TIPS FORUM 2017

INDUSTRIALISATION AND SUSTAINABLE GROWTH

Development towards green growth in Gauteng province: Opportunities and challenges

June 2017

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Paper presented at the TIPS Annual Forum 2017.

The Annual Forum 2017 is being hosted by Trade & Industrial Policy Strategies (TIPS) in partnership with the South African Research Chair in Industrial Development, based at the University of Johannesburg, and in association with the Green Economy Coalition (GEC). It is supported by the European Union and the Department of Trade and Industry.

Abstract

Green economy is placed as a potential to promote social equity and improve human well-being by addressing poverty and inequalities. The transition towards green growth in Gauteng province is progressing in the right direction, with various government departments developing strategies and initiating programmes and projects to support implementation. It is important that the state of strategies developed and their alignment to the national green policies is assessed to determine the provincial development level in terms of green growth transitioning. The study found that there is a progressing transition to a green economy in Gauteng which is supported by a number of strategies and green projects that are being implemented around the province. From the implemented projects level of commitment across prioritised sectors is not uniform, there are sector with highest progress and sectors with poor progress, the built environment sector seems to be the leading sector with decent progress by 49%, followed by the air quality sector by 30%. The focus area with a poor progress includes sustainable agriculture and economic development.

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ABBREVIATIONS

DBSA	Development Bank of Southern Africa
DEA	Department of Environmental Affairs
DED	Gauteng Department of Economic Development
DOE	Department of Energy
DST	Department of Science and Technology
DTI	Department of Trade and Industry
EDD	Department of Economic Development
GCCRS	Gauteng Climate Change Response Strategy
GESS	Gauteng Energy Security Strategy
GHG	Green House Gas
GIES	Gauteng Integrated Energy Security Strategy
GSP	Green Strategic Programme
IDC	Industrial Development Corporation
NGP	New Growth Path
NSSD	National Development Strategy for sustainable Development

Introduction

The concept of green economy has moved beyond the boundaries of environmental economics and into mainstream politics and business in response to the dual problems of global climate change and economic crisis. The concepts of green economy, argues that this type of the economy will enable environmentally friendly economic and employment growth on the same or a greater scale than current environmental environmentally unsustainable growth (Borel-Saladin and Turok, 2013). Green economy is placed as a potential to promote social equity and improve human well-being by addressing poverty and inequalities ((Musvoto et al, 2015). Transition to a green economy offers new opportunities for advancing the achievement of sustainable development objectives through economic growth, employment creation and the reduction of poverty and inequalities (Faccer et al, 2014). There are a number of benefits and opportunities that the green economy presents; one of the main benefits of green growth is that the type of the jobs it creates tends to have higher local content than traditional fossil-fuel based economic activities. And some of the benefits are that the energy efficient investment such as retrofit of the buildings tend to be location specific and requires local labour (Borel-Saladin and Turok, 2013). Green economy also presents an opportunity as an investment facilitator in resource savings as well as sustainable management of natural capital that will drive the growth. Green economy offers the opportunity to actively promote economic growth and bringing about improved social and environmental value (Faccer et al, 2014).

Globally and at national levels, there has been a growing attention on climate change and projected inability of the world economies to sustain into the future growth rates that they have enjoyed in the past without irreversible in a green economy as a way of helping the economy to recover. Local level, states and metropolitan areas have an opportunity to stimulate their economies by capitalising on the green wave of innovation, and new product and service development. During the past several years, there has been considerable interest in estimating the size of the green economy and monitoring and projecting its growth. Various studies have been conducted and in certain countries and in the local areas as well (Eberts, 2011). Estimating the size of a green economy, assist to determine the state at which a particular state is transiting to a greener growth.

The aim of this study is to assess the level of transition towards green growth in the province of Gauteng. The study answered the following questions 1. What is the level of the green economy in Gauteng? 2. What are Gauteng prioritised green sectors in relation to the national prioritised sectors? And 3. What are the impeding factors to achieve green growth in Gauteng?

And the rest of the paper is structured as follows; the section that follows contains literature reviewed on the transition towards green growth, South African green growth context and the challenges of green growth transition, the method used to conduct the study, findings of the study and end with the presentation of conclusion.

