Green Economy in South Africa and its Impact on Sustainable Economic Development

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Abstract

This paper seeks to identify the effects of the green economy in South Africa, the opportunities it presents, the associated challenges, and how the green economy policies can achieve sustainable development. South Africa's transition to a green economy will lead to a number of investment incentives towards the creation of a large number of green jobs, up to 300,000 over the next 10 years. This is in addition to increasing investments in the public and private sectors, providing an enabling environment for infrastructure development and enterprise restructuring. This is expected to result in a much larger share of green sectors in the production output of the national economy, a significant reduction in energy and material intensities of production process, as well as significantly reduced waste, pollution and greenhouse-gas emissions.

Keywords: Green Economy, Sustainable Economic Development, South Africa

Introduction

South Africa is ranked as 13th internationally in the volume of greenhouse gases emitter while it occupies the 29th rank on the level of GDP and the 70th rank on the level of GDP per capita. South Africa is seeking to exploit the emergence of green economic development in the world. It plays a leading role in the Southern African region and in Africa through renewable resources (solar and wind predominantly). Green sectors have the ability to promote growth and employment in South Africa, as well as to achieve sustainable development (Clair, 2012).

The transition to a green economy, based on the concept of sustainable development, has been internationally recognized as a way of combining economic development, social welfare and environmental protection. The green economy is argued to lead to improved human well-being, social equity, as well as significantly reduced environmental risks (UNEP, 2011).

This paper introduces the emerging green economy policy in South Africa. It explains how objectives of green economy and sustainable development can be achieved, notably by making use of the results of the South Africa Green Economy Model SAGEM (UNEP, 2013). This model is based on a system dynamics model approach, to assess the effects of green economy investments in selected sectors.

This paper is divided into five parts. Part one presents the South Africa context and its policies to transition to a green economy. Part two discusses greening the economy in South Africa. Part three presents the programs to achieve green economy in South Africa. Part four discusses the expected impacts of green economy programs in South Africa, and part five outlines our conclusions.

1-The South Africa Context and Green Economy Transition

The Government of South Africa has promulgated many pieces of legislation that deal with environmental issues, including with the

National Environmental Management Act [NEMA] in 1998. South Africa hosted the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002, and has been an important contributor to the United Nations Climate Change Conference in 2009 (OSEC, 2010).

The National Framework on Sustainable Development in South Africa was based on the 'Johannesburg Plan' which was adopted at the WSSD. This Framework set out the country's vision for sustainable development, and called for an integrated approach to plan and implement the development strategies, where social welfare was addressed with due consideration for the environment (OSEC, 2010).

South Africa signed the Kyoto Protocol and the United Nations Framework Convention on Climate Change (UNFCCC), and committed to the Cancun agreement for which greenhouse gas emissions must be reduced by 34% in 2020 and 42% in 2025. In addition, South Africa is a party to many international treaties and conventions related to biodiversity (such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Convention on Biological Diversity, the International Convention for the Regulation of Whaling and the Ramsar Convention on Wetlands of International Importance) and pollution issues (such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes cross-border and disposal, the Stockholm Convention on Persistent Organic Pollutants and the Montreal Protocol to protect the ozone layer) (Clair,2012).

