Snape, 2014). The pragmatic philosophy utilises a mixed or multiple method approach, it the collection of

data as it argues that it is possible to work within both positivist and interpretivist. The positivist is the researcher is concerned with gaining knowledge in a world which is objective using scientific methods of enquiry utilising quantitative data collection methods. The realist approach philosophy relies on the idea of independence of reality from the human mind. This philosphy is based on the assumption of a scientific approach to the development of knowledge. Lastly, the interpretism utilises a small samples with in-depth investigations, using qualitative methods (Ormston, et al 2014). This research was conducted based on the positivist philosophical approach as the objectives of the study requires objective examination and collection of facts rathere then opinion.

Figure 3.1 Research philosophy in the "research onion"



Source: Saunders at al, 2012

3.2 Research Design/ Methodology

Research design is described as a plan or a framework that guides how the researcher will conduct his or her study (Creswell, 2013). It is the structure that constitute researching and the realisation of the aims and the objectives of the. Sekaran and Bougie (2010) describe it as the process of collecting and analysing data

in line with the objective of the research. Research design can be divided into two clear functions, the first one being identifying and developing research procedures, while the second one focuses on quality within these procedures to make certain that the research is objective, valid and accurate (Kumar, 2005).

It is important that each study that is conducted clearly articulates the guidelines which will be utilised as well as the methodology to be followed. Accordingly, Sekarang and Bougie (2010) indicates that the research methodolody entails the methods used to gather information for the research task by specifying the sample design, population and the sampling method that has been used. Not all research data collection methods are suitable for all types of research. It is important to select the most appropriate data collection method for the targeted population. This can include personal interviews, focus groups, survey questionnaires and postal surveys.

William (2007) and Leedy & Ormrod (2001) define descriptive quantitative research as the very basic method which involves exploring the possibility of relationships between two or many occurrences, or either identifying a particular occurrence mainly basing on a structure feedback. The quantitative study is a scientific method which is based on a particular universal laws which is called the post positivism. This kind of an approach demonstrates the need to quantify and measure data objectively, hypothesis can also be tested and with this, the researcher can predict and also control the behaviour of humans.

It is different from qualitative research, which tends to compel the researcher in becoming more involved within the research environment and collect detailed information from the data source (Creswell, 2013). With this method, certain ideas and occurrences are described, explained and interpreted from the collected information. This form of research was not utilised in this study, as the quantitative option was preferred due to the nature of the objectives of the study.

The nature and the type of the data required largely determines the method of collection that is used in any study. It is the general option for researchers to utilise qualitative research methods or quantitative research methods, or a combination of the two research methods. This research utilised the quantitative research

methodology to carry out the survey and to meet the objectives of the study. This has proved to be an ideal method towards acquiring the required data. This is due to the nature of the iformation gathered which is largely descriptive and the large number of the participarts required to validate the study.

Chipp (2007) indicates that the quantitative research methodology is best used when the researcher aims to check the degree of the problem and or its impact on a particular location. Kothari further explains that quantitative research methodology involves the measure of the amount or quantity after a process of collecting the data (Kothari, 2004). In the quantitative research methodology, the data are collected utilising a questionnaire which can be analyse after measuring different quantities after the collection of primary data.

3.3 The Location of the Study

Ethekwini Metropolitan area is located within the province of KwaZulu-Natal in South Africa. It stretches from the coastal east of the country to Cato Ridge in the west, uMkomaas is the southern boundary, while the small town of Tongaat provides the Northern boundary of the municipality. This municipal land is contained within an area which is approximately 2 297km². It is home to an estimated 3, 5 million people. The population is quite diverse, with 4 major racial groups present and these are Blacks, Whites, Indians and Couloured groups. Like other metropolitan areas in developing countries, it faces various challenges which are, economic, environmental, social and also governmental (Stats S.A., 2015). The counted population through the census of 2011 came up to 3 442 361. The population growth is not aligned with the economic growth of the municipality. The census indicates a population growth of 1,08 % from 2001 - 2011, as opposed to 2,34% in 1996 – 2001 (Stats S.A., 2015). This growth also contributes to the unemployment rate which is ever increasing and requires innovative solutions to curb.

This study was conducted in Durban, as the target population included the green businesses that are located within the Ethekwini Municipality, see illustration in figure 3.1.

Figure 3.1 The locality of Ethekwini Municipality

Source: Yes Media, 2017

3.4 Sampling Techniques

The sampling process refers to selecting sufficient number of right elements from a population, so that a study of that sample makes it appropriate and reasonable to generalise with regards to the entire population (Sekaran and Bougie, 2014). Sampling designs is divided into two, the probability and the non-probability sampling. In probability sampling, the sample unit in a population has the potential known as non-zero opportunity, of being selected into a sample.

Teddlie and Yu (2007) describe three commonly used probability sampling techniques and these are the random sampling, the stratified sampling and the cluster sampling.

Random sampling of a population occurs when all the units within a population stand an equal chance of being nominated into a research sample, while stratified sampling happens when the population is divided into subgroups such that the units belong to different categories, for example, primary education, high school education, and tertiary education. On the other hand, cluster sampling is represented by the selection of a grouping of units like all schools, hospitals, prisons and community halls (Teddlie and Yu 2007).

A non-probability sample refers to sample units that do not possess known opportunities of being selected to a sample. Non-probability sampling techniques that are generally used are the convenience and the purposive sampling. The sampling unit in a non-probability sample are particularly selected on the basis of accessibility or through the personal judgment of the researcher (Mugera, 2013).

Most researchers are confined and limited by the amount of time and money available to conduct a particular research. It then sometimes becomes impossible to conduct probability random sampling thus, many would opt for the non-probability technique. The disadvantage of the non-probability sampling technique is that a proportion of an unknown population can be overlooked and not sampled (Mugera, 2013). This then compromises the sample, which may not now be representative of the entire population in an accurate manner. The results of the research can be difficult to use in generalisations pertaining to the entire population.

This research utilised the probability sampling technique in choosing the prospective respondents, as the list of businesses already existed. Probability sampling is known to be useful for researching units with different and similar traits within units (Saunders, Thornhill & Lewis 2007). An important aspect of probability sampling is creating a sample that closely represents the population. The more representative was the sample of the population, the more the researcher had confidence that a generalisation can be made from the sample to the population of green industries within the Ethekwini Municipality.

It was imperative for this research to produce more reliable results hence, the simple random probability sampling technique was utilised. Simple random sampling is one

of the types of probability sampling which focuses on similar traits of elements within a unit (Saunders et. al. 2007). To attempt to draw representative samples of these green industries, the sample of the population was selected across various subsector of the green industries where it was possible and these included energy generation, waste related industries, manufacturing and service industries.

A larger sample size can lead to a more representative result to the research population (Explorable, 2016). In choosing a sample size for any research, two considerations need to be taken and these are statistical and non-statistical. The non-statistical considerations include issues like manpower, resources and budgets, while statistical considerations include the desired precision of the results, based on the nature of the study (Explorable, 2016).

The statistical consideration was made upfront, where a calculated sample size needed for credible results was determined at 73. This was based on the population of all the 300 companies on the list being accessible for the study and identifiying these as the study's potential research participants. With a confidence level of 95% and a confidence interval of 10, the sample size precalculated was originally 73. This was not to be, as in reality the actual potential research participants were 139. This is made up of the 69 who accessed the survey online and the 70 that the survey was manually distributed to.

3.5 The Population of the Study

Population is identified as that total group of people, or events or things that are of research interest, of which studies and researchers want to investigate (Sekaran and Bougie, 2014). Within this particular research, the population comprised all the green industries in Ethekwini Municipality, represented on the database from Ethekwini, as well as industries that might not have been on that list.

This made the unit of analysis the individual companies or entities that produce a green product or service for profit. The key respondents were the owners of these companies or entities, or the representatives, of which it was mostly the operating managers of the entities. The data from Ethekwini Municipality contained a list of 300 companies

that were identified under the category of green companies. The Economic Development and Investment Promotion Unit of the municipality had given clearance, appendix 2 attached, for the utilisation of this list as part of the population where a sample was selected for this study.

Some of the respondents were owners of the small green businesses, especially those that were small with less than 10 employees. With the bigger companies, the respondents were either the employed operational managers of the companies or the designated public relations managers who were assigned to respond to the survey. Almost all of the respondents were from within the boundaries of Ethekwini Municipality and were educated enough to be able to read and respond in English, with minimal or no assistance.

3.6 Data Collection Strategies

In this research, the survey was utilised in collecting information through a structured questionnaire to a selected number of respondents. The advantage of this method was that it provided a platform of standardising the format of the questions which were asked to the businesses. The data that are gathered usually possess some better description of the characteristics of the general population usually involved in a study (Patten, 2016).

The researcher targeted to circulate the questionnaire to all the 300 businesses as per database on the list provided the Ethekwini Municipality, but this was not achieved. 59 of the emails provided on the list were not working anymore, and an online report from question pro indicated that only 69 email contacts accessed the questionnaire.

Variable numbers were then allocated to each question in the questionnaire. This was done so as to group answers into categories. Some questions were similar and could be interpreted as a group without losing the essence of each feedback on question.

There are various ways of distributing the questionnaire that are easier and faster. It is no longer the face to face distribution or by post as things used to be, but with the advent of the internet, online surveys are now very popular. The primary instrument utilised for this study was an online survey software which is hosted by QuestionPro.

Furthermore, a manual survey was utilised as there was poor response rate after a month of having circulated the survey.

According to Dornyei and Taguchi there are specific benefits to using an online survey questionnaire (Dornyei and Taguchi, 2010):

- It provides easier access to a wider population within a particular geographical area
- It saves time, as it is able to code, as well as to capture data that previously would have to be manually administered.
- There is a cost saving factor, as the email is the avenue for distribution. unlike the posting and the physical circulation of the questionnaire
- It also allows for easier forms of responding to questions on the questionnaire

This research benefited from most of the above advantages, except the one relating to easier access to a wider population in this case. Originally, the survey was planned to collect data through this tool only, but because of the poor response over a period of 4 weeks, even after reminders were sent, the researcher was then forced to employ other ways of distributing the questionnaire.

A high powered breakfast seminar themed Green Livable City, Ethekwini, was held on the 27th October 2016, with over 150 various stakeholders directly involved in the green economy in Ethekwini Municipality. These included business people, non-profit organisations and government officials, all working in the green sector. The researcher took an opportunity to distribute 70 hard copies. A request was made to the participants in this seminar to fill in the questionnaire. The questionnaire was returned immediately after the breakfast seminar with 37 completing the questionnaire.

3.7 Data analysis methods

There are three major steps and options that are involved in most social research data. These include the data preparation, descriptive statistics and inferential statistics (Trochim, 2006). Data preparation largely involves the organising and the cleaning up of data before the analysis. Data need to be usable and hence, the preparation which

would include transformation through the development of databases to integrate the many variables. The descriptive statistics describe the basic features of data in any study. It provides a summary regarding the sample and its measure. This then form the basis of a quantitative analysis of the data as it depicts what the data describe and indicates what the data are showing. The research could have further utilised the inferential statistics, if the researcher wanted to focus on the testing and the investigation of the questions, models and hypotheses (Trochim, 2006), but this was not the major focus of this research, as indicated in the objectives.

The analysis of the data was conducted utilising descriptive statistics which proved to be the most appropriate, considering the sample size. The data that were collected were then collated and stored utilising the questionpro software. Together with the manually executed survey data, which was manually captured, it was then exported to an excel spreadsheet where further analysis took place. This included tallying up and grouping similar responses such that the researcher was able to produce representative diagrams in the form of charts and tables that could further be analysed.

3.8 Ethical Considerations

Ethical issues were considered befor conducting this study. An ethical clearance approval was sought from the database owners, the Ethekwini Municiality, to permit the use of an already existing database of companies within the municipality, collected in 2014 by the Department of Economic Development of the Municipality, for the purposes of conducting this research.

Furthermore, at the beginning of all questionnaires there was a concent form explaining the purpose of the survey and it was indicated at that participation is voluntary and confidentially. There was a space provided to sign indication the fact that the participants understood. On the online survey participants had to tick block provided before going into the first question.

3.9 Validity and Reliability

To ensure the validity of the research, it was important that the questionnaire be answered by the senior member of the company with as much accurate information as possible where the respondents was not the owner. The email addresses the

questionnaiere were sent too were of mainly registered owners of CEO. The seminar had also invited senior representatives of different organisations.