Factors that determines transition to green economy

Growth towards a green economy means fostering economic growth and development while ensuring that natural assets continues to provide the resources and environmental services on which our well-being relies (OECD, 2011 quoted in OECD, 2013). To do this green growth must act as a catalyst for investment and innovation, which will underpin sustained growth and give rise to new economic opportunities (Martinez-Fernandez, et al, 2013). Green growth results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is an economy which is low carbon, resource sufficient and socially inclusive (OECD, 2013). Promoting green growth is about ensuring sustainable human wellbeing on the basis of policies and measures that protect the ecological, social and economic environment. A green growth model implies all-embracing, holistic approach to economic development, maximizing conflicts and contradictions with different priorities such as improving human security, employment, adequate food and water supply, access to health services and deliver broad based economic prosperity and making use of good natural resources (African development bank group, 2015). Green growth improves human welfare, reduce energy related risks, social inequalities and poverty, promote inter-generational equality and foster new opportunities for human development. Green economy is low carbon resource efficiency socially inclusive and improves human well-being and social equity while significantly reducing environmental risks and ecological scarcity (Droste et al, 2016; Elsevier editorial, 2016).

The existing economic development model has shown to be destructive to the environment, while failing to alleviate poverty, raise living standards or ensuring prosperity. Promotion of green growth means addressing existing and emerging development challenges in a manner that it does not deplete natural capital nor leaves economies and livelihoods more vulnerable to climate change and other social and economic risks (African development bank group, 2015). Transition towards green growth holds that there is a trade-off between lower growth in the short-run and higher growth in the long-run and this growth goes

further to support that environmental policies can also increase economic growth in the short-term. Shifting towards green growth requires policies contributing to growth through four effects, including, input effect, efficiency effect, a stimulus effect and innovation effect (Droste et al, 2016). Green growth is determined by a number of factors such as creation of enabling policy and implementation environment for achieving a transition to a green economy, there is a need for a clear predictable and stable policy environment which creates confidence required to stimulate private investment. The enabling conditions to stimulate green economy includes national regulations, policies, subsidies and incentives as well as international market and legal infrastructure, trade and technical assistance (Musvoto et al, 2014). Policies leading to successful green economy transitions will include formulation of relevant goals as well as their implementation and monitoring, therefore, a successful green economy transition requires action space to shift across all system layers up to the governance system to greening and cleaning production and consumption and thus aligning with carrying capacity of the system earth (Droste et al, 2016). The carrying capacity of the earth can be sustained by conserving biodiversity and maintenance of the ecosystem services which are key pillars of the efforts to transit to a greener economy (Gasparatos et al, 2017). Green growth implies breaking the link between growth and increase pressure on the environment, thus enabling economic growth to reduce poverty within the current generation while maintaining the carrying capacity for future generations (OECD, 2013).

Not only policies drives green growth, this growth address the economic context situation, including promoting clean and risk-minimizing energy investment, create jobs, introduce full-price mechanism, stimulate innovation and market development for low carbon technologies improve resource efficiency, increase energy security, diversify economic activities and improves competitiveness. The green economy also focuses on reducing emissions and environmental related problems by reducing environmental harms and social inequality while growing the economy requires a transformation of existing production and consumption patterns and thus transformations of the entire economy (Droste et al, 2016). Transiting to a green economy requires changes within all the sectors of the economy, for any sector to support green growth, the functioning of a particular sector needs to be understood, the understanding of each sector is crucial for ensuring that a sector is aligned to operate in a way which is compatible with the objectives of a green economy (Musvoto et al, 2015).

Transition to a greener economy will not happen only through policy development and natural resource conservation, the transition will also will happen when there is an investment and innovation, which underpins sustained growth and gives rise to the new economic opportunities. Greening the economy needs both private and public investment to be steered towards greener and reasonable strategies, these investments have to be supported by targeting public expenditure, policy reforms and regulation changes which stresses the role of government intervention and there is a need for innovation in terms of available technology, organisational support, market conditions, a broader societal setting and the overarching governance framework (Droste et al, 2016). Achievement towards green growth involves taking advantage of opportunities to develop new green industries, jobs and technologies, as well as managing the transition for greening the more traditional sectors and the associated employment and distributional effects. It requires adopting new technologies, developing new products and supporting new patterns of demand from households, companies and governments (OECD, 2013). The low-carbon economy will see the emergence of new industries and new markets for green products and services (Martinez-Fernandez, et al, 2013).