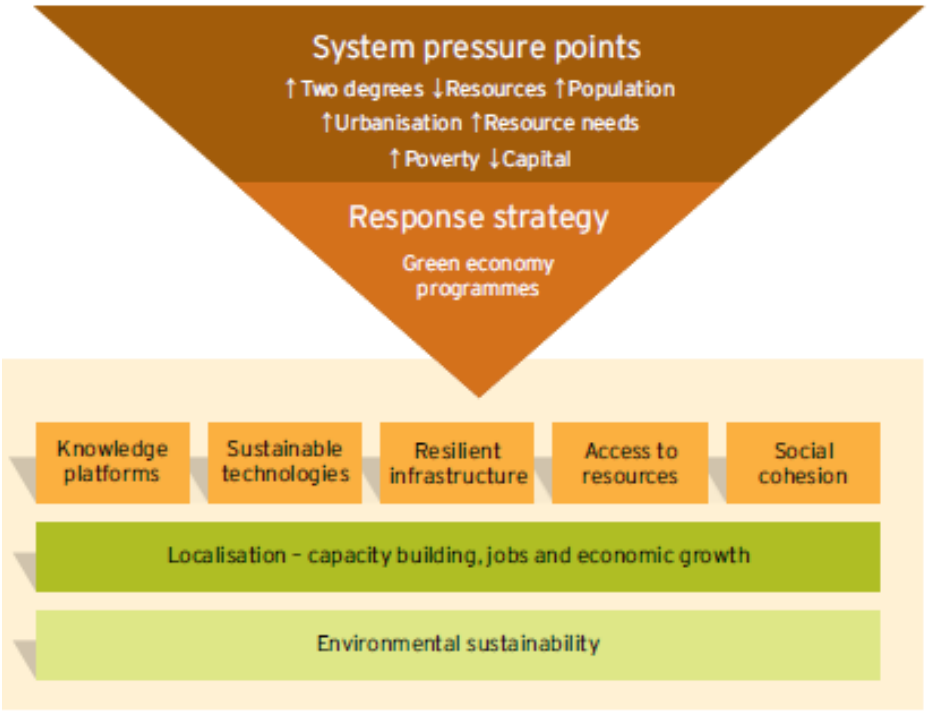
2-Greening the Economy in South Africa

There is a large consensus that the current exploitation of natural resources and environmental pressures require a shift from the traditional economic growth paths towards green alternatives. The concept of green economy aims for achieving growth strategies economically and environmentally sustainable. There is an opportunity to use the natural resources in a better way, including impact mitigation and adaptation. South Africa is in a good position, based on the strength of the existing

institutional platforms to support, invest in and implement climate interventions (DBSA, 2011).

There are several economic reasons for South Africa to strive to green its economy. Energy and water as among other ecosystem services are important economic inputs that increasingly require attention. Also there is a growing threat to increase the environmental protectionism of the industrial countries in the form of tariff and non-tariff measures such as carbon taxes and restrictive standards. Though there is no other choice but to grow through the use of natural resources, the world is gearing to make a radical shift towards development pathways which do not lead to the degradation of the environment (Figures 1 and 2, DBSA, 2011).

Figure 1: Converting development challenges into green development opportunities



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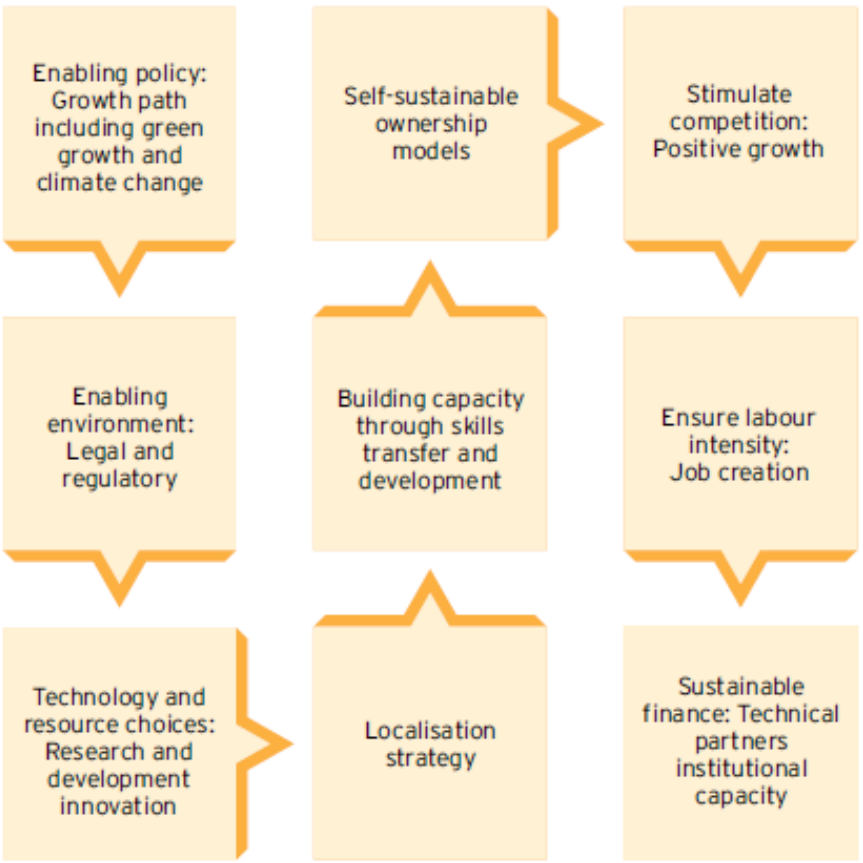
For instance, South Africa seeks to reduce carbon emissions by 2020; through Appling a number of policy reforms, these reforms will be necessary to absorb the negative GHG externalities, however there will

be many challenges, such as green interventions requiring access to innovative financing and technical support (DBSA, 2011).

Figure 2: Pathway to a green economy



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In its drive to transition to a green economy, South Africa has developed a very large number of policies and strategies. The policies are related to waste management, biodiversity, energy efficiency, solar water heating and public transport among others. The government has implemented many initiatives at the regional and local levels, for example, the green economy or green industry strategies in Gauteng, Western Cape and KwaZulu-Natal (RSA, 2009).