3.10 Limitations of the Study

The limitatations of this study were identified as follows:

- Time available to conduct the survey was limited to one month. Fewer then expected feedback was received by the end of this period.
- The boundary of the study was limited to Ethekwini Municipalty. Business operation are sometimes not limited by location and can go across a defined boundary. Furthermore the data that could be access only indicated provincial information as opposed to information at a municipal level.
- While the study was aimed at understanding the company as a whole feedback was limited to one individual who was either an owner of a senior manager and responded on behalf on the business. There was no option of more then one responded from the same company.
- Some sensitive information with regards to turnover were not answered by all respondents which limits the r

3.11 Summary

This chapter dealt with the research process and procedures that the researcher utilised in this study to investigate the green industries of Ethekwini Municipality and its potential for job creation. The difference between the quantitative and qualitative methods of research were explored. The sampling methodology, survey instrument and the data analysis methodology used were also discussed in-depth. The researcher recruited the respondents listed on the municipality's database of green companies. Two methods were used in the end to circulate the questionnaire. The questionpro software was used initially to design and administer the questionnaire. A manual circulation was later utilised to boost the response rate. The next chapter presents the findings from the data collected. The analysis of the data is presented in graphic representations of bar graphs and pie charts to support the results. The following chapter also focuses on the coding, editing and the processing of the data received

CHAPTER 4: PRESENTATION OF RESULTS

4.1 Introduction

This chapter focuses on the presentation of the research data that was collected. After collecting the data, it was broken down into four main themes: the demographics, the type or subsector of the green industry, the skills sets requirements to grow a green business, the nature of the support required by business for jobs and economic growth within Ethekwini Municipality. The data are therefore presented through the use of descriptive statistics. The questions within each section will be presented and the reasons for asking these questions. The answers to these questions are presented in the form of bar charts and pie graphs which were utilised to facilitate the analysis as these are deemed to be effective when illustrating trends and relationships.

The outcomes of the survey are represented further in this chapter through the use of pie charts, bar graphs, tables and summary notes. The percentages are rounded off into the nearest whole number for ease of reference.

4.2 Response Rate

As previously discussed, the questionnaires were sent out to 241 email addresses that could be accessed from Ethekwini database. The question pro programme is able to indicated the number of respondents that actually accessed the survey and this was 69. Out of these, about 33 respondents completed the questionnaire and this put the respondent rate at 47 %. Telephone follow ups with some of the targeted businesses revealed that some were no longer operating within the green business space and had ventured into other businesses.

A second method of collecting data was then utilised as the researcher felt that the number of online respondents was low and could still be improved. The manual survey was thus collected at the Ethekwini Municipality organised seminar named the Green Livable City Breakfast Session. An additional 37 feed-back from respondents was collected on the 27th of October at this event, where 70 manual copies were handed out. The manual survey results were collated and uploaded on the excel spreadsheet to add to the online responses already received. An acceptable number of responses was to achieve an above revised minimum targeted number of 70 respondents. With

the total number of 139 accessed questionnaires and a total number of 70 responses received, this gives a total response rate of 50.4%.

4.3 Respondent Profile - Demographic Data

This section of the responses relates to the demographics of the people involved in the green industries within the Ethekwini Municipality. Questions1 – 4 and question 8 dealt largely with the demographic information of the people involved in green companies. Aspects pertaining to race, gender, level of education, the number of years that the company had been operational and the legal status of the businesses, are discussed in this section. This is important information as it provides a foundation and an understanding of the formation of the companies that have been surveyed. The information about the companies can still be divided into subgroups, based on the demographic information, should it be required.

4.3.1 Gender

The respondents were requested to indicate their gender. The objective of the questions was to determine which gender is more favoured by this new green industry. Out of the 70 respondents who answered this question, 28 were males while 42 were females. The illustration on figure 4.1 indicates that 40% of the respondents were males, while 60% were females.

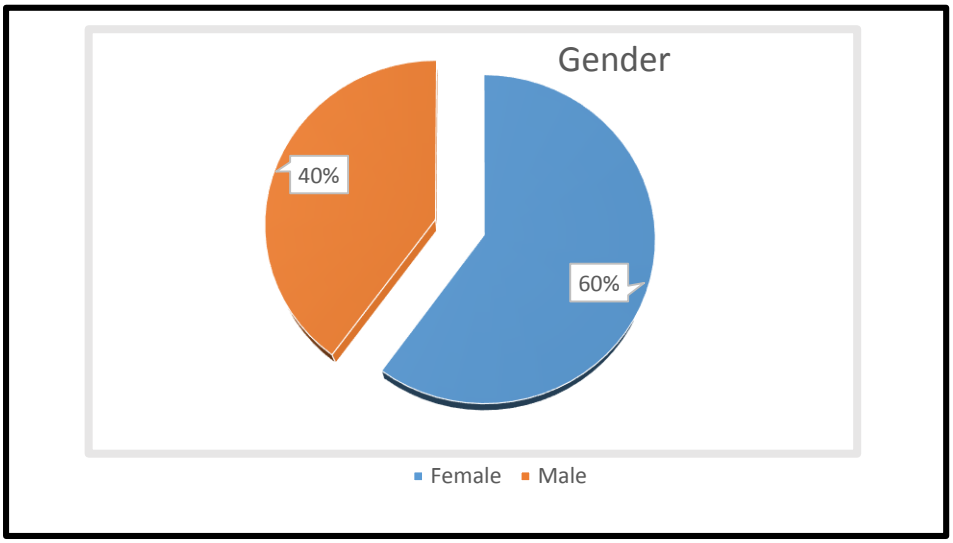


Figure 4.1 Distribution by Gender

4.3.2 Racial Profile

The respondents were requested to indicate their race. The objective of this question was to determine whether this these types of industries are more aligned to a particular racial group in Ethekwini.

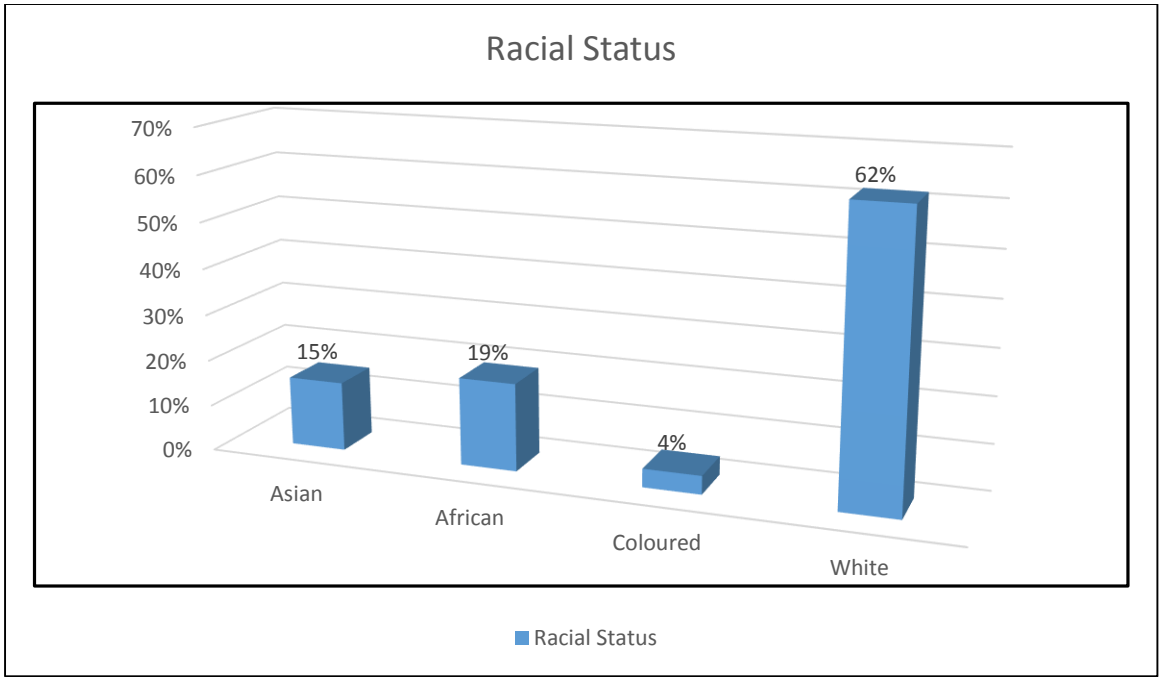


Figure 4.2 Distribution by Race

The results of the survey as depicted above in figure 4.2 indicated that 62% of the green business surveyed were owned or managed by Whites, 19% by Africans, 15% by Asians and 4% by the Coloured community.

4.3.3 Level of Education

On this question, the respondents were required to state their level of education. The objective of this question was to establish whether the involvement of people in the green industries had anything to do with their level of education. The survey results are as indicated in Figure 4.3.

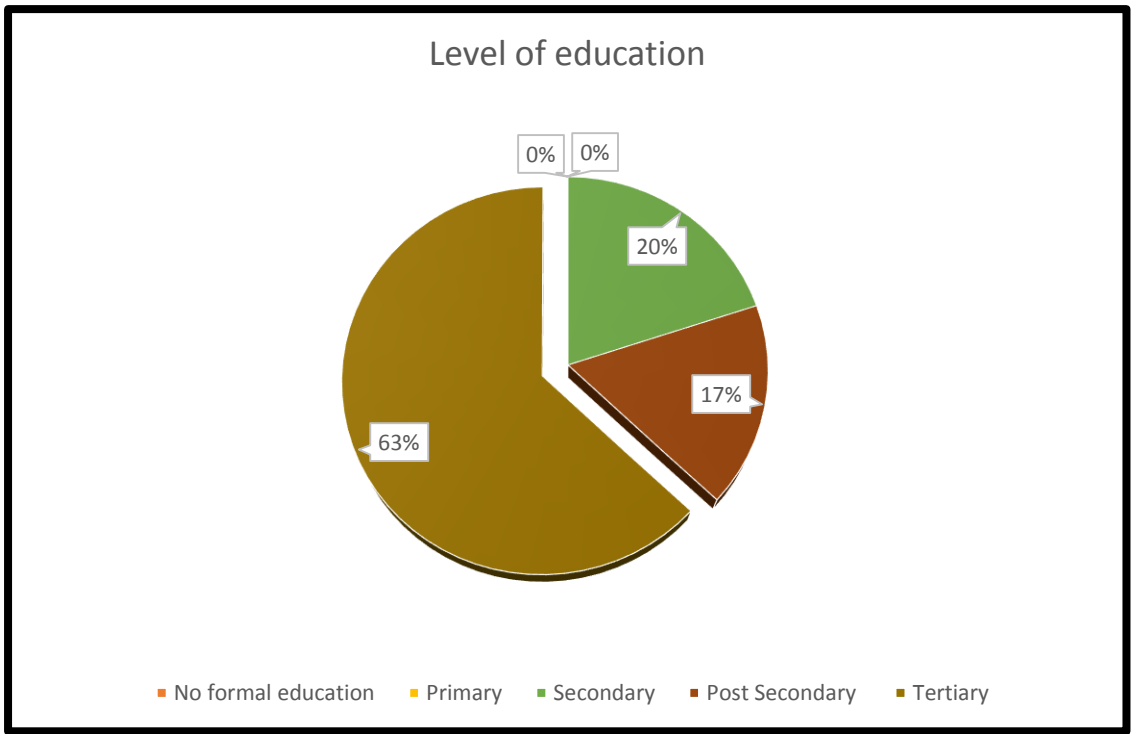


Figure 4.3 Distribution by level of Education

The results of the survey indicate that 63% of the respondents had tertiary qualification, 20% of the respondents had a post-secondary qualification and the remaining 17% of the respondents had a secondary qualification. The survey indicated that there was no respondent without a formal education or even with only primary school level education.

4.3.4 The Legal Status of the Business

This question focused on attaining information with regards to the nature or the legal status of the business if it was a registered business. The responses are represented in Figure 4.4.

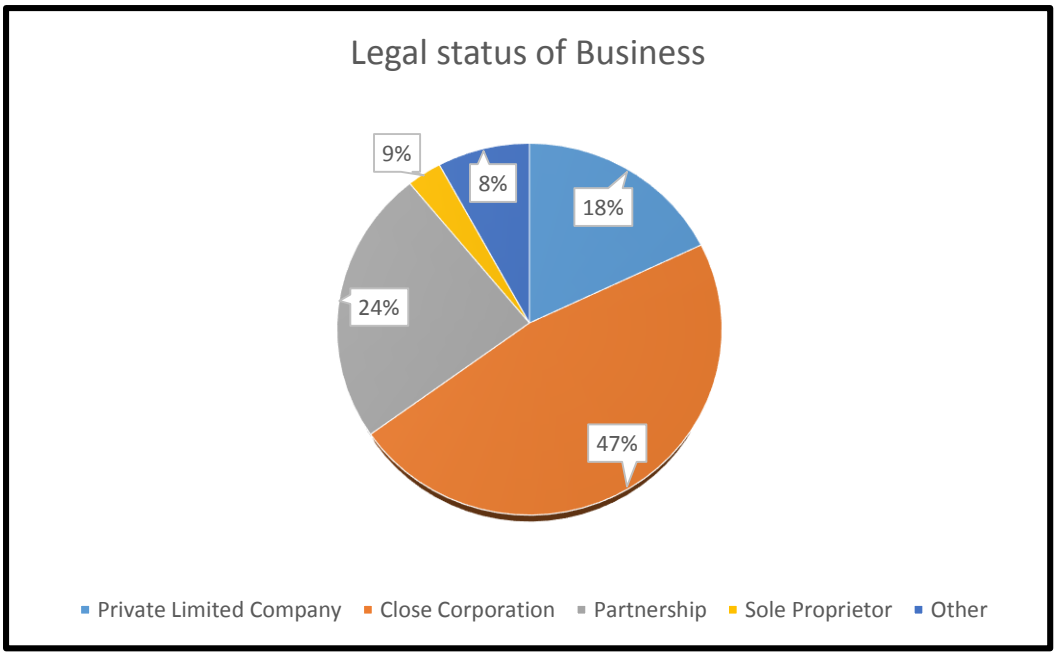


Figure 4.4 Distribution by Legal Status

The results in Figure 4.4 indicates that the most popular type of business with this green sector in Ethekwini is a Closed Corporation with 47%, followed by partnerships with 24%. There were about 18% of the respondents from Private Limited Companies who were surveyed, as well as 9% being Sole Propriety. The remaining 8% went to the other types of businesses which included non-profit companies and a co-operative companies.