The new developed industries will overcome the lock-in of previous fossil-fuel based energy system while promoting major market returns in the form of new green consumer products (Faccer et al, 2014). These represent opportunities for firms to grow and develop, however, the process of innovating and commercialising new products in an emerging market is a perilous journey when customers are not familiar with the unique features of the product, or if the product requires setting a premium price compared to other similar products it can be hard for market penetration to occur Achieving green growth will involve capitalising on opportunities to develop new green industries, jobs and technologies as well as managing the transition for greening the more traditional sectors and associated employment and distributional effects. This will require adopting new technologies, developing new products and supporting new patterns of demand from households, companies and governments (Martinez-Fernandez, et al, 2013). In the green growth economy, income and employment is driven by public and private investments that reduce carbon emissions and pollution and enhance energy and resource efficiency and prevent the loss of biodiversity and ecosystem services (Nhamo, 2013.

The overview of the green economy development in South Africa

South Africa has progressed well towards greening its economy, greening of the South African economy is important for two basic reasons, firstly the exceptional level of unemployment that the country is experiencing and secondly the high carbon impact to the economy. The country viewed the green economy as a driver of both economic growth and job creation, since; the emergence of the green economy agenda the country has implemented a number of policies to address the issue of job creation and greening of the economy. In the year 2008 DEA introduced the National framework for sustainable

development, in 2009, the 2009-2014 medium term strategic framework was introduced, in 2011 there were more than five policies and strategies that were introduced at a national level including; the National strategy for sustainable development through DEA, the NGP through EDD as a response to the 2008 economic downturn, the NGP aimed to create additional 5 million new jobs by 2020, the 2011 integrated resource plan, national climate response strategy White Paper 2011, the 2011 national skills development strategy and the Green Economy accord was signed by various government departments and non-government organisations, the aim of the accord is to create 300 000 jobs by 2020 from activities that contributes to the greening of the economy by 2020 and the accord is the responsibility of EDD. In 2012 the National development plan was introduced by the national planning commission and the 2013 the National environmental Act Amendment: 23A, 2012 green economy model (DEA, 2010; Borel-Saladin and Turok, 2013; Montmasson-Clair, 2012).

The developed policies are supported by the priority sectors that the country has identified as focus areas for the green economy development. The country green economy focus areas are; sustainable consumption and production, policy, fiscal and regulatory frameworks; financing, green building and built environments, sustainable transport, clean energy and energy efficiency, green cities and towns, resource conservation and management, sustainable waste management and agriculture, food production and water management. And also there are a number of programmes linked to various priority sectors such as payment for ecosystem services, water harvesting, effluent management, municipal metering, waste beneficiation, off-grid options, solar water heating, non-motorised and sustainable transport (Nhamo, 2013).

The country have supported the developed policies and selected focus areas with financial programmes to assist in implementing and running various programmes and projects in the priority sectors. There is a number of financing programmes introduced in support of the green economy agenda and these financing programmes are mandated to various institutions; there is green fund, which is administered jointly by the Development Bank of Southern Africa and the Department of Environmental Affairs. There is also a financing mechanism at the Industrial Development cooperation of R25 billion, there is DBSA dry land, and international funds to the Southern African National Biodiversity institute (Nhamo, 2013). DEA who is the custodian of the green economy agenda in the country has committed R800 million to assist the transition towards a green economy in the country, DBSA have set aside R10 billion for a green economy course, and there is private finance of R100 billion. And in 2009 the country has received a funding of $500 million for South Africa's clean technology fund (CTF) Investment plan to assist with moving closer to the generation of electricity from renewable sources and to improve energy efficiency and providing 1 million households with solar water heating. In addition the World Bank has secured $ 3.75 billion loan to Eskom to fund solar and wind electricity generation. There is a climate change mitigation project worth R120 million between the Department of Energy and Swiss agency for the development and cooperation and has been launched to fund climate change mitigation (DEA, undated).