South Africa's institutional arrangements with respect to the green economy reflect the challenges faced internationally of complex interconnections between a maze of institutions. The National Strategy

for Sustainable Development and Action Plan (NSSD) is the responsibility of the Department of Environmental Affairs (DEA), but the National Planning Commission (NPC), a department of sustainable development in all but name, resides in the Presidency. The Economic Development Department (EDD) includes the green economy under its formulation of a New Growth Path (NGP) for the country, but EDD only has direct control over the two main state-run development finance institutions: the Development Bank of Southern Africa (DBSA) and the Industrial Development Corporation (IDC). Support for green industry falls under the Department of Trade and Industry (the DTI), but the DTI has to rely on other departments to implement measures aimed at green industries. Environmental fiscal reform (green taxes and subsidies which supports both green industries and the greening of the economy as a whole) is under the mandate of the National Treasury (NT) (Clair, 2012).

The Department of Environmental Affairs (DEA) is responsible for the protection and restoration of ecosystems and the setting of environmental standards (e.g. for pollution or emissions). The Department of Energy (DOE) is in charge of issues relating to fossil fuels and renewable energy. The Department of Water Affairs (which falls under the same ministry as the DEA) is responsible for issues relating to water and technology policy, and research and development (R&D) are under the Department of Science and Technology (DST). Other departments (including for mining, agriculture, forestry, fisheries, transport, housing and local government) all contribute to green economy activities and thereby to green jobs at the sectoral level (Clair, 2012).

The government of South African is thus trying to implement a comprehensive green economy framework. The framework set out a number of goals, with specific means to achieve these goals, and tools to assess the progress made. It covers all areas of sustainable development (education, health, safety and security, employment, skills, infrastructure, rural development, human settlements, the local government, the environment, the international relations, and public services), hence reflecting the broad scope of desired development outcomes which the government aims to achieve (DPME, 2010).

Evolution of South Africa's Green Economy Policies

Both the public and private sectors are recognized as critical in the formulation and implementation of policies that seek to support the transition to a green economy in South Africa. These national policies aim to enable support for the transition to a green economy, notably by providing funds for green projects. Some of these policy frameworks are as follows:

- The 2006 National Treasury Framework for Environmental Fiscal Reform;
- The 2008 Department of Science and Technology Ten-Year Innovation Plan;
- The 2009 National Planning Commission Medium-Term Strategic Framework 2009–2014 and later the National Development Plan in 2011;
- The 2011 Department of Environmental Affairs National Climate Change Response; and the 2011 Department of Environmental Affairs National Strategy for Sustainable Development; and
- The 2012 Department of Trade and Industry Industrial Policy Plan.

(Nhamo et al., 2013).

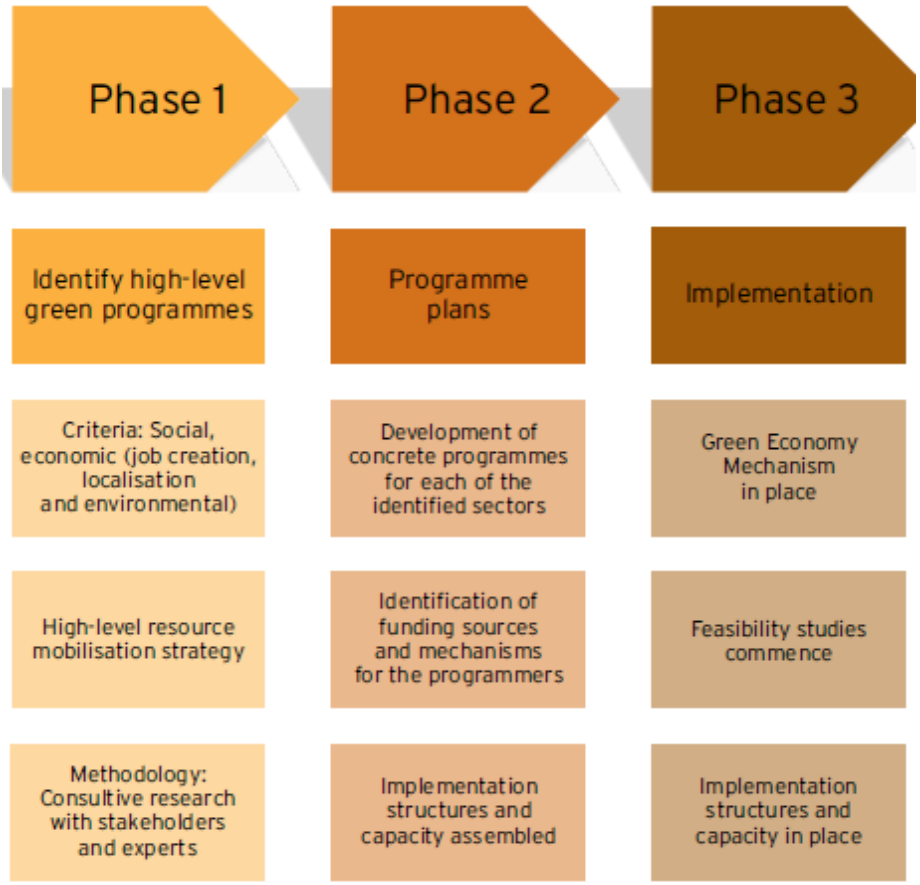
South Africa faced threat of retaliatory trade policies of countries that seek to reduce their emissions (Arendt et al. 2011). In recognition of this, the government adopted a climate change resolution at the conference in Polokwane which aimed to find a growth path with concomitant greenhouse gas emissions reductions (see Tyler 2009). Accordingly, the SA government committed to reduce 42% of greenhouse gas emissions by 2025 (RSA 2010).