4.3.5 Years in Operation

The intended outcome of this question was to ascertain the number of years that the companies had been in operation. With the focus on green industries being fairly recent in South Africa, as a potential job creator and an economic growth driver, it was important to understand the period of operations for green businesses in the Ethekwini Municipality. Figure 4.5 represents the results.

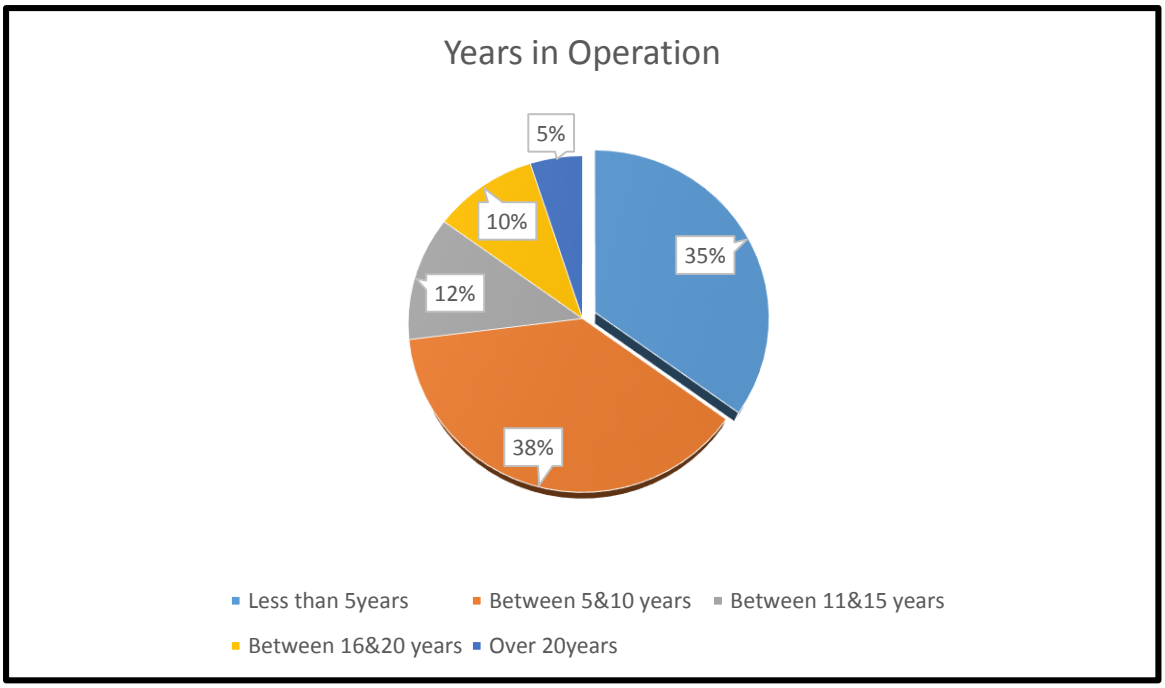


Figure 4.5 Number of Years in Operation

The results above indicate that 38% of the businesses had been in operation for between 5 and 10 years, while 35% had been in operation for less than 5 years. About 12% of businesses had been operating for a period between 11 and 15 years and 10% of the respondents indicated that their businesses had been in operation for a period between 16 and 20 years. Only 5% of the respondents indicated a period of more than 20 years in operation.

4.4 Subsectors of Green Industries in Ethekwini Municipality

There are many different streams of focus for a green business. Different countries might focus on different opportunities that are more suitable for that region, but might not work in other regions. These could include business in the primary, secondary and tertiary economic activities.

4.4.1 Understanding a Green Industry

For the purpose of this research, all the respondents had to answer question 5 of the questionnaire, which sought to confirm that their business was a green business as defined for the purpose of this research. There slight variations in definitions that could potentially contaminate the results of the survey, if not clarified upfront. The results to this question are represented in Figure 4.6.

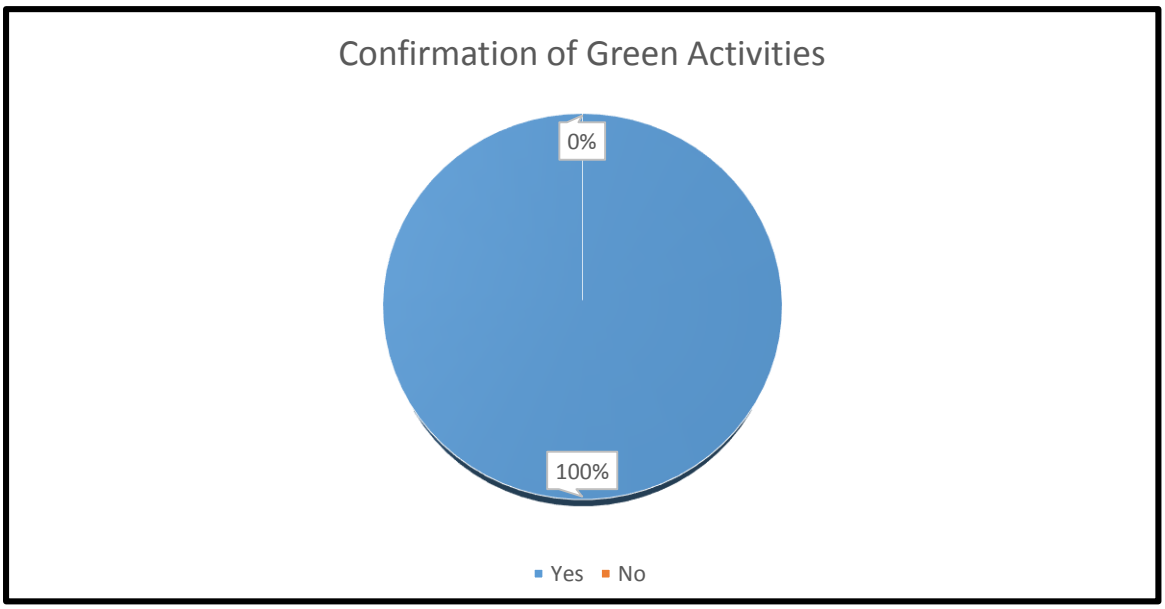


Figure 4.6 Confirmation for Uniform Understanding of Green Activity

All the companies that were surveyed indicated that they understood what a geen business is and had confirmed a 100% participation within that framework.

4.4.2 Type or Subsector of Green Business

The objective of this question was to establish the different categories that were prevalent within the green industries of Ethekwini Municipality. Figure 4.7 represents the results.

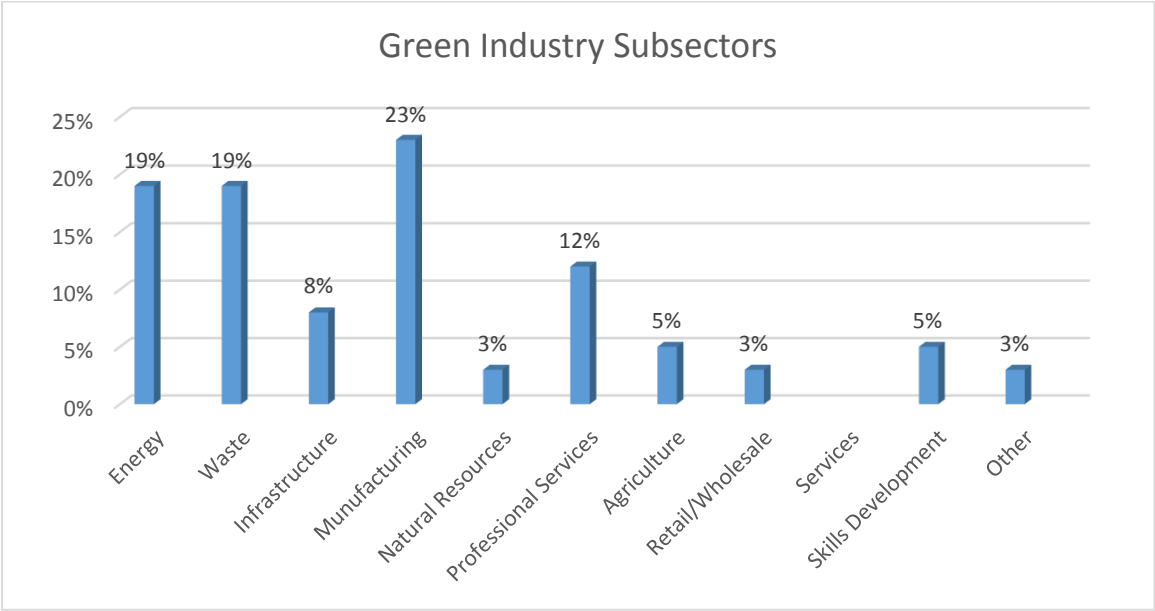


Figure 4.7 Green Industry Subsectors in Ethekwini

The illustration on Figure 4.7 indicated that both energy and waste subsector were at 19%. Manufacturing took the lead at 23%, with professional services at 12%. Infrastructure development was represented by 5% of the feedback from the respondents.

Not all the respondents gave a further explanation as per requirements by question 7, but below is a summary of explanations that were given:

- Formulate and manufacture biological farming inputs, e.g. insecticides, compost
- Publishers of a digital indigenous gardening magazine that encourages the use of indigenous flora, the creation of wildlife habitats and a general interest in preserving and protecting the natural world.
- Eco-friendly cleaning chemicals
- waste management companies
- Waste recycling companies dealing with paper, plastics, electronics, tyres and glass
- Manufacturing and distribution of alternative building materials which include recycled roof tiles, gutter systems, compressed earth blocks.
- Non-profit organisations (NPO) who lobbies and promotes environmental sustainability principles to different stakeholders and this includes structure holistic planning, building and subsequent management of new developments in a sustainable manner. Develop economic opportunities in waste beneficiation
- Waste beneficiation from recycling e.g. producers of plastic products- refuse bags
- Assessors and advisors on the potential impacts of development on the receiving environment and addresses mitigation thereof
- Retailing of environmentally friendly cleaning chemicals to businesses, as well as schools, B&Bs and households
- Activities associated with the production of renewable energy specialising in the manufacture of Solar PV panels.

4.5 Skills Sets for Green Industries

In this section, questions that pertained to the skills capacity of the industry were asked, with the view of ascertaining the level of skills that existed and are required within the various companies. Furthermore, it was important to enquire about the skills gap that existed in Ethekwini. These questions were closely aligned to objective number 2 of this research, which required an understanding of the skills set associated with the green industries.

4.5.1 Factors affecting Green Industries

The respondents we requested to rank the factors that affected the green industries in order of importance, 1 being a very important factor, scaling up to number 7 being the least important factor that affected the industry negatively. The results are indicated in Figure 4.8

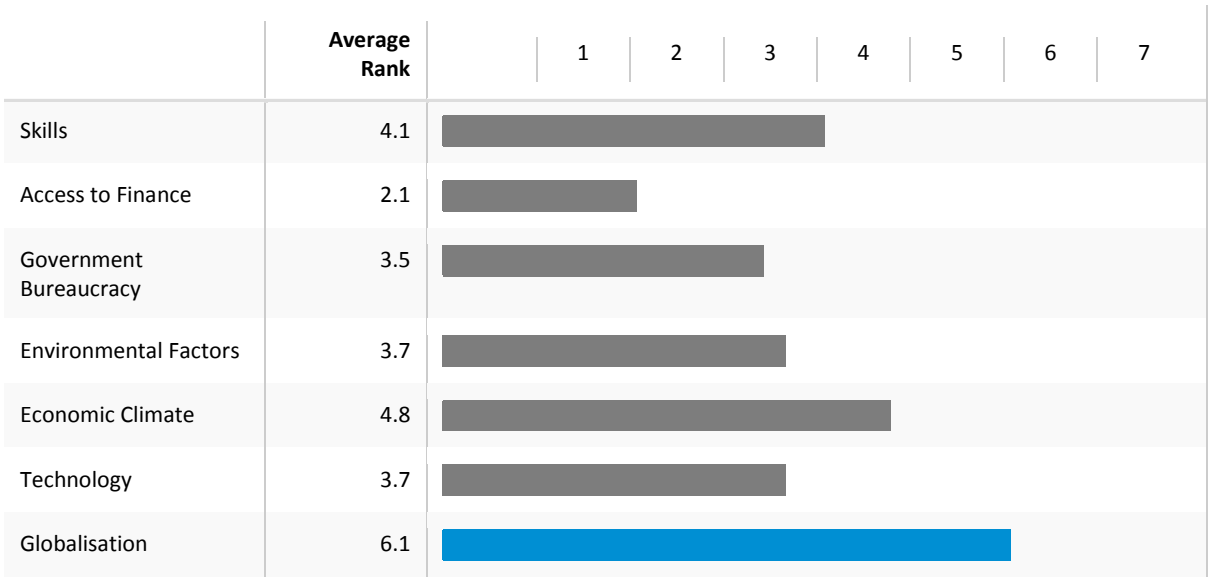


Figure 4.8 Factors affecting the Green Industries in Ethekwini

The results as illustrated above indicate that the most important factor that was on the list is the access to finance, followed by government bureaucracy, then at number 3 it was technology and environmental factors. Skills was at number 4 and the least affecting factor was globalisation.