Factors impeding transition to a green growth

Like any other economic development agenda, green growth have a criticism, it is criticised for emerging due to the unwillingness of policy makers to sacrifice short-term economic gains for the sake of long-term sustainability. Given a clear focus on climate change, low-carbon energy technologies and related policies, scholars have raised similar concerns about; the lack of long-term commitment to green growth spending (Elsevier editorial, 2016). A major limiting factor in the development of a green economy is the availability of the appropriate skills and policies to enable such developments. There is a significant gap on skills development that relate to a green economy (Faccer et al, 2014). The green growth requires higher education qualification for both high and low profile positions, it is important to ascertain the teaching gap so that graduate and unskilled unemployed people can be trained to find work in the bio-based economy. Green jobs and skills should be created across governance levels, across borders and across sectors. Challenges related to green jobs and creation of skills include creating proper definitions, addressing poverty and unemployment and investigating the relationship between greening and jobs and greening and gross domestic product (Martinez-Fernandez, et al, 2013).

The other issue is the problem of resources, particularly where energy and water supply is concerned. The main concerning factor is the availability, accessibility, quality, sustainability and price of the required resources. These four factors are either individually or collectively important to the long-term viability of certain types of green economy projects. This has been an evident in the some projects or the implemented to date, especially the biomass projects. Additionally the availability of resources is crucial for the sustainability of new ventures (Maia et at, 2011). The other issue is to stimulate the demand for bio-based products will be critical to the success of the cluster, commercially viable production is very much dependant on what consumers want. However, the supply-demand mechanism does not always work like that, particularly in emerging markets, where an excellent bio-product can fail due to insufficient market development. Market development is essential because new products are being developed (Martinez-Fernandez, et al, 2013).

Additionally, the other major stumbling block with reference Southern Africa is that realisation of the green economy in the Southern Africa lies in the prominent role played by primary industries such as agriculture and mining in economic development. These sectors are more responsible for wealth and value creation than any other industry in the region. Almost one-half of the countries in the region are highly mineral dependent, with mining contributing 9 to 29% of the gross domestic products of countries like Angola, Botswana and others. Mining and other primary industries have provided a valuable source of local employment and infrastructural development but at a considerable cost to the environment and to the ability of these countries to transform and develop their economics beyond natural resource extraction (Faccer et al, 2014).

Methodology

There are various methods to estimate the size and progress of the transition to a greener economy which yields different results. According to (Eberts, 2011), criteria for identifying green activities and methodologies for estimating the size of the green economy vary somewhat and yield different estimates. To answer the study questions, the author has applied various research methods that were used by on previous studies. To answer the first study question which aims to assess the level of green economy in the Gauteng province, the study has applied similar methods that were used in the study by (Smit and Musango, 2015) this study has used content analysis to do its analysis. The analysis involved identifying a set of policies and plans that are related to the green economy. Since at the provincial level there are no policies developed, only strategies to support national level policies are developed, in this study policies referred to strategies. The study identified all the provincial strategies developed in relation to the green economy agenda during 2010 to 2016. To answer the second study question, the study used intensive literature searches on South Africa policies that are guiding the transition to a green economy and match them with the strategies developed in Gauteng province. The Intensive literature search method was also applied in the study by (Nhamo, 2013). And to answer the last question, the study developed a mini questionnaire was developed and administered on government employees around Gauteng province on the departments which are mandated to develop strategies that are in line with the green economy agenda. And a number of 10 people were interviewed and the data is presented using pie-charts. With the questionnaire the author wanted to find out what are the impending factors in implementing both the strategies and the project which are green related in the province.

The level of green growth transitioning in the Gauteng province

The Gauteng province has witnessed a transition to green growth mainly through strategies, there are a number of strategies that have been developed and implemented around the province through different provincial departments. In 2010 the province implemented the Gauteng Integrated Energy Security Strategy (GIES) the strategy was introduced in response to the power outage that the province was experiencing at the time. The strategy was meant to ensure energy security for desirable economic growth, diversity of energy sources in the province, increase access to affordable and modern energy for all citizens in the province, promotion of energy efficiency measures and improving energy governance and administration in the province. GIES was later reviewed and approved in 2016 as Gauteng Energy Security Strategy (GESS), the reviewed strategy focuses on both energy security and energy diversity by investing in a diversified low-carbon energy sources and innovative technologies to deliver reliable and affordable energy services to the province. GESS has six pillars that are guiding the implementation of the strategy which are; enhance security of supply, promotion of energy efficiency, modernisation of the energy infrastructure, and a contribution to economic development through re-industrialisation of jobs, ensure universal access of energy to the poor and a reduction of the impact of negative energy system on the environment. GESS is the responsibility of the Department of Economic Development.