3- Programs to Achieve Green Economy in South Africa

A green economy summit that was held in May 2010 identified the importance and need for the development of a major program to coordinate activities towards greening the SA economy. This was considered the first attempt adopted by the government through Development Bank of Southern Africa (DBSA) towards an integrated and comprehensive approach to the green economy, with the aim of developing a proposal that mobilize resources on a national basis to

support and implement this major program. The overall process is illustrated in figure 3.

Figure 3: Phases of the green economy program development



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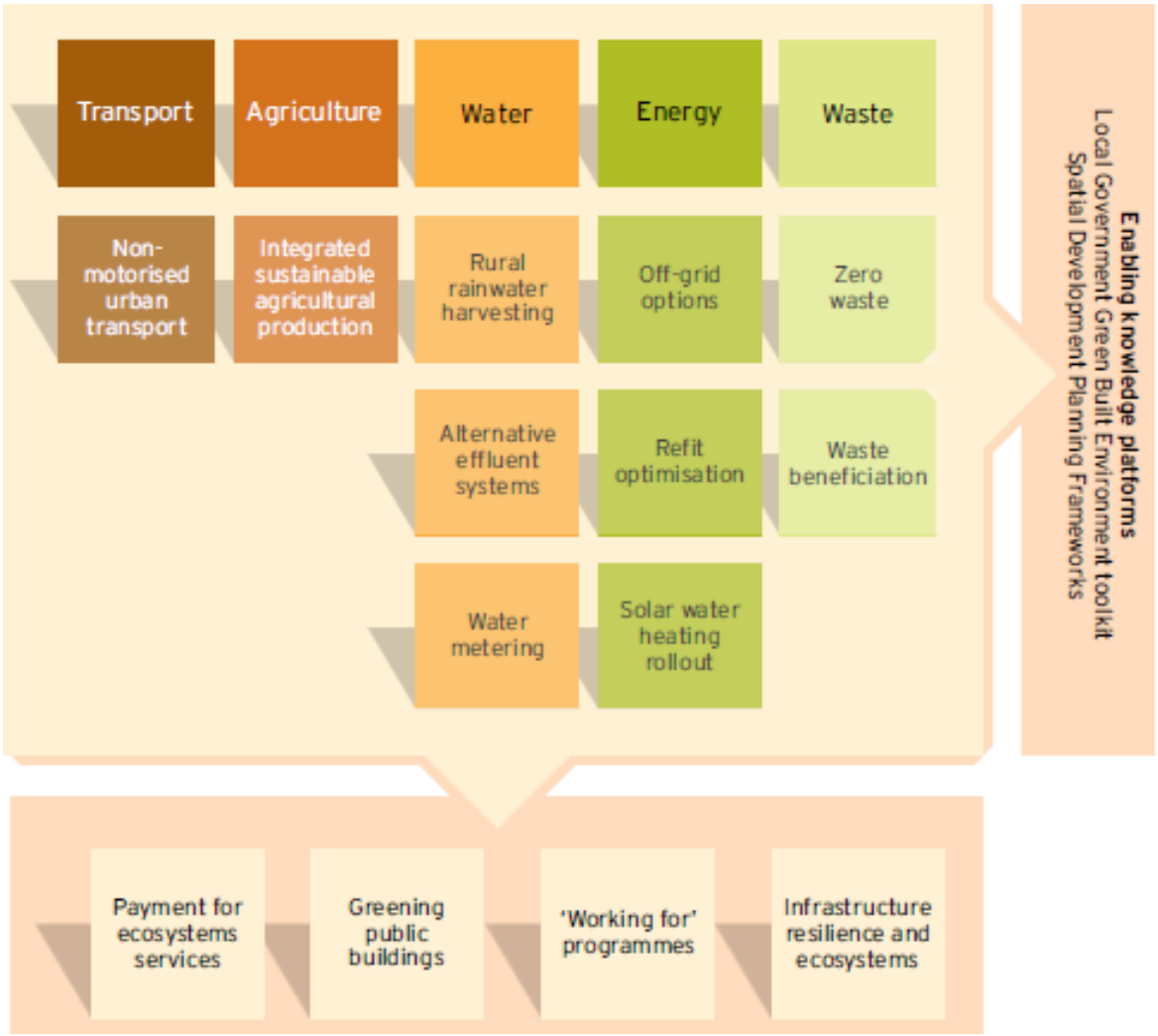
The new growth path strategy specified a number of objectives, as: promoting activities that can support the employment opportunities on a large scale, reducing the cost on short and medium terms, though maintaining development of more knowledge-intensive industries aiming at achieving economic growth in the long-run.