4.5.2 Important Skills Requirement

The respondents were asked to choose the appropriate and important skills required by the companies from a given list. This question was asked so that the researcher was able to short list the priority skills within the green industry sector. Figure 4.9 indicates the results that emanated from this question.

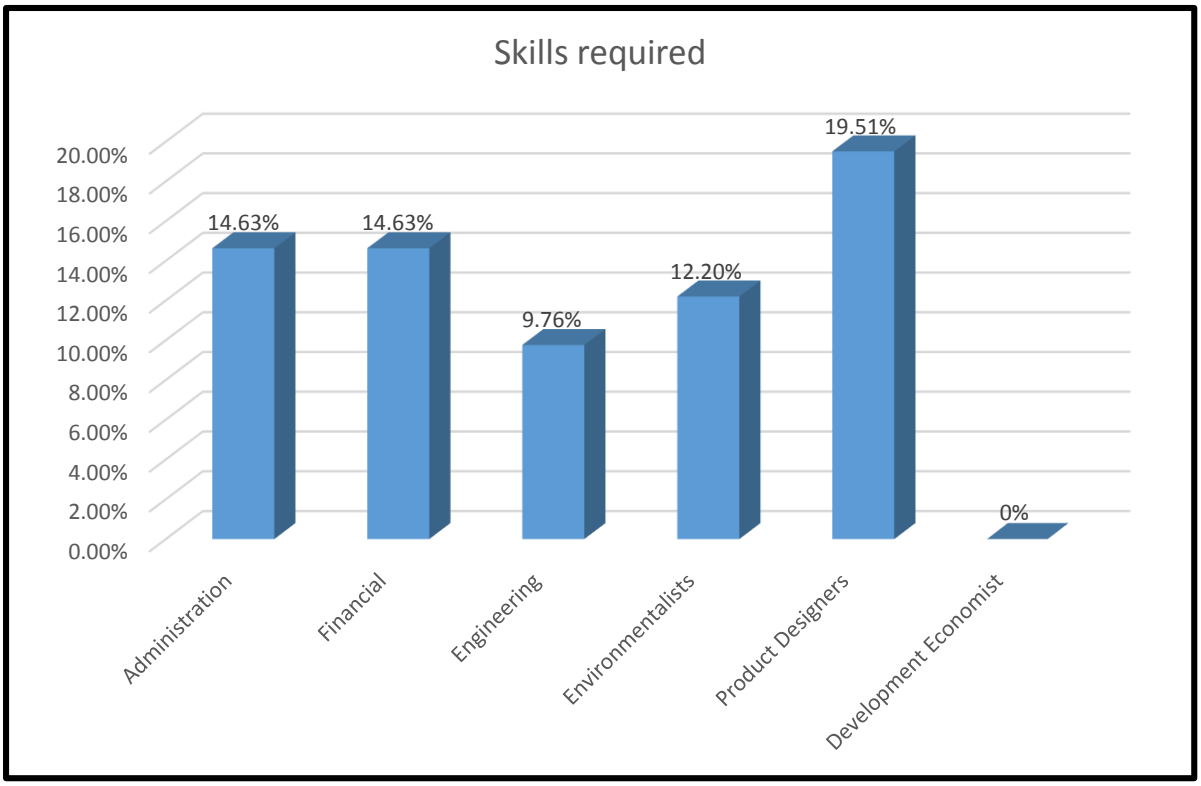


Figure 4.9 Skills required by the green industry of Ethekwini

Indication from the results illustrated above shows that skills in designing new products was ranked number 1, followed by administration and financial skills to support the

businesses. In the 4th place was the requirements for qualified environmentalists and lastly, was the skills required for engineers.

4.5.3 Training for Identified Green Skills

The respondents were asked to indicate whether the skills they had identified as priority were attainable through academic training, on the job training on through both methods. The purpose of this question was to gain an understanding of whether there were facilities in Ethekwini to facilitate the bridging of that particular skills gap. The results for this question are indicated in Figure 4.10

Answer	Percent
Academic formal training	14.%
On the job Training	21%
Both	65%
Total	**100 %**

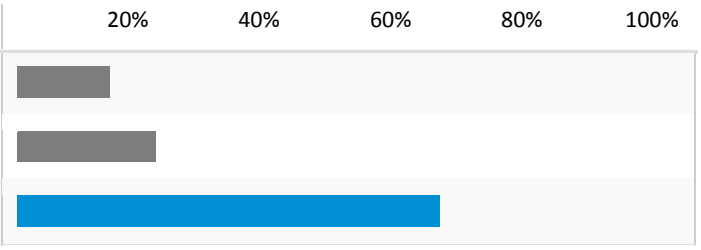


Figure 4.10 Source of training for Green Industries in Ethekwini

The above results of 65 % revealed that the general belief is that the identified skills are attainable from both academic institutions and just as important on the job training. Only 21% of the respondents indicated that the required skills were attainable on the job without the need for any academic formal training, while 14% of the respondents indicated that the only requirement is a formal academic training.

4.5.4 Availability of Skills in Ethekwini

The respondents were asked to indicate whether the skills required were readily available within the boundaries of Ethekwini Municipality. The reason for asking this question was to solicit an understanding of the urgent need for training potential

incumbents to fill that gap without companies sourcing from outside of the municipality. The results for this question are illustrated in Figure 4.11

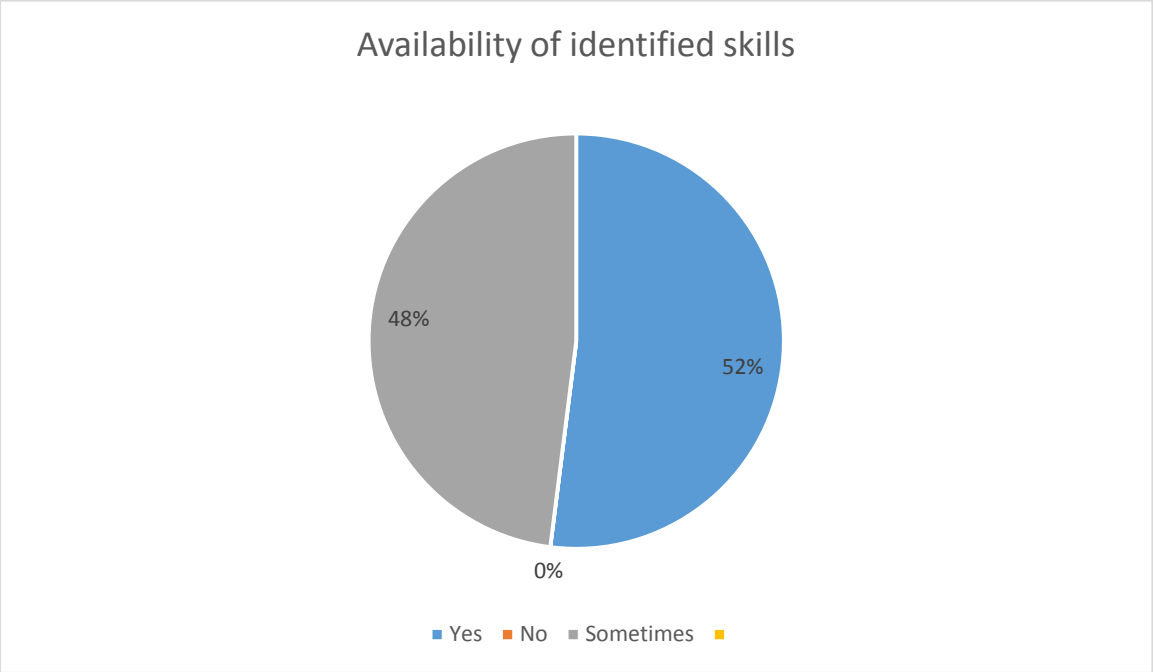


Figure 4.11 Availability of Identified Skills

The findings above indicates that 52% of the respondents believed that the identified priority skills sets was readily available in Ethekwini, while 48% believed that this was the case sometimes. There was no one who responded to indicate that these skills were not available at all.

Question 13 and 14 of the questionnaire were designed to get a deeper understanding with regards to the types of skills that were not readily available in Ethekwini and to further understand what types of skills had to be imported by these companies to fulfil the requirements of their operating businesses. Not all of the respondents answered this question fully.

On the question of what types of skills were not readily available, those respondents who were able to give a specific indication gave the following areas:

- The businesses cut across Durban, as well as other areas like Pietermaritzburg and Richards Bay and therefore, professional skills were largely shared

between regions to accommodate a short fall in a particular area, like engineers, accountants and environmentalist.

- Others mentioned technical skills on equipment, business management skills, financial and professional skills.
- Another group indicated green engineering and decent "product" design capabilities.
- Knowledgeable sales executives with regards to sustainability issues.

The question that pertained to the types of skills that companies had to import from outside of Ethekwini Municipality was answered and is summarised as follows;

- Writers and designers pertinent to other climatic regions of the country
- Some Non Profit Organisations were international affiliates and would import sustainability Managers, programme designers, book keepers and accountants
- As most of them came from outside the municipality, there was the need from time to time, to procure the services of technicians from outside the municipality to service and maintain the industrial machines
- The technology was mostly imported from outside the province
- Installation of their manufacturing equipment.

4.6 Nature of Support for Green Industries

This last section of the results focuses on the interventions that various stakeholders could give to the industry to fastrack economic development, which would also result in more job opportunities for the people of Ethekwini Municipality. This last set of questions is aligned with the third and last objectives of this study. The results are not only crucial to the validation of this research study, but can also be utilised by various stakeholders, especially the government, with designing relevant programmes that would boost and fastrack the green economy, not only in Ethekwini, but the whole country as well.

4.6.1 External support services for Green Industries

The respondents were asked to indicate by choosing from the list, the external support that they frequently utilised as businesses. The reason for this question was to establish the types of businesses that benefited from a typical green business operation. This further expanded the types of operations and business activities that needs to be supported by various interventions, as these also contribute to the growth of green industries. The results of the question are indicated in Figure 4.12.

Answer	Percent
Accounting/bookkeeping	13%
Advertising	20%
Consultants/mentorships	10%
Product Design Experts	17%
Packaging	14%
Consultants/Expects	10%
Other (please specify)	3%
Other	13%
Total	**100 %**

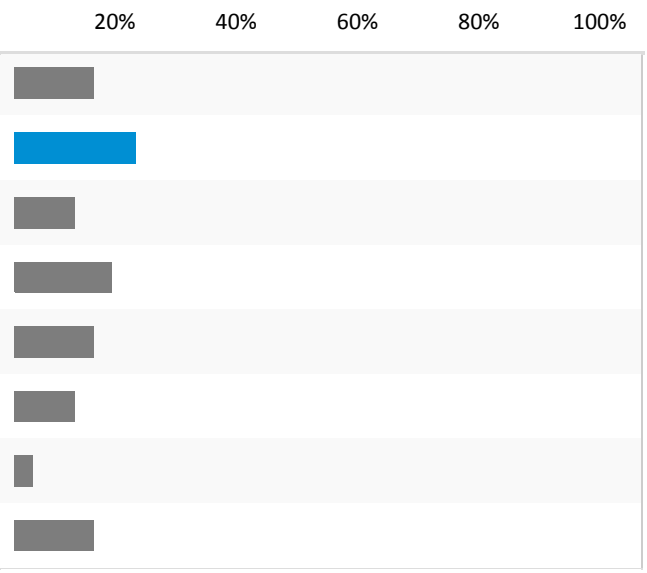


Figure 4.12 External Support Services procured by Green Industries in Ethekwini.

About 20% of the respondents indicated, as illustrated in Figure 4.12, that advertising was the most procured service towards their business operations. While 17% of respondents indicated product design expertise as the most procured service at their companies, 14% indicated packaging as the most outsourced service. Accounting and bookkeeping services were mentioned by 13% of the respondents, while 10% of the respondents identified mentorship and professional services as having been outsourced regularly by the companies.

4.6.2 Estimated Turnover

Respondents were asked to indicate the estimated turnover of their business. This question was asked to give an indication of the level and the size of their businesses. Interventions also differ for the emerging small companies, as compared to the nature

of support given to older big businesses. An indication of the turnover is a good measure in ascertaining the level and the size of industry. It must be indicated that not all of the participants gave information to this question and therefore, the results are represented of a smaller number than the actual sample size. Figure 4.13 represents the estimated turnover of green businesses in Ethekwini.