In 2011 the province implemented the Gauteng Green Strategic Programme through DED; DED is responsible for fostering economic development and growth in the province. The strategy acts as an overarching guiding document for all sectors, the strategy has covered nine sectors, including air quality, climate change, Economic Development, Energy, Food Security, Spatial Planning and Land use, Transport, Water and Sanitation and Waste. In addition to the overarching GSP, in 2011 the province implemented the Gauteng Climate Change Response Strategy through the Department of Agriculture Rural Development which is responsible for managing the natural environment, agriculture, soil conservation, animal control and diseases, pollution control, abattoirs, veterinary services. The GCCRS focuses on implementing mitigation and adaptation interventions to curb greenhouse gas emissions and this strategy is linked to the other related provincial that is the 2010 Gauteng Integrated Energy Strategy and the 2011 Green Strategic Programme. Additionally, in

2014 the Department of Transport has implemented the Promoting Sustainable (Green) transport strategy, the policy aims to reduce the impact that the transport systems has on the environment, the strategy objects to reduce the carbon emissions from the transport system, since the transport sector is the highest contributor of carbon emission in the province.

The development of strategies in the Gauteng province shows that the province is transiting towards green growth, the findings concurs the study findings by (Musvoto, et al, 2014), the scholar emphasised that it is the responsibility of the governments to create enabling policies and conditions for a green transformation. The development of green policies was also supported by (African Development Bank, 2015), promoting green growth is about ensuring sustainable human wellbeing on the basis of policies and measures that protect the ecological, social and economic environment. The development of policy was also recognised study by a number of scholars (Martinez-Fernandez, et al, 2013; OECD, 2013; Droste et al, 2016), transition towards green growth is determined by a number of factors such as creation of enabling policy and implementation environment for achieving a transition to a green economy, there is a need for a clear predictable and stable policy environment which creates confidence required to stimulate private investment. Transition towards green growth requires policies contributing to growth through four effects, including, input effect, efficiency effect, a stimulating effect and innovation effect. Furthermore, public policy does play a role in the support of the green economy, the most prevalent and effective forms of green economy support to date have been shown to be through the government's using their regulatory powers to increase the efficiency standards and emissions action requirements of energy, buildings, cars, appliances. Public policy can also play a role in supporting new green markets through public procurement.

Comparison between the Gauteng green growth level with the national level green growth

At the national level there are number of sectors prioritised for as a green economy focus areas, which were developed during the 2010 green economy summit, the summit prioritised the following green economy focus areas sustainable consumption and production, policy, fiscal and regulatory frameworks, financing, green buildings and built environments, sustainable transport, clean energy and energy efficiency, green cities and towns, resources conservation and management, sustainable waste management, water management and agriculture, food production and water management (Nhamo, 2013). Similarly the Gauteng province in 2011 introduced an overarching green economy strategy with nine sectors that are similar to the national level as a focus area, the GSP focus areas are; air quality, climate change, economic development, energy, food security, spatial planning and land use, transport, water and sanitation and waste. The provincial focus areas are not as exact as the national focus areas, however, most of the dissimilar focus areas are addressed by other policies developed through various departments at the national level, and for example, the area of economic development is addressed through the NGP and the green accord which are administered by the national Department of Economic Development.

Both the national and the provincial level have not only identified focus areas for green growth, they have loped policies to support these priority sectors. There are a number of policy documents that were introduced through different departments at both national and provincial levels. The province also, have the stand-alone strategies in other priority sectors including energy, transport, climate change and food security and like at the national level policies which were developed through different ministries such as the NGP and others.

In addition, also at the provincial level, not only strategies are developed, there are a number of green initiatives also done in response to the green growth on various priority areas.