Accordingly, the main focus of some pillars of strategy are aligned with SA strive to green its economy, in various dimensions, as: technological innovation and development, establishment of local

manufacturing base for the dissemination of environmentally friendly technologies, with the main aim of supporting the creation of local jobs and regional integration, gearing to make the radical shift towards development pathways (DBSA, 2011).

There are several platforms for green economy programs, either on the industrial or the infrastructural location of these programs, including water, waste, agriculture, energy and transport (Figure 4).

Figure 4: Summary of green economy programs and enabling platforms



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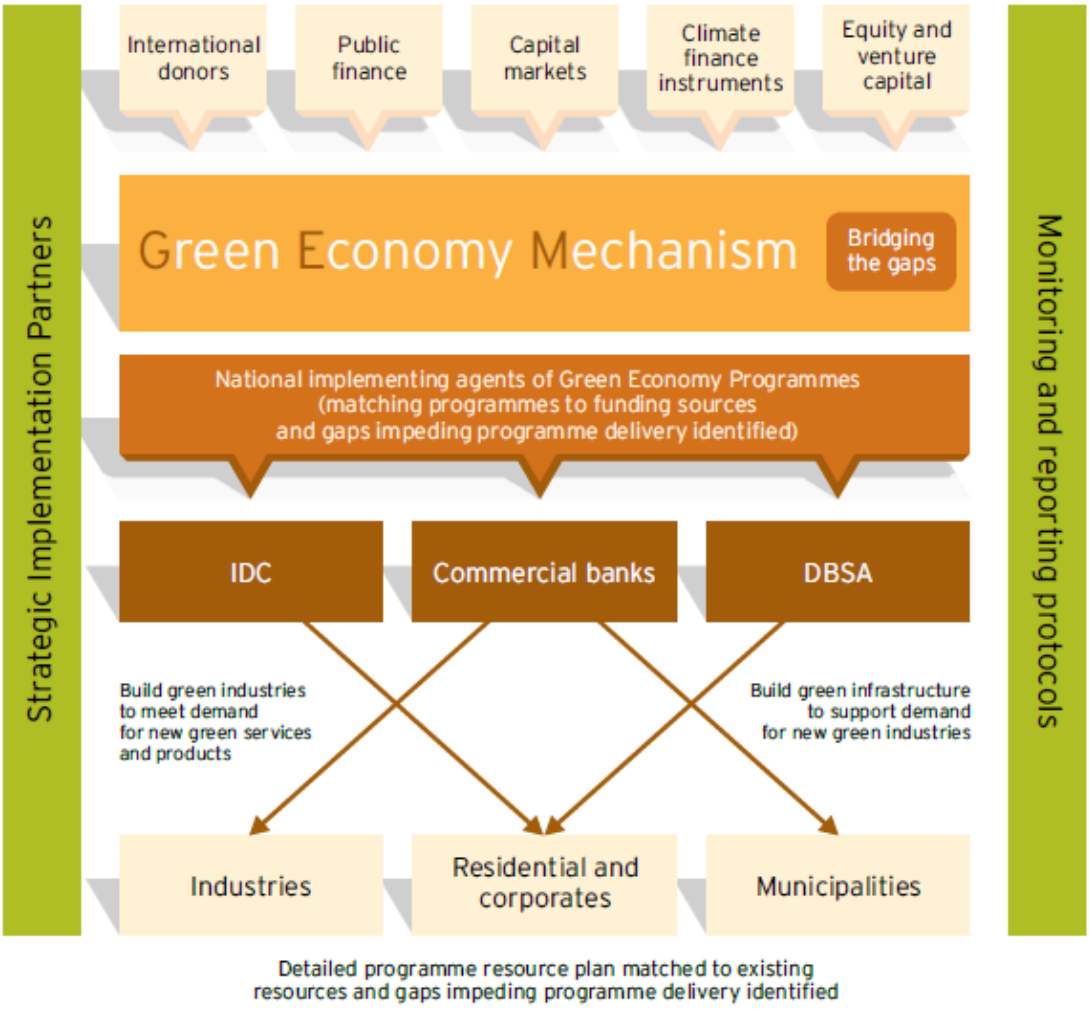
As previously assured the critical role of both public and private sectors for SA in the transition to green economy, a tool is introduced for communication between public and private funding institutions for advancing the national program of green economy entitled “Green Economy Mechanism” (GEM) (Figure 5).