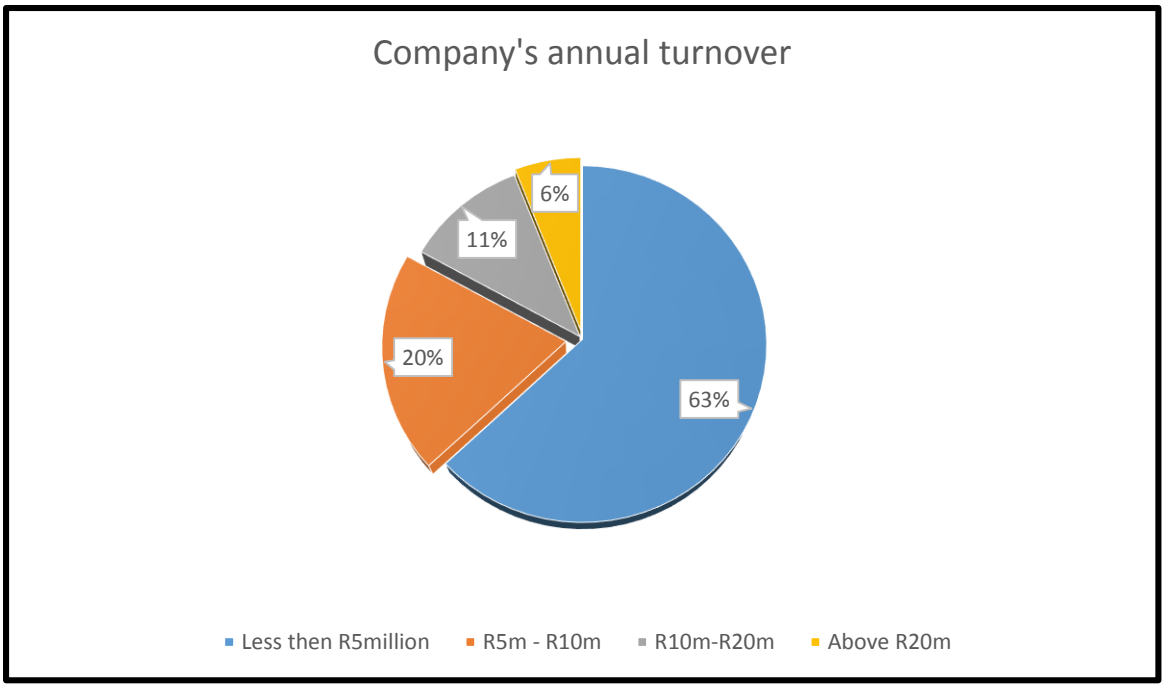


Figure 4.13 Estimated turnover of Green businesses in Ethekwini

The results from this question indicate that a large percentage, 63% of the companies received less than R 5 million per annum. 20% of the companies had a turnover of between R5m and R10 m, while 11% of the companies reported to be turning over between R11m and R20 m per annum. Only 6% of the companies had a turnover of more than R20 million.

4.6.3 Interventions for Profitability and Growth

Respondents were asked to indicate what interventions they believed would support their green businesses in becoming profitable. This question was asked to identify the specific interventions from the industry people, which would assist in designing programmes to support the green industries. Below is the consolidated summary of the responses received:

- Financial injection and outside investments
- Marketing, potential customers being aware of the products that the is being manufacturd and sold
- Relaxed legislation from the government to facilitate trade
- Improved and state of the art machinery
- Faster turnaround time for processing Environmental Impact assessment by the Department of Environmental affairs
- less tax; recognition of "in-field" learning opportunities offered
- subsidise new technology for waste to energy projects or Anaerobic Digesters

Furthermore, a question indicating the confidence as to whether these interventions would facilitate growth and expansions in businesses was also asked. 100% of the respondents answered this question with a yes, as indicated in Figure 4.14.

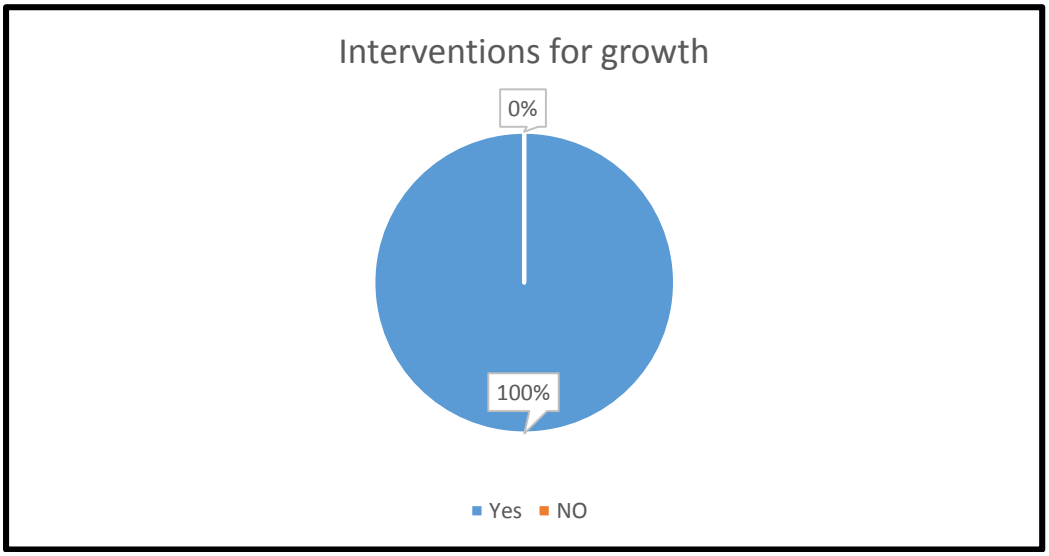


Figure: 4.14 Confidence on interventions for Growth and Expansion

4.6.4 Estimated Number of Employees

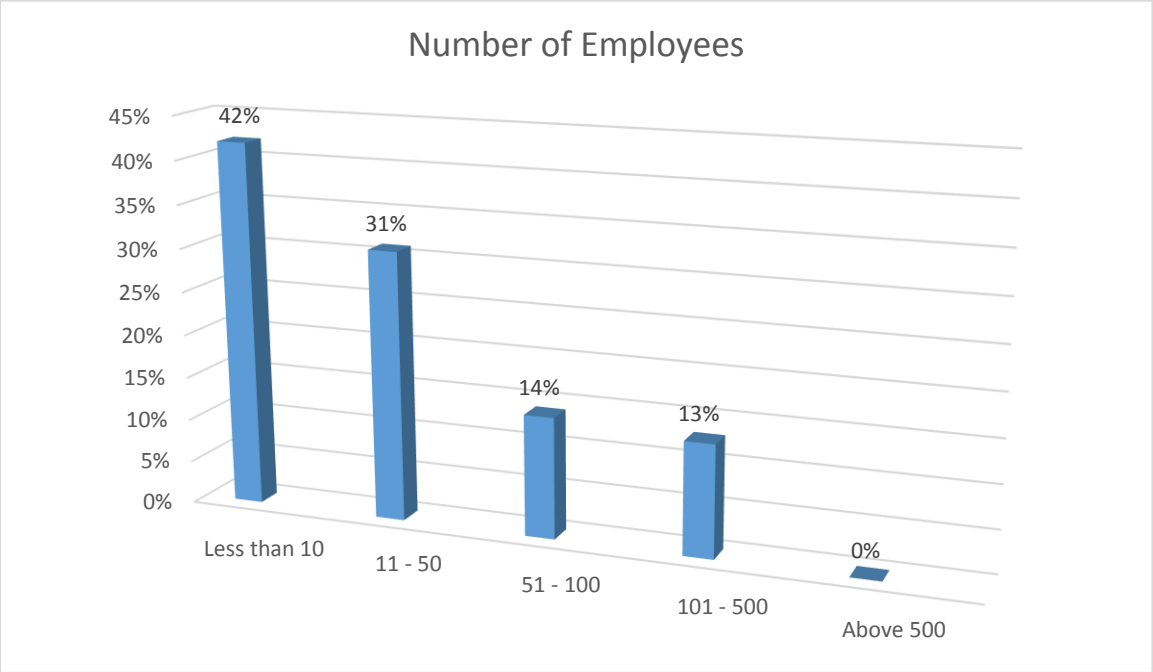


Figure 4.15 Estimated Number of Employees

The results indicated in figure 4.15 that about 42% of the respondents had less than 10 employees in their organisations and companies. 31% of the respondents had a staff complement of between 11 and 50 employees, while 14% and 13% had about 51 to 100 employees and 101 to 500 respectively. Lastly, there were no employees with a staff complement of more than 500 employees.

4.7.5 Interventions for Job Creation

The last 2 important questions requested the respondents to indicate the interventions that would specifically facilitate an increase in the number of its employees. With the ever increasing unemployment rate in South Africa, it is prudent to facilitate interventions that would maximise the absorption of the unemployed within the municipality, as well as the rest of the country (Ethekwini Municipality, 2014). Companies need to be able to identify potential opportunities for growth that have the most potential in maximising job creation. The summary below indicates the response given through the survey:

- Environmental consciousness and education, marketing which would lead to more sales. This wouldmean growth in business and therefore, would require to employ more people
- Stronger economic growth, more subscribers, more money to pay employees
- Alternative safer and user friendly technologies for the handling of solid waste and waste water
- Benchmarking from overseas companies on what has worked.
- Incentivising companies that seek to employ more people
- Legislating green practices
- Participation in the whole of the value chain from sourcing of rough material, designing own sustainable solutions, production and focusing on manufacturing as it is the biggest employer, marketing and looking for export opportunities
- Some did indicate that they were not looking at employing more people.

4.7 Validity and Reliability of the Instrument Used

To ensure the validity of the research as indicated in the previous chapter, it was important that the questionnaire be answered by the senior member of the company with as much accurate information as possible where the respondents was not the owner. This was to ensure the reliability of the information as well. The email addresses the questionnaires were sent too, were of registered owners or managers of the businesses and the responses received were from those addresses. Once the respondent was on the questionpro site it was not possible to forward the questionnaire just so that the respondent who start responding finishes that particular questionaire.

The fact that the sector itself is largely dominated by small businesses made it easy to access the senior people within these companies, which improved the reliability of the information received. This assisted also with the attendies of the Green livable city seminar where the senior representatives of different organisations attended the seminar as per indications on the attendance register which was kept for the seminar.

4.8 Chapter Summary

In this chapter, the data that were collected through a structured questionnaire were presented for the examination of green industries and their potential for job creation in Ethekwini Municipality. Important information on the socio demographics of the companies through the respondents that participated in the survey. Through analysing the questionnaires, categories of different green economy subsector started to emerge. The respondents gave information on the skills required by the industry and identified gaps in the availability of skills in Ethekwini. Lastly, suggestions were made on the interventions that could support the growth and further job opportunities within the green economic sector of Ethekwini. Chapter 5, which follows, analyses and discusses the results that have been presented in this chapter. The results arealso analysed against the literature review that was presented in Chapter 2.

CHAPTER 5: DISCUSSION

5.1 Introduction

The results of the survey that was conducted through a structured questionnaire were presented in Chapter 4. The aim of Chapter 5 is to further discuss the main findings, providing an in-depth understanding in relation to the original research questions posed in chapter 1. More importantly, a discussion on how these results are presented and the main findings coming out relates to the literature review which was presented in Chapter 2. Firstly, a brief review of the objectives of this research is discussed. This is then followed by the discussion of the survey findings, which are linked to the literature review. This is done to validate the findings of the survey.

5.2 Review of the Research Objectives

The first objective of this research was to unpack and understand the different categories of green industries that exist in Ethekwini Municipality. The second objective was to establish the skills set associated with these emerging green industries. The third and the last one was to ascertain the required support for industry growth and how to increase the number of people employed in this sector.

5.3 Demographic profile of a typical green business in Ethekwini

This section of the chapter discusses the findings from the demographic data already presented, which is associated with a typical green industry in Ethekwini Municipality. These findings relate to the gender, race, education levels, the legal status of the company and the years in which the businesses have been in operation, as related by the respondents representing the companies.

5.3.1 Prevalent gender in the green industry

It was unexpected that the survey indicated that the owners/managers of the green business in Ethekwini were dominated by females. This is a good result, as

traditionally, business activities are dominated by men. The unemployment rate is very high at 29% in Ethekwini Municipality (Statistics S A, 2016). The government encourages even more and more women to play an active role in businesses and if green industries allow for greater participation by females, it could contribute immensely to the rate of employment and thus, alleviating poverty.

5.3.2 Dominant Racial Group

The racial profiling of the respondents representing the businesses indicated a very high percentage on white population dominating the green industry. The ownership or management of the businesses were represented across all races, but the white businesses dominated by far. With the general population in Ethekwini Municipality dominated by the Africans at 74%, Indians at 17% and White at only about 7%, it is important to note the inequality that is presented considering that this is a new industry that has this as a deficiency in the system (Statistics S.A., 2011). The literature indicated that the green economy has contributed positively to the economy of various countries and has provided for additional jobs in these economies. It is thus important that this economic sector attracts more and more of other racial groups, other than the Whites.

5.3.3 Level of education of the business owners

All of the business owners or managers of green businesses in Ethekwini had some form of education. The majority of the respondents, about 63%, had gone to study at a tertiary institution. This is understood to positively affect the chances of a successful business enterprise. Entrepreneurs who are more educated are more willing to start new and unchartered ventures, as opposed to the less educated business, in South Africa (Leitau and Franco, 2011). It is further noted that the chances of survival of a new business by an educated entrepreneur are also higher. This being a fairly new industry in the country, then it is more plausible that the people who would venture into this sector should be more educated.

5.3.4 Legal Status of the businesses

Close Corporations are a very popular form of business in South Africa. It is thus not surprising that the highest percentage of the surveyed businesses, at 47%, were registered as close corporations. This might have been motivated by the fact that has been, for the longest period in the country, the easiest form of starting and formalising a new venture (Cronje et al. 2004). It is also further attributed to the convenience of the ease of raising finance for the business if it is a Close Corporation, as opposed to other forms of business entities. At 24%, Partnerships as a business entity came in second. This could be attributed to the fact that a green business involves many facets that requires collaborations at times for its success, as most of them aim to correct the wrongs done to the environment, while providing a sustainable solution for the future. Private Companies came out third at 18%. These were the bigger companies within the industry this form of a business is more suitable for larger establishments that also seek to facilitate global activities.