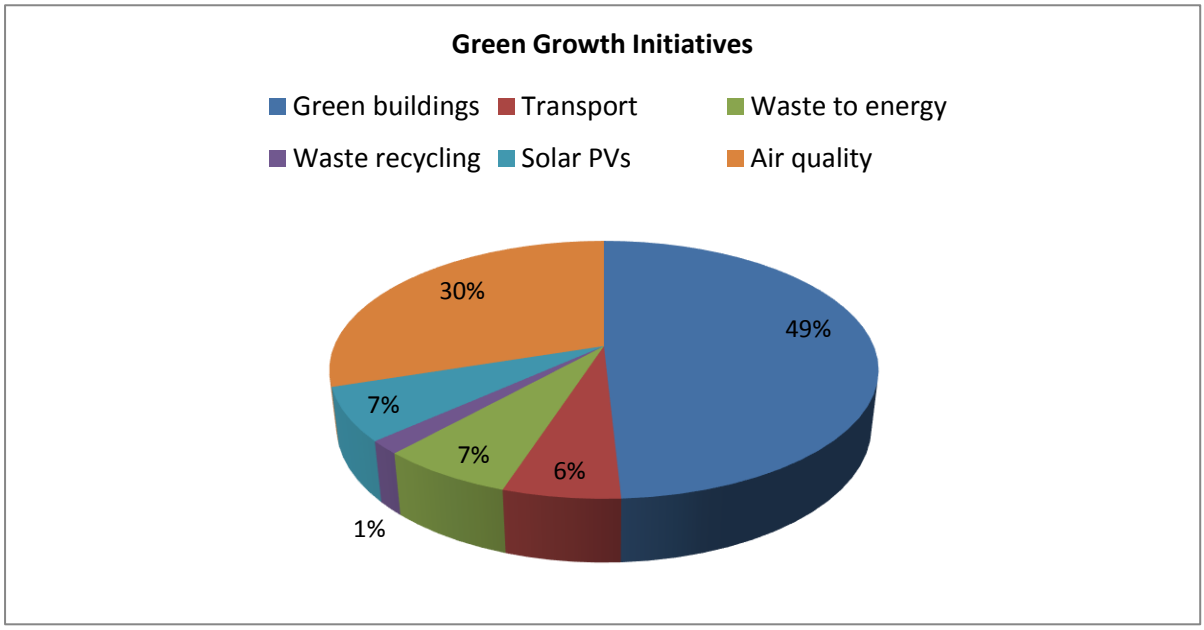

Figure 1: Green growth initiatives in Gauteng

Source: Author from 2016 DED green initiatives pamphlet.

There are a number of green initiatives the province and the area that seems to have a high number of initiatives in the province is the green building sector by 49%, followed by installation of air quality ambient stations by 30%, solar PVs by and waste to energy project with 7% respectively, transport by 6% and waste recycling by 1%. Even though the province has prioritised nine sectors for green growth transition, there are only six areas that are receiving good implementation progress as depicted in the figure 1 above. The area of green buildings is not priotised as green buildings in the provincial strategies, but as a spatial planning and land use management.

Challenges for achieving green growth in the province of Gauteng

In the province, there are a number of factors that are impeding the development of green economy development as indicated in figure 2 below.