Figure 5: Illustrative use of the Green Economy Mechanism



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The success factor for GEM's tool rely on enabling environment, policies and programs seeking to increase investments, notably by creating jobs, localizing manufacturing industries, and focusing on the

regional influence of SA regarding its economic role. The GEM aims to fill the development gap for radical shift towards development pathways, either on the economical, social or environmental dimension.

4- Impact of Green Economy on Sustainable Development in South Africa

The necessity of Green economy for SA is derived from two main reasons: (1) unemployment level in the country and (2) high carbon emissions and its impact on the economy, accordingly green economy is considered one of the priority sectors in achieving new growth path, as its capable of steering economic growth and fostering job creation (Saladin and Turok, 2013).

The government has supported the development of an investment strategy, aiming at reallocation of resources towards high value-added industries within the path of structural transformation process; the strategy plan comprises a shift from coal usage to nuclear and renewable energy (Resnick et al., 2012).

In its drive to transition to a green economy, Ministry of Economic Development in SA estimates the contribution of renewable energy sector to GDP by US$500 million, and the creation of 400 000 jobs by 2030, through promotion of production of goods and services related to the green economy, this in addition to 35000 jobs per year in bio-diversity and natural resource management, due to the use of sustainable renewable resources and exploitation of non-renewable resources (Nhamo and Others, 2013).

It is worth mentioning that green economy in SA contributes in providing thousands of jobs for its citizens in various economic sectors, as: 1) mining sector, jobs are related to drilling and extraction of minerals, 2) services sector, jobs are concentrated in activities related to recycling, preservation of biodiversity and eco-tourism (Clair, 2012)

As previously emphasized that green economy foster job creation process and in the meantime, it maintain the quality of employment,

however, it is estimated that a decline will occur in coal mining sector employment, due to both, decline in demand on coal exports, and changes in domestic demand (Clair, 2012).

Hence, government will need to provide green jobs for coal miners, in addition to securing employment in the long run in specific sectors as, platinum that is highly dependent on SA ability to keep up with the global development of technology (Clair, 2012).

The Results of South Africa Green Economy Model

The Green Economy Model in South Africa (SAGEM) is a system dynamics model approach, designed with the main aim of assessing the effects of green economy investments on selected sectors. The model has identified possible options and opportunities to achieve a number of goals, through comparing between two scenarios: 1) the business as usual BAU, using the trend over the period from 2001-2010 as baseline and assuming no changes to apply in policy or other external factors till 2030. 2) GE2, allocating 2% of GDP in green economy sectors till 2030, covering natural resource management, agriculture and transport (UNEP, 2013).

Natural Resource Management (NRM)

The contribution of green economy to the NRM is mainly, through preservation of agricultural land size, a positive contribution to investments is illustrated as a result of this contribution without any reduction in agricultural sector need for land availability