The other types of companies came at 8% and these included the co- operatives and non – profit companies. There are a few community organisations that are located within the Municipality, that support and mobilise for various green initiatives. Although not significant, they are worth noting as they contribute to the green job available opportunities within the Municipality.

5.3.5 Old vs. young businesses

The survey conducted indicate a wide spread of years in the operation of various green businesses in Ethekwini Municipality, ranging from less than five years in operation to more than twenty years. The data indicated the larger percentage of operation period was concentrated in companies that are not more than ten years old. This prove the fact that the green economy is a fairly new industry in the municipality, as well as in the country. Literature indicates a fairly recently accommodated economic sector, even though the legislation with the most significant laws for business operation having been concluded in the last ten years.

The first 3 years in business are the most difficult period in any new business. Literature also proves that the highest failure rate of businesses is mostly within the

first 5 years and this is across different economic sectors (Abor & Quartey, 2010). This fact was also proven during the survey, where those potential business respondents, as identified by the 2014 Ethekwini registration list of green services and industries, where telephoned and some of the responses given were that that those businesses were no longer in operation, or they had closed and started another type of a business.

5.4 Emanating subsectors of green industries in Ethekwini Municipality

The survey results indicated five main subsectors that were prominent in the green industries of Ethekwini Municipality. These were energy, waste, infrastructure, manufacturing and professional services. The other subsectors identified constituted 5% and less of the respondents. Manufacturing industries came out the highest, followed by energy and waste related industries. In the fourth place was the professional services and this is not surprising, as many legislations that require compliance from the side of businesses and professional services in the sector are in demand.

The development of the green industries in Ethekwini Municipality is similar to many other countries that have started before, with regards to the dominant subsector. The literature review done for this research indicated that the green economy in other countries has focused on three main greenhouse gas heavily intensive sectors which are the energy, transport and the infrastructure sectors. The reason given was that these sectors easily attract climate change funding. The survey also indicated that energy and infrastructure industrial activities are on the top five of the list of subsectors. South Africa as a country has been forced into green energy generating activities because of the recent energy crisis. Ethekwini Municipality industries, like the rest of the country, are also engaging in various green energy generation activities like manufacturing and installing the solar panels, producing biodiesel and others (Ethekwini Municipality, 2013).

Literature also indicated that countries are not homogenous, some focus on agricultural activities, some on forestry and fisheries, some on manufacturing and waste management. Waste management solutions are mentioned as being popular, especially with the European countries where waste has been turned into a valuable

resource. It has been indicated that the United Kingdom has done fairly well in this arena. Ethekwini's green manufacturing and waste management industries have featured fairly high on the survey results. These results cement and confirm the categories of green industries that exist within the Ethekwini Municipality.

5.5 Emerging skills requirements for green industries

This section relates to the results presented in the previous chapter, about the factors affecting the green industries, important skills required by the industry, training for identified skills and the availability of these skills within the Ethekwini Municipality. The literature presented in Chapter 2 indicates that local skills availability or unavailability impacts on the development and growth of any new industry. An example was presented, of the emergence of the IT industry, where a totally new skills set had to be acquired to prepare for the working environment. This saw the development of new curriculum, new colleges being opened and there was a lot more focus on the upgrading of the employees in the workplaces, such that businesses are able to survive the new IT era. This happened everywhere in the world, even in South Africa, new modules relating to Information Technology are still being formulated and updated to keep up with the technology times.

5.5.1 Factors affecting green industries

The survey revealed that amongst other factors, the issue of skills is not the most pressing factor that affect the development and the growth of the green industry in Ethekwini. Out of a list of seven factors, access to finance was identified as the most pressing factor that affected the growth of green industries within the municipality. This is not surprising, since it has already been established that a larger portion of the green business is new and less than 10 years old. Access to finance is generally regarded as the most inhibiting factor to the survival of small new businesses throughout the world (Abor & Quartey, 2010).

5.5.2 Important skills requirement

The respondents indicated that the skills set that is mostly required for the success of Ethekwini green businesses is the product design skills. This gives an indication that the type of skills that are mostly lacking by the sector are technical expertise. The survey indicated that these vary from designing a locally tailored machinery, to repairs and maintenance. This is closely followed by administration and financial skills. Every business requires a very strong administration, with a competent financial person, as these are the main support systems for a business. This also facilitates businesses to function in a uniform and an acceptable manner in various quarters (Abor & Quartey, 2010). For instance, it is easier for a business to apply and attract funding if its administration is in order, its finances have been utilised well and can be properly tracked. The literature review discussion in the earlier chapter also indicated that the literacy, as well as numeracy skills in the green industry, are a foundation for additional learning and training, especially technical skills.

It is also noted from the survey that more environmentalists are also required to boost the industry and this is a largely consultative sector with specific legislation guiding and facilitating its development.

5.5.3 Capacity building for identified skills

This question dealt with the source of training for the identified skills above. The question was to establish whether these skills can be ascertained on the job, through a formal tertiary institution, or both. The feedback received clearly indicated that both methods were necessary to equip the labour force for full participation within the green economy. While some technical skills can be learned on the job, the theoretical aspects of these skills are imperative and can only be acquired from formal academic institutions. The literature also indicated that, especially in developing countries, basic literacy skills are sometime necessary to equip people for the technical skill. This qualifies the need for both the formal academic training and on the job training for experience and practical skills.

5.5.3 Availability of qualified labour in Ethekwini

The survey findings are almost split in half with responses indicating that these skills that were identified are readily available in Ethekwini, as and when the employers need them, with some respondents indicating that sometimes they are available while and sometimes they are not. Where there is a possibility that there is a gap in available skills, it is necessary that Ethekwini Municipality mobilises for these to be filled through various educational support opportunities, such that the leakage of job opportunities be plugged within the municipality.

5.6 Support programmes for green industries

Literature has proven that government interventions in facilitating a conducive environment for economic growth is imperative, more especially in facilitating new industrial development. In countries where there has been tangible success in the growth of the green industries, the government has played a significant role. This has been through legislating around green and sustainability matters as per international and local standards, incentivising good green practice and penalising bad environmentally harmful processes and behaviour.

5.6.1 External support services for green industries

The survey findings indicated that there were a wide variety of services that were being procured from outside the company to support that particular green industry. Higher than most was advertising. This is not surprising, as it is mostly big companies with big budgets that have internal marketing and advertising departments. Most small and medium companies outsource this role as it is not considered the core of the business (Zhanga & Zhaob 2012).

The main reason for asking this question though, was to determine the alignment of green industries with other sectors, such that when there is support for growth, a holistic view is taken. The other external industries that support the main industry is a big contributor to the success of the main industry. In this instance, advertising companies are important and need to be supported by the various stakeholders, since

they largely contribute towards the growth of the green industries. An analysis done by the Economic Development Department of the Ethekwini Municipality on their Waste Value Chain indicated as one of the recommendations for intervention, that mobilisation and educating the community regarding the value of waste is one important way to increase the volumes of waste coming into the system, such that viable economic projects could be undertaken (Ethekwini Municipality, 2015). One of the main vehicles for this are the advertising campaigns and therefore, it is not surprising that a new industry like the green economy would require more advertising.

The second most outsourced function in Ethekwini Municipality is the product design expertise. In the earlier analysis, with regards to the skills most required by the industry, design expertise faired quite high. It is therefore not surprising that when companies do not have this competency in-house, they source it from other companies. It emphasises the point about supporting the skills development in this field in Ethekwini.

The third most outsourced supporting activity is the packaging for green products. This is another activity that has developed in some countries where innovative green product packaging has become an industry of its own (Zhanga & Zhaob 2012). It defeats the purpose to produce an environmentally friendly product only to package it in an environmentally unfriendly packet. There is more and more use of recycled containers and environmentally harmless packaging that is currently being used, like the fruits and vegetable peals being processed and turned into food packaging as seen in Figure 5.1.

Figure 5.1 Packaging processed from vegetable peels

5.6.2 Estimated Turnover

The question indicated the annual estimated turnover. It was indicated in Chapter 1 of this study that information with regards company turnover might be a sensitive one, even though it is important to ask, as it gives an indication of the industry potential. To circumvent this fact, the questionnaire did not ask for the exact amount of monies made, but rather required that the respondent indicates within a range of amounts where his or her company fits. The feedback was poor, since not all of respondents gave information on this question.

The information received indicated that a large percentage of companies fall within the less than five million annual turnover category. In South African terms, this category of companies falls within the small business category (Chetty, 2009). Chetty explains the different categories of businesses, based on their turnover and indicated that companies with less than five million per year are officially categorised as small in South Africa. 20% of the respondents indicated that their companies fall within the next category of a turnover of between five to ten million. Only a very small number of

respondents indicated higher amounts. Green industries of Ethekwini still has a potential to grow.

5.6.3 Interventions for profitability and growth

The respondents gave specific suggestions, with regards to assisting in unlocking the potential of green businesses in Ethekwini. The suggestions received ranged from legislative matters to technical internal support. It was clear that while the government has played an important role over the years, by acknowledging the need for a greener economy and provided some guidelines through legislation in some instances, for example through the Waste Act, there is still a lot more to be done in supporting the emerging small businesses. This is more crucial for this study because it has been established that most of the Ethekwini's green industries fall under this category. Suggestions with regards to the government relaxing legislation on how the green industry operates are crucial. Finalising operating licences, environmental impact assessments and quality certification, indicate some of the areas in which the government takes too long to process for these businesses to survive and these were indicated as the things that affect their potential to progress fast to the next level.

Local municipalities are not responsible for legislation in South Africa, only the National Government, but local municipalities are responsible for developing the strategies for development and growth, which are aligned to the National Government imperatives (National Economic Development, 2013). Also, metropolitan municipalities, like Ethekwini, can develop and enforce their bylaws, especially around recycling activities, how and where they can take place within the city.

Literature indicates that governments of various countries provided various incentives, including financial backing to facilitate the development of the green industries. South Africa has various schemes like the energy fund, the green fund, part contributions from the government to retrofit factories for efficiencies, funds to reduce cost of installation of green products (Maia, 2011). The respondents of the survey indicated that the cost of the infrastructure needed to be subsidised, financial injection and tax incentives into the businesses would boost growth and profitability.

5.6.3 Estimated number of employees

The results from the respondents, on the number of employees within their systems, are in line with the results received for the size of the businesses. A larger percentage of 42% in this case, had a staff complement of less than 10 employees. 31% of the respondents indicated that they had a staff complement of between 10 and 50 employees. These 2 categories were an indication of the level of existing green industries for Ethekwini and could provide a base for calculating the potential additional numbers of staff, if the size of the businesses expand or new additional green industries are facilitated within the municipality.

5.6.4 Interventions for job creation

As indicated in the literature, the unemployment levels in South Africa are very high and the country requires innovative ways to absorb labour and reduce the levels of unemployment. In most cases, the government is accused of developing uninformed support programmes for businesses thus, it was crucial to ask this main question, so as to hear from the respondents as to what interventions would assist their industry to expand and employ more people. This question largely relates to the last objective of the study.

The respondents indicated that with more and more awareness and an increased level of consciousness from the customers on the need to go green, there is a potential for increased sales which would trigger the need to employ more staff and develop more businesses of this nature.

It was also clear that the interventions needed to focus on legislating green practices, while awareness campaigns would assist with the marketing of this green sector, some practices needed to be forced into society for the protection of the environment and intern drive the increase in the industry.

It was further suggested to benchmark activities from similar countries around the world, taking what worked and tailor make those interventions for the South African context.

Participating in the whole green industry value chain of this industry is an important feedback which has the potential of unlocking more and more business opportunities, especially in the manufacturing and the new technology subsectors. The literature

review indicated the job potential numbers from the green economy in South Africa and manufacturing activities, especially in manufacturing the products that are listed in Table 2.1.

South Africa has implemented the Employment Tax Incentive Programme to boost the level of employment country wide, especially for the youth who are coming out of Universities (Department of Trade and Industry, 2016). The respondents indicated that an incentive scheme for industries that seek to employ more people would benefit the green industry sector and it would facilitate more numbers to be employed. It was evident that the respondents did not know about the government's initiative of this tax incentive programme, yetsuch programmes need to be publicised as often as it is possible.

5.7 Chapter Summary

The quantitative results that were presented in Chapter 4 were discussed in detail in this chapter. The results indicated that the green industries that are located within Ethekwini are divided into five main categories. These are manufacturing, infrastructure, energy, waste and professional services. A discussion has been presented, which also indicated that both academic and on the job skills are an important catalyst in the development and growth of the green industry of Ethekwini Municipality. Lastly in the discussion, it was evident from the survey that a larger percentage of the industries falls under what is defined as small industries, which still needs a lot of support in maximising the growth of the companies and also maximising opportunities for these companies to employ additional human capacity from Ethekwini.