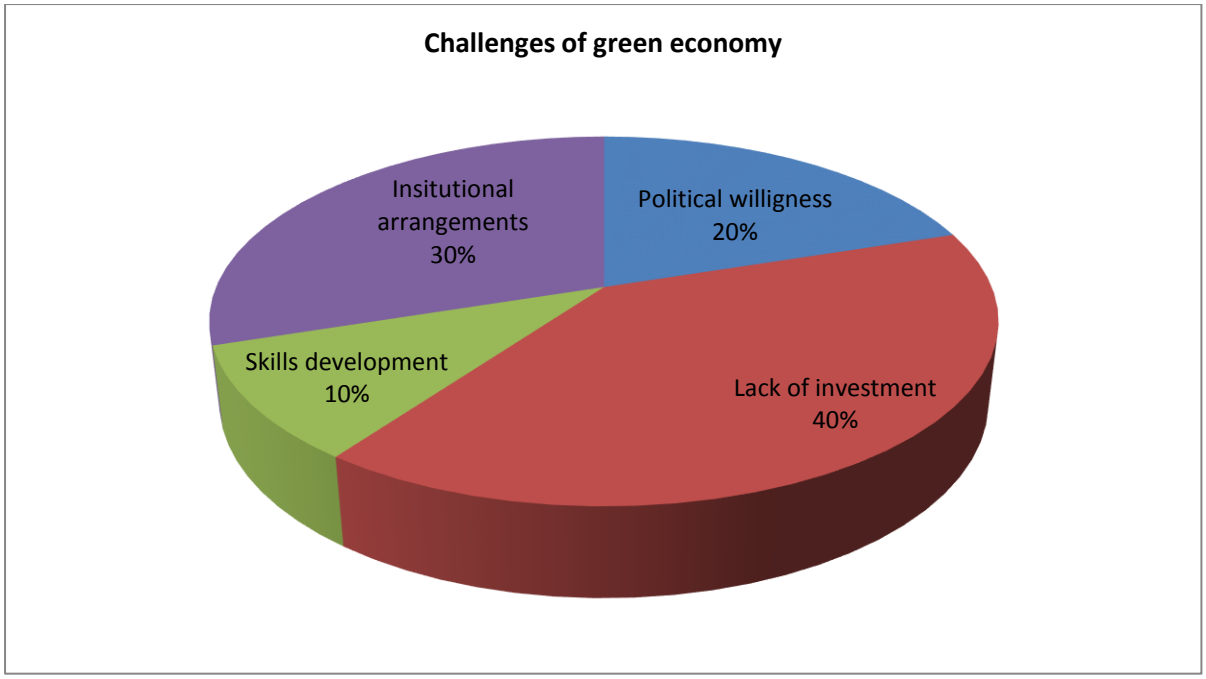

Figure 2: Challenges of implementing green economy in Gauteng

Source: Author from surveyed data.

From the 10 people that were interviewed to find out the challenges of that are hampering the progress towards the development of green economy in the province, 40% believe that there is lack of investment by both the private and the public sector to implement programmes and projects that are in line with the developed strategies, 30% blamed institutional arrangements, that the departments that are responsible for implementing green growth strategies are not given the mandate to implement these initiatives for example the department of economic development is responsible for the development of the green economy strategy, but they have no mandate to fund any initiative in relation to the strategy, they only do coordination of the implemented work from other departments. 20% of the people believed that there is no political willingness, strategies are been developed but progress towards implementation is sluggish and 10% believed that there is no relevant skills to implement the proposed strategies and projects and programmes, since green economy is been confused with the environmental sustainability issues.

The challenges that are hampering green growth in Gauteng were acknowledged in the other studies by other scholars (Nhamo, 2013; Giordano, 2011; Faccer et al, 2014; Martinez-Fernandez, et al, 2013; Elsivier editorial, 2016), there is a problem of financing green growth, although a number of sources could fund green growth, budgetary support is critical, especially as regards readiness expenditure. There is a challenge of horizontal and vertical integration coordination. Since, green economy is a complex and cross cutting issue, addressing climate, efficient mitigation and adaptation intervention measures requires buy-in from across various spheres of government. The key challenges are constraint to development priorities, agreeing on a definition of mainstreaming and the highly fragmented general environmental policy space which hosts climate change. In South Africa the issue of climate change is being led by a number of departments and none of these departments except for DEA seen to take climate change mainstreaming as an operational priority. There is an inability and willingness of institutions to implement policies that are essential.

Conclusion

There is a transition towards green growth in Gauteng, the province has developed a number of policy strategies to support the transition and also the transition is not only through strategies development, there are also a number of initiatives that the province have done in support of the green growth. The province green growth is aligned to the national transition to green economy. The province has aligned its focus areas and policies with the national focus areas and policies developed through various departments. There are more than two strategies being implemented in the province in support of a green

economic growth those include; the Gauteng Green Strategic Programme and the Gauteng Climate Change Response Strategy and others. The province has recorded a fairly good progress in implementing initiatives that support green growth; however, the progress is sluggish in other sectors.

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