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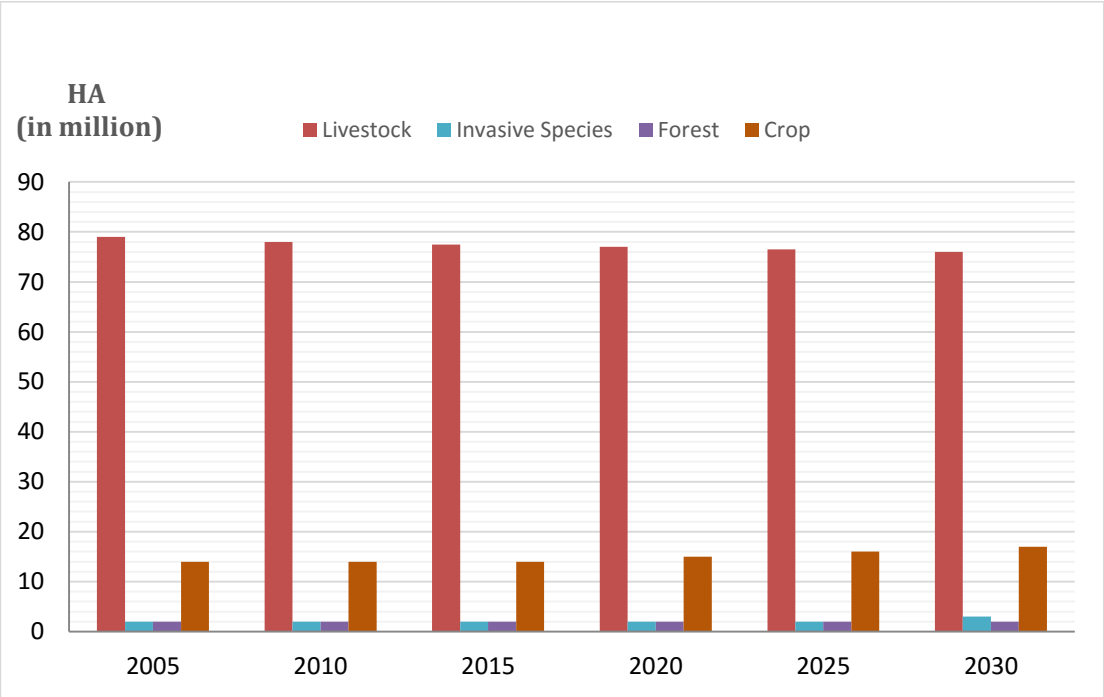
By applying GE2 scenario, an estimated increase of 46.4% in restored land by 2030 in addition to higher water availability. The expected outcome of investments in NRM is creation of jobs, with an emphasis in water supply increase, and providing biomass for power generation (UNEP, 2013).

Agriculture

There is a large consensus that investments adopting environmental and ecological agriculture, as the use of organic fertilizers, lead to a steady increase in yield per hectare, accordingly, by applying the GE2 scenario, it is estimated that 23.9% rise in yields per hectare by 2030, (UNEP, 2013), thus, it is important to show the land usage as per BAU scenario (Figure 6).

Figure 6: Selected land use changes in the BAU scenario



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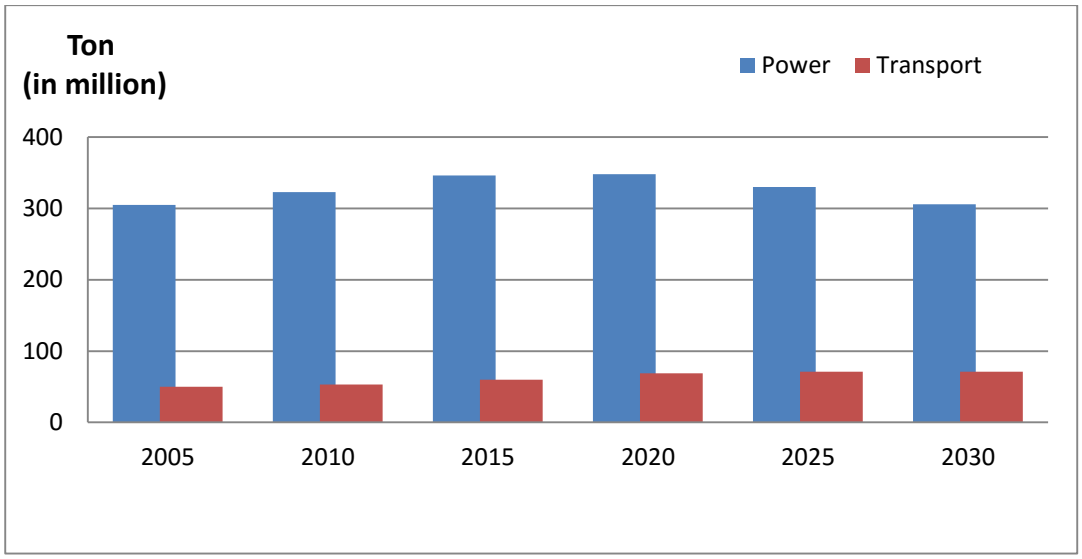
Transport

The main target of introducing green investment in transport sector is to improve the efficiency of energy use, however, investment in transport efficiency alone is not enough to reduce the demand on energy by 9 % in 2015, as estimated in the energy efficiency strategy in 2005, thus, an increase in demand on energy in the transport sector is excepted as a result of increase in GDP and population.