Chapter 6 deals with the conclusion and recommendations, based on the findings of this study. Recommendations for future research on specific matters relating to the potential for growth and job creation in the green industry within Ethekwini Municipality, are also made.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

Green industries have a significant role to play in the economy of Ethekwini Municipality, as there is a dire need for innovative economic growth that would bring a lasting solution to the many economic problems facing the municipality, especially the need for accelerated job creation. In theory, small businesses across various sectors are the solution that would drive down the levels of unemployment in South Africa (Chetty, 2009). That is why the government, as a strategy, endeavours to support small business development. It has been established that the majority of the green industries in Ethekwini are considered small businesses and would therefore qualify for the majority of the government industry support programmes.

This chapter revisits the research questions that were presented at the beginning of this study and discusses whether these research questions have been resolved or not. It further summarises the outcome of this research and its implications on various entities. Furthermore, this chapter highlights the limitations that were experienced, as well as the recommendations on how best to solve them in the future. Lastly, the chapter describes the recommendations for future studies.

6.2 Has the Research Questions been resolved?

The research question of this study entailed identifying the existing categories of green industries and examine their potential in increasing job or employment opportunities within the Ethekwini Municipality. This question has been achieved with the identification of the five main categories of the subsectors that constitute the current green industries within the Ethekwini Municipality. Chapter 5 gave a detailed discussion of the results which also indicated what needs to be done to increase the number of job opportunities that this industrial sector could present.

6.3 Summary of the Research Outcomes

The aim of the research was to examine the green industries that currently exist within Ethekwini Municipality, as well as to explore some aspects that would contribute to increased job opportunities within the sector. The research highlighted the different factors concerning the emergence and the growth of green industries globally. It highlighted the change over the years, towards the green economy especially in the first world countries. Green innovation has increasingly been considered as a source of job creation with high numbers of employment opportunities identified in the energy, waste manufacturing and the infrastructure sectors.

The aim of the study was to examine the green industries in Ethekwini Municipality and the potential for these industries for job creation. The study consisted of a survey which sought responses from the owners or the representatives of the green industries within the municipality. The survey was then followed by a descriptive analysis of the results, which indicated the 5 main green industry subsectors that exist in Ethekwini. It also gave details of the skills requirements that would propel the industry forward. Lastly, the survey indicated the main elements of support that the industry requires to facilitate growth and increase employment opportunities within the firms.

The findings in Ethekwini were in line with what has happened in most parts of the world, where the green industries are largely driven by small businesses, especially during the early stages of development. There are specific education and skills requirements that are linked to a new industry development in a third world country, where most of the technical skills requirements go hand in hand with the literacy training as well.

This research acknowledged that behind every new economic sector, especially at the emergence stage, new skills are required and old ones enhanced differently. In the green economy sector, a different set of technical skills and improved technology are important in facilitating the development and growth of green industries. The survey conducted revealed that there are product design skills and environmentalists requirements in Ethekwini. Furthermore, strong administration and financial skills would enhance the growth of this sector within the municipality. These would propel the existing industries into the next growth level.

It has been imperative for this research to ascertain the nature of interventions that could assist the existing green businesses to not only improve, with regards to their turnover, but also to be in a position to employ more people. It is understood that this green economy sector has a potential of employing a large number of employees in different skills categories. A large number of existing green industries is a category of small emerging industries. The results of the survey revealed that the government is required to play a role, not only in incentivising green industries, but also in relaxing the laws and providing for facilitative legislation that does not hinder the free development of green industries. The results also indicated that sourcing and maintenance of relevant machinery are mostly not a local competency, this is where additional support could be directed and this also presents employment opportunities for a particular segment of the population.

6.4 Conclusions

The green economy and associated green industries around the world have made a significant contribution to various economies, especially of the first world countries, where it has existed for many years, as compared to South Africa. The environmental awareness and the requirements for each and every country to adopt sustainable development practices and contribute to the reduction of greenhouse gases that are emitted into the atmosphere, have contributed in cementing green businesses into the mainstream economy and be counted as one of the highest contributors into the economy. South Africa and Ethekwini Municipality in particular, has a fairly new green economy sector. Ethekwini Municipality recongises the need to diversify priority economic sectors, like the green economy, as is indicated through the Municipality's strategies and plans. There is a need for targeted intervention supporting various emerging green businesses. This will assist is the reduction of failed businesses and grow the sector within the Municipality.

6.5 Implications of this Research

The findings of this research are not entirely unexpected, because most of them are aligning with what has been revealed by the desk top investigation of the industries in

other areas around the world. Having been able to conduct a study of this nature within the Ethekwini Municipality, the study indicated the presence and a growing segment of this economy which embraces green economic activities. The opportunities for a diverse economy are evident. The results of the research prove that there are opportunities that could, if supported, contribute towards job opportunities in Ethekwini.

What is evident though is that these opportunities can be unlocked by a targeted intervention to address the supply of potential employees with technical skills, like product design, engineering, tooling, amongst others, as well as professional skills in environmental management, finance and administration. Furthermore, for this sector to be fully realised, it is imperative that the government plays a significant role in facilitating the growth of these industries through appropriate legislation, incentives and penalties that promote and support the ease of establishing and expanding a green industry, not only in Ethekwini, but the whole country.

The research results have deduced that it is largely the small businesses that are driving this industry within the Ethekwini Municipality. Both national and local government support the development of small businesses, as it has been proven in various countries, for example, India and the United States that small businesses are contributing immensely to various economies. In his article, Ackermann (2012) indicates that looking back from the end of the 20th century, it is clear that small business has been America's economic powere house but this has been slow to be recognised (Ackermann, 2012). This proves and recognises the role played by small businesses in the economy. This implies that as the green industries are currently driven by small size businesses, they have the potential to absorb more employees, in as much as they also can access various government assistance and support programmes that are tailor made for small business development.

6.6 Recommendations

Environmental problems, high levels of unemployment, high failure rate of SMMEs and infrastructure backlogs are some of the problems that have plunged the municipality for a long time. Sustainable development, through green industrial development, has positively contributed towards solving such problems in other parts of the world. The findings of the study indicated the existence of green industries in Ethekwini

Municipality, although these activities are fairly new in Ethekwini, as well as the in rest of South Africa, as compared to other parts of the world.

The recommendations below could assist the strengthening of this green economy sector and thus, positively contribute to the economic development of Ethekwini Municipality:

- Education of the community about environmental issues would create the awareness necessary to positively contribute to the economic activities of the green industry. The research results revealed the need for environmental awareness interventions in Ethekwini, as this would facilitate increased sales which would contribute to the growth of the industry in the Municipality.
- Ethekwini Municipality has an opportunity to facilitate incentive schemes that could drive growth and increase the survival rate of green industries. All municipalities collect rates from businesses, facilitate business licences and thus, the green industries could be incentivised in these areas as they positively contribute towards the United Nations' Sustainable Development Goals, as well as creating employment opportunities.
- Lobbying national government against some of the existing legislations that hinder the growth of the green industries is important as this would unlock the full potential of this industry and reduces the failure of some small green industries.
- Innovation and technology is one of the factors that can positively contribute positively in the diversification of employment opportunities, especially in the growth of green businesses. Finding new innovative ways of doing businesses gives the businesses a competitive advantage that sets them apart and therefore, they would be able to compete at a different level.
- The municipality needs to grow the right skills to accommodate the current new industry challenges. While most of the skills requirements within the green industries are largely traditional in any business, there is a particular requirement pertaining to green product design that needs to be localised, environmentalists and artisans who are able to maintain a different set of machinery. This on its own creates the job opportunities that are required by the municipality.

6.7 Limitations of the Study

- The biggest constraint that was noted during the process of this research was the poor response rate from the potential respondents. The online survey was only completed by 47% of the respondents that actually accessed the survey. This unsatisfactory response rate, after repeated reminders, could be attributed to respondents not being at ease with sharing company information online and the time to sit and answer survey questions over the internet being limited to a small number of green business owners.
- Another constraint was the fact that the study utilised a municipal boundary to demarcate the locality of the survey, while a few of the respondents mentioned that their operations go beyond the boundaries of Ethekwini Municipality. Some specifically indicated that they operate between Pietermaritzburg and EThekwini Municipality, while one indicated that the company was servicing the whole of KwaZulu Natal Province. While this was the case, the feedback received was still relevant as the context of these other areas were similar to the conditions of Ethekwini Municipality. The results of this study could be utilised as a contribution to a Provincial or even a National study of a similar topic.
- Another limitation was the fact that some respondents did not answer all the questions, especially with regards to the company turnover. This is understandable, as most people consider information with regards to sales and profits as classified. The study itself did not intend to analyse in detail the value of these businesses, but only to ascertain whether they are in a category of small or big business. Information was also extracted from the question that dealt with the number of employees in the business.
- The time allocated to conduct the survey was also limited to a month. Perhaps more time would have eventually produced satisfactory results. The fact that the survey results are a representation of the reality that is less than 100% accurate, cements the validity of the study conducted.

6.8 Areas for Future Studies

The declining economy in Ethekwini and the rest of the country is a serious matter that requires every stakeholder to participate and introduce measures that can turn this situation around. The requirements for all nations to change development practices so as to reverse or mitigate against global warming effects and the depletion of resources through unsustainable economic practices, are other opportunities for Ethekwini to contribute through the growth of green industries. To facilitate the growth of the green economy in Ethekwini Municipality, the following recommendations for future studies are made:

- While the data on green industries exist, which was the basis for the survey conducted, it is imperative that regular surveys are conducted to keep the list current. It was noted during the survey that changes occur regularly, especially in businesses that are less than five years old.
- With regards to the survey conducted and the difficulty in ascertaining some of the information like, turnover, a different manner of sourcing sensitive information in the future will have to be devised and it is a crucial part of and industry data.
- Further research is required to determine the economic and environmental impact of green services and industries on not only Ethekwini Municipality, but of the Province of KwaZulu-Natal as a whole. This would qualify and quantify the value of the industry to inform decision making between economic sectors.
- Assessment on the accessibility of the current initiatives by government in support of the emerging green economy would be useful in informing future interventions by various stakeholders.
- Detailed studies that would include the examination and impact of greening the current brown industries as these existing industries are more prevalent within the municipality and were excluded in this study. Sectors like the automotive, chemicals, transport and logistics, dominate the economy of Ethekwini.

References

Abor, J. and Quartey, P., 2010. Issues in SME development in Ghana and South Africa. *International Research Journal of Finance and Economics*, *39*(6), pp.215-228.

Ackermann, S.J. ed., 2012. *Are small firms important? Their role and impact*. Springer Science & Business Media.

Alliance, G., 2012. Green economy: a UK success story. *Green Alliance. http://www. Green-alliance. org. uk/grea_p. aspx*.

Amaratunga, D., Baldry, D., Sarshar, M. and Newton, R., 2002. Quantitative and qualitative research in the built environment: application of “mixed” research approach. *Work study*, *51*(1), pp.17-31.

Barbier, E.B., 2010. *A global green new deal: rethinking the economic recovery*. Cambridge University Press.

Barbier, E., 2011, August. The policy challenges for green economy and sustainable economic development. In *Natural resources forum* (Vol. 35, No. 3, pp. 233-245). Blackwell Publishing Ltd.

Bezuidenout RM, Davis C, du Plooy-Cilliers F. 2014. *Research Matters*. Juta Publishers.

Borel-Saladin, J.M. and Turok, I.N., 2013. The impact of the green economy on jobs in South Africa. *South African Journal of Science*, *109*(9-10), pp.01-04.

Bowen, A. and Kuralbayeva, K., 2015. Looking for green jobs: the impact of green growth on employment. *Global Green Growth Institute*.

Brand, U., 2012. Green economy–the next oxymoron? No lessons learned from failures of implementing sustainable development. *GAIA-Ecological Perspectives for Science and Society*, *21*(1), pp.28-32.

Chapple, K., Kroll, C., Lester, T.W. and Montero, S., 2011. Innovation in the green economy: An extension of the regional innovation system model? *Economic Development Quarterly*, *25*(1), pp.5-25.

Chetty, A., 2010. *A critical analysis of current approaches to SMME development and support within the eThekwini Municipal Area* (Doctoral dissertation, University of KwaZulu Natal).

Chipp K., 2007. *Samra Paper Report prepared for the Economic Development Department*, Ethekwini Municipality

Creswell, J.W., 2013. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Davies, S., 2011. Regional resilience in the 2008–2010 downturn: comparative evidence from European countries. *Cambridge Journal of Regions, Economy and Society*, 4 (3): 369-382.

Department of Economic Development, 2014. *New Growth Path Framework*. [Online] http://www.economic.gov.za/communications/51-publications/151-the-new-growth-path-framework [accessed 2 November 2015].

Department of Trade and Industry 2016*. Industrial Policy Action Plan 2016-17*. Pretoria

Department of Energy, 2003. White Paper on Renewable Energy, Government Printers. Pretoria

Dörnyei, Z., with Taguchi, T., 2010. *Questionnaires in second language research: Construction, administration, and processing*.

Ethekwini Municipality, 2013. *Economic Development and Job Creation Strategy*, Durban.

EThekwini Municipality, 2014. *Integrated Development Plan 2016-2018,* Durban.

Ethekwini Municipality, 2015. *Analysis of the Waste Value Chain in Ethekwini Municipality*, Durban

European Centre for the Development of Vocational Training (Cedefop), 2010. Skills for green jobs: European synthesis report.

Explorable, 2016. Non-Probability Sampling, *Sampling* [online] https://explorable.com/non-probability-sampling [accessed 4 April 2016].