By applying GE2 scenario, the estimated contribution of transport sector in reducing energy consumption and improving efficiency is 5.5 % by 2030, assuring that green economy leads to energy efficiency resulting in lower demand on energy and reduce investments on supply side by increasing the share of renewable energy up to 24.4 % by 2030 (UNEP, 2013). As a result, it is important to present Co_2 emissions in transport and power sectors in the BAU scenario (Figure 7).

Figure 7: BAU Co_2 emissions in transport and power sectors



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The Green Economy Model in South Africa (SAGEM) has also tested the impact of green investment on both national development and GHG emissions.

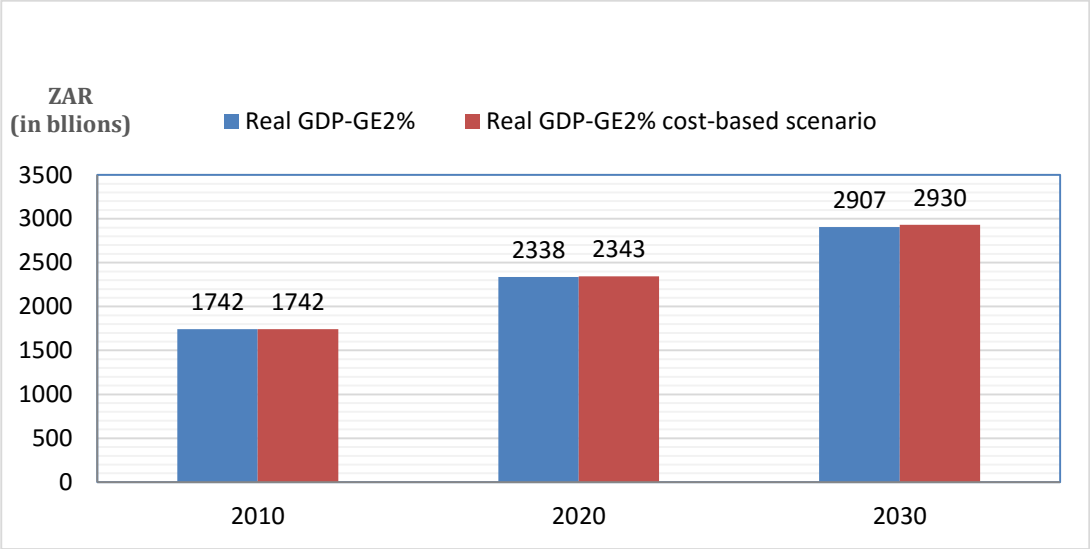
National Development

It is worth noting that green economy scenarios contribute to the increase in economic growth, as investments contribution to GDP exceeds estimated 2% compared with real GDP in 2012, leading to increase in per capita income over the years. As previously assured, green economy fosters job creation, depending on investment opportunity

and priority for investments in the energy sector due to the additional requirements of infrastructure in this sector (UNEP, 2013). The figure 8 shows the real GDP and cost based scenario in GE2.

One of the priority dimensions in the national development is the quality of employment, taking into consideration the good implementation of regulations to ensure the green economy growth. In addition to assuring the importance of high-quality jobs in South Africa, notably by, increasing the administrative and technical skills of employees, as engineers, giving attention to training by providing training programs on green skills (ILO, 2010B), as most of sectors are affected by hydropower, biogas and biomass, which connect these sectors together in a series of development (ILO, 2011).

Figure 8: Real GDP and cost based scenario in GE2



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GHG Emissions

Green economy leads to reduction in greenhouse gas GHG emissions, through intervention in the energy sector to improve both efficiency of energy and diversification of energy supply to renewable energy, in addition to other low carbon options in various sectors (UNEP, 2013).

The green economy not only leads to the creation of jobs (formal and informal) to replace the work in the "brown economy"), but also it aims to play a role in the maintenance of existing jobs from the effects of pressures related to the environment, such as rising commodity prices, particularly food and energy prices (Clair, 2012).

5- Conclusion

South Africa is considered at a crossroads, while it has implemented effective policies that put the country on international trends, but there is a need to overcome challenges both on the social and economic dimensions as poverty and unemployment.

The heavy reliance of South Africa on coal as a major source of energy for consumption and production makes South Africa as one of the main contributors to the net greenhouse gas emissions in the world; this is considered as an incentive to South Africa towards the necessity to strive to green its economy. The membership of South Africa in BRICS and the Group of Twenty provide both great opportunities and possibilities to gear its radical shift towards green economy through investment and green industries.

There is a large consensus that green economy is an opportunity for improving the environment and stimulating growth in South Africa, especially in the existing high levels of carbon emissions and unemployment. This provides necessary incentive to create sustainable green industries. The implementation of regulations, local laws, industrial policies and skills training will have a significant impact on the growth of green jobs in South Africa.

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