Explorable, 2016. Sample - Size, *Sampling* [online] https://explorable.com/sample-size [accessed 4 April 2016]

Hamdouch, A. and Depret, M.H., 2010. Policy integration strategy and the development of the 'green economy': foundations and implementation patterns. *Journal of environmental planning and management*, *53*(4), pp.473-490.

Hu, A., 2016. *China: innovative green development*. Springer.

Humanities Teaching and Learning Office: The University of Manchester, 2015. *Research Methodology* [Online] http://www.humanities.manchester.ac.uk/studyskills/assessment_evaluation/dissertations/methodology.html, [accessed 25 October 2015]

ILO & CEDEFOP, 2011. Skills for green jobs: a global view. Synthesis report based on 21 country studies, Switzerland. Intells *International Labour Office*.

Jacobs, M., 2012. Green growth: economic theory and political discourse. *Centre for climate change economics and policy working paper*, 108

Kothari, C.R., 2004. *Research methodology: Methods and techniques*. New Age International.

Kumar, R., 2005. Research Methodology: a step-by-step guide for beginners. 2nd ed. London, Sage Publications Ltd.

Li J , 2013. *Quantitative Data Analysis Techniques for Data-Driven Marketing*. [online] http://www.iacquire.com/blog/quantitative-data-analysis-techniques-fordata-driven-marketing-2, [accessed 03 October 2015]

Maia, J., Giordano, T., Kelder, N., Bardien, G., Bodibe, M., Du Plooy, P., Jafta, X., Jarvis, D., Kruger-Cloete, E., Kuhn, G. and Lepelle, R., 2011. Green jobs: an estimate of the direct employment potential of a greening South African economy. *Industrial Development Corporation, Development Bank of Southern Africa, Trade and Industrial Policy Strategies*.

Mendelsohn, R., 2008. The impact of climate change on agriculture in developing countries. *Journal of Natural Resources Policy Research*, *1*(1), pp.5-19.

Msweli, P., 2014. How to change the complexion of the economy from brown to green? A case of South Africa, 1ST International Conference Makaranga, Kloof Durban, 17-19 December 2014

Mugera, W., 2013. Non-Probability Sampling Techniques. https://learning.uonbi.ac.ke [Accessed 07 October 2015]

Mutula, S.M. and Van Brakel, P., 2007. ICT skills readiness for the emerging global digital economy among small businesses in developing countries: Case study of Botswana. *Library Hi Tech*, *25*(2), pp.231-245.

Nabudere, D.W., 2013. *From Agriculture to Agricology: Towards a Global Circular Economy*. Real African Publishers.

National Treasury-The Republic of South Africa, 2013. *Carbon Tax Policy Paper*

Ormston, R., Spencer, L., Barnard, M. and Snape, D., 2014. The foundations of qualitative research. *Qualitative research practice. A guide for social science students and researchers*, pp.1-25.

Page, C.L. and Miller, S.H., 2002. *A Comparative Analysis of Leadership Skills Development in Marine Corps Training and Education Programs*. NAVAL POSTGRADUATE SCHOOL MONTEREY CA.

Patten, M.L., 2016. *Questionnaire research: A practical guide*. Routledge.

Pavlova, M., 2012. Generic green skills: Can they be addressed through Technology Education?, 2, p.49.

Peters, D.J., 2013. Understanding green occupations from a task-based approach. *Applied Economic Perspectives and Policy*, p.ppt026. http://aepp.oxfordjournals.org/content/early/2013/09/30/aepp.ppt026.short [Accessed 12 September 2016]

PSIR, 2014. Clothing Textile and Fashion in Ethekwini, *The Edge Quarterly Bulletin September 2014*.

PSIR, 2015. Manufacturing Industries in Ethekwini, *The Edge Quarterly Bulletin September 2015*.

Ragheb, A., El-Shimy, H. and Ragheb, G., 2016. Green architecture: a concept of sustainability. *Procedia-Social and Behavioral Sciences*, *216*, pp.778-787.

Ratcliff D.2015. 15 Methods of Data Analysis in Qualitative Research, [Online] http://psychsoma.co.za/files/15methods.pdf, [accessed 25 October 2015]

Raworth, K., Wykes, S. and Bass, S., 2014. Securing social justice in green economies: a review and ten considerations for policymakers. *IIED and CAFOD, London*.

Republic of South Africa, 1996. *Constitution of the Republic of South Africa*, Pretoria, GCIS.

Republic of South Africa, 2008. National Energy Act No.34, 2008, Pretoria

Republic of South Africa, 2009. National Environmental Management: Waste Act No.59, 2008, Pretoria

Ruffin, F.A., 2013. Municipal International Relations: The South African Case of Metropolitan eThekwini. *Loyola Journal of Social Sciences*, *27*(1), pp.119-141.

Samad, G. and Manzoor, R., 2015. Green Growth: Important Determinants. *The Singapore Economic Review*, *60*(02), p.1550014.

Saunders, M.; A Thornhill & Lewis, P., 2007. Thornhill. *Research methods for business students,* 4th ed. London. Pearson Education Limited.

Saunders, M., Lewis, P. & Thornhill, A., 2012. "Research Methods for Business Students" 6th edition, Pearson Education Limited

Saxena, R.P. and Khandelwal, P.K., 2012. Greening of industries for sustainable growth: An exploratory study on durable, non-durable and services industries. *International Journal of Social Economics*, *39*(8), pp.551-586.

Schutt, R.K., 2011. *Investigating the social world: The process and practice of research*. Pine Forge Press. http://www.sagepub.in/repository/binaries/covers/web85/Catalogues/2013SC/PDFs/RM-2013.pdf, [accessed 25 October 2015]

Scott, M.J.; Roop, J.M.; Schultz, R.W.; Anderson, D.M. and Cort, K.A., 2008. The impact of DOE building technology energy efficiency programs on US employment, income, and investment. *Energy Economics*, *30*(5), pp.2283-2301.

Sekaran, U. and Bougie, R., 2010. Research Method for Business, A Skill Building Approach. John Wiley & Sons Inc.

Sekaran, U. and Bougie, R., 2014. *Research methods for business:* Research Methods for Business. 6th Ed. West Sussex: John Wiley & Sons.

Statistics South Africa, 2011. Statistics by Place: Ethekwini Municipality. [online] http://statssa.gov.za/EthekwiniPlace/people.htm [accessed 2 November 2016].

Statistics South Africa, 2015. Key Economic Indicators. [Online] http://statssa.gov.za/EconomicIndicators/economic.htm [accessed 16 September 2016].

Steiner, A., 2010. Focusing on the good or the bad: what can international environmental law do to accelerate the transition towards a green economy. *Am. U. Int'l L. Rev.*, *25*, p.843.

Steiner, A., 2011. *Towards a green economy: Pathways to sustainable development and poverty eradication*. UNEP. http://www.unep.org/greeneconomy/GreenEconomyReport/tabid/29846/Default.aspx [accessed 26 October 2015]

Stiglitz, J.E., Sen, A. and Fitoussi, J.P., 2010. Report by the commission on the measurement of economic performance and social progress. *Paris: Commission on the Measurement of Economic Performance and Social Progress*. www.stiglitz-sen-fitoussi.fr accessed on the 19 October 2015.

Technopolis, 2016. *Education for people and planet: Creating sustainable futures for all* Background paper prepared for the 2016 Global Education Monitoring Report, ED

Teddlie, C. and Yu, F., 2007. Mixed methods sampling a typology with examples. *Journal of mixed methods research*, *1*(1), pp.77-100.

The Conference Board, 2016. Global Economic Outlook 2016 - Key Findings, [Online] https://www.conference-board.org/data/globaloutlook/ [accessed 20 September 2016]

The IHS Global Insight Report, 2010. Country & Industry Forecasting. [Online] Http://www.ihs.com/products/global-insight/index.aspx. [Accessed 15 September 2016]

Trochim, W.M.K., 2006. Research Methods Knowledge base. Web Centre for social research methods. p.2015 [Online] *http://www.socialresearchmethods.net/kb/* [Accessed March, 14,].

UNIDO, 2016. Green Industry Initiative [Online] https://www.unido.org/greenindustry/green-industry-initiative.html [Accessed 6 January 2017]

United Nations General Assembly, 2015. Open Working Group of the General Assembly on Sustainable Development Goals, *Sustainable Development Goals*, [Online] http://www.un.org/ga/search/view_doc.asp?symbol=A/69/L.85&Lang=E [accessed on 17 August 2016]

Wei, M., Patadia, S. and Kammen, D.M., 2010. Putting renewables and energy efficiency to work: How many jobs can the clean energy industry generate in the US?. *Energy policy*, *38*(2), pp.919-931.

Williams, C., 2011. Research methods. *Journal of Business & Economics Research (JBER)*, *5*(3).

Yes Media, 2017. The Local Government Handbook: A Complete guide to Municipalities in South Africa [Online]

http://www.localgovernment.co.za/ [accessed 8 March 2017]

Zhang, G. and Zhao, Z., 2012. Green packaging management of logistics enterprises. *Physics Procedia*, *24*, pp.900-905.

APPENDIX 1

Questionnaire

Examination of green industries and its potential for job creation in Ethekwini Municipality

GRADUATE SCHOOL OF BUSINESS UNIVERSITY OF KWAZULU-NATAL

Dear
Respondent

I, Phakamile Mbonambi, am an MBA student at the Graduate School of Business, University of KwaZulu-Natal. I am currently conducting a study entitled "Examination of green industries and its potential for job creation in eThekwini Municipality" .The study aims to gain an understanding of the existence of green industries and their scale in Ethekwini.

Through your participation in the study I hope to identify different subsectors that exist, understand the skills required to grow this industry and also ascertain the support that is required to fastrack growth and job within these industries within the Municipality. Your participation in this study is voluntary and confidential. Neither your name nor your current business will be identified in this study. It is on this premise that I request you to respond to these questions honestly. I thank you in advance for taking your time to complete the questionnaire as your input will be immensely valuable. The questionnaire will take you approximately fifteen minutes to complete.

Should you have any queries relating to this study or your participation therein you can contact either myself or my supervisor on the contact details below: Phakamile Mbonambi on 083 792 3289 or phakah24@gmail.com or my supervisor Mr Chris Chikandiwa on 031 260 8883 or chikandiwa@ukzn.ac.za

I agree_____

Please indicate your answers by circling the appropriate numbers where appropriate.

1. Please indicate your gender
    1. Male
    2. Female

2. Please indicate your racial status
    1. Asian
    2. African
    3. Coloured
    4. White

3. Please indicate your level of education
    1. No formal education
    2. Primary
    3. Secondary
    4. Post-Secondary
    5. Tertiary

4. Please indicate the nature of your business
    1. Private Limited Company
    2. Close Corporation
    3. Partnership
    4. Sole Proprietor
    5. Other (please specify) _____

5. For the purpose of this research, a **green industry** involves a company whose economic activity relates to production, distribution or consumption of goods and or services that results in increased human well-being and reduction of environmental risks.

Do you consider yourself operating a green business?

1. Yes
2. No

6. What type of industry does your business deals with?

1. Energy
2. Waste
3. Infrastructure
4. Manufacturing
5. Natural Resources
6. Professional services
7. Agriculture
8. Retail/Wholesale
9. Services
10. Skills Development
11. Other (please specify)

7. Please expand on the nature of your operations – what does it do.

_____

8. For how long has your company been in operations?

1. Less than five (5) years
2. Between 5 and 10 years
3. Between 11 and 15 years
4. Between 16 and 20 years
5. Over 20 years

8. Please indicate your company's annual turnover as indicated below:

1. Less than R5m
2. R5m – R10m
3. R10 – R20m
4. above R20m

9. Please rank the following factors that affect your industry in order of importance (1 being very importance and 7 being the least important factor):

1. Skills _____
2. Access to Finance_____

3. Government Bureaucracy_____
4. Environmental factors _____
5. Economic climate _____
6. Technology _____
7. Globalisation_____

10. Please identify the appropriate number the important skills required by your company

1. Administration
2. Financial
3. Engineering
4. Environmentalists
5. Product Designers
6. Development Economists
7. General labour
8. Driver
9. Other (please specify)_____

11. Are the applicable skills set attainable through?

1. Academic training
2. On the job Training
3. Both

12. Are these skills readily available in Ethekwini as and when you require them?

1. Yes
2. No
3. Sometimes

13. If your answer is 2/3 above, what skills are not readily available within the Ethekwini Municipality?

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14. What are the skills that you had to import from outside the Ethekwini Municipality?

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15. Please indicate what external supports do you use (You may choose more than ONE)?

1. Accounting/bookkeeping
2. Advertising
3. Consultants/mentorships

4. Product design experts
5. Packaging
6. Consultants/experts
7. Other (please specify)_____

16. What technical industry specific interventions would support your green business in becoming more profitable?

_____

17. Would this/these intervention facilitate growth and expansion to your business?

1. Yes
2. No

18. Please give an estimated number of employees in your business.

1. Less than 10
2. 11 – 50
3. 51 – 100
4. 101 – 500
5. Above 500

19. What interventions would facilitate your green business increasing the number of its employees?

_____

20. Would an increase in employee numbers support any of your strategies for future business expansion you might have?

1. Yes
2. No

THANK YOU

APPENDIX 2

Ethekwini Municipality's GateKeepers Letter

APPENDIX 3

Ethical Clearence