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Abstract

Green economy is a pathway leading to sustainable development. It can be defined as an economic system aimed to improve people's lives by combating climate change, energy insecurity, and ecological instability. Environmental degradation due to increased human activity driven by social and economic growth is the main motivation for the need and subsequent existence of green principle-based economy. The South African government defines it as a just transition to a resource-efficient, low-carbon, and pro-employment growth path. The main aim of this article is to present this green economy concept and to focus on the South African government's initiatives toward transition to green economy.

Keywords

Green economy • Sustainability • Energy efficiency • Ecosystem • Recycling • Waste management

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Introduction

Overview of Green Economy

The survival of humankind is intimately linked and dependent on the environment and natural ecosystem. Social and economic growth implies increased human activity and intervention usually causing environmental degradation through climate change and the global warming phenomenon. Therefore, the existence and survival of a healthy environment seek economic development based on green principles focusing on managing the interdependence between economic growth, social protection, and the natural ecosystem.

The concept of green economy derives from the “Brundtland Report-1987” of United Nations World Commission on Environment and Development. It defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their needs” (United Nations 1987). This gave rise to the three pillars of economic, environmental, and societal dimensions of sustainable development. The term green economy was then coined to give effect to sustainable development and was thus defined by the United Nations Environment Programme as the economy that results in “improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (United Nations Environment Program 2011).

The *National Strategy for Sustainable Development and Action plan* (2011) of the Department of Environmental Affairs, South African government, defines green economy as a “just transition to a resource-efficient, low carbon and pro-employment growth path” (South African Department of Environmental Affairs 2011). *Green economy* is one of the pathways to sustainable development and poverty eradication and may ensure sustainable economic growth (United Nations 2012). South Africa is taking a similar route with green economy also viewed and outlined as a path to the sustainable development and a driver to overcoming the development challenges.

Developing a green economy implies the decoupling of resource use and environmental impact from economic growth. It is usually characterized by substantially increased investment in green sectors, supported by enabling policy reforms. Moreover,

it is a growing economic development model whose proper implementation can create green jobs, ensure real sustainable economic growth, and prevent environmental pollution and degradation. The main outcomes of the green economy paradigm envisioned for the South African economy are (South African Department of Environmental Affairs 2012):

- I. Growing economic activity (which leads to investment, jobs, and competitiveness) in the green industry sector
- II. A shift in the economy as a whole toward cleaner industries and sectors with a low environmental impact compared to its socioeconomic impact

The transition to green economy seeks the involvement and substantial contribution of agricultural, manufacturing, research and development, administrative, and service sectors to preserve or restore the environmental quality and to protect ecosystems and biodiversity by reducing the consumption of energy, material, and water and minimizing the generation of waste and pollution.

Challenges and Opportunities

As a developing country, even though South Africa has maintained a slightly higher GDP growth rate than the world average over the last decade (i.e., 3.31% compared to 2.66%), poverty and unemployment are still two significant socioeconomic challenges (The World Bank). Therefore, intrinsic employment creation economic growth mainly focused toward poverty eradication should be the major priority of the green economy drive. A shift from the conventional trend of industrial development to sustainable development is also a major challenge, as industry is heavily reliant on energy produced from coal. In a wider perspective, the South African economy is highly dependent on natural resources, and therefore, resource extraction and depletion need to be decelerated for long-term economic benefits. Sustainable methods of electricity generation are still largely underdeveloped and of limited scope in South Africa. Research and development toward new and innovative technologies relevant to green economy and specifically to energy production are taking place on a limited scale and growing.

Some of the major challenges toward the green economy transition are:

- Creating a green economic awareness among the population at large
- Reaffirming and “living” the already well-established policies
- Dealing with institutional weaknesses
- Effective management of the financial resources
- Sincere follow-up for the execution of the action plans and review of the progress

Limited professional staff is available to take part and execute the plans of the green economy drive. Providing relevant education and training opportunities for a new green workforce will be critical to achieving a successful transition. It is difficult

to motivate the workers and people working in the key government departments to shift from traditional pattern to the newly introduced green economy concept and to take part in the activities to mobilizing other partners and unlocking the bureaucratic constraints to green projects.

To encourage industrial and manufacturing sectors toward improved energy and resource efficiency is not as easy as it seems, and inclusion of new “green” production techniques may cause increased costs. Ensuring the exploitation of mineral resources for the sustainable benefit of citizens is also a challenging task for the government. Encouraging citizens toward nonmotorized transport, sustainable land and water utilization, and pollution prevention requires sincere efforts in this direction. The lack of modern electricity infrastructure in rural regions and limited access to development aid need to be resolved as a priority. To encourage the private sector to participate and invest in energy generation, creating employment, and greening the economy has to be done as a priority because green economy transformation cannot be driven by individual government agencies or departments alone.

An attempt is being made to address these challenges by South African government through initiatives, institutional policies and frameworks, action plans, educational movements, and collaborations with industrial giants and private sectors to promote “green” concept in economy.

Green funding initiatives and awareness drives are specifically aimed at the educational and private sector to encourage participation in a drive toward a green economy. The government is also strengthening mutual cooperation with neighboring countries.

The main role players in the green economy drive for sustainable development in South Africa are the Departments of Economic Development, Environmental Affairs, National Treasury, Trade and Industry, Science and Technology, Rural Development, Agriculture Forestry and Fisheries, Energy, Public Works and Labour, private business community, trade unions, and several other community organizations.

Several reforms and policies of the government as well as reports based on the outcomes of previously held summits and meetings encourage and endorse the green economy drive. These schemes, policies, action plans, and their impacts and outcomes to promote and facilitate the green economy drive are briefly presented and discussed in the subsequent sections.

Evolution of South Africa’s Green Economy Drive

The journey of a green economy transition in South Africa accelerated in 2002 with the hosting of the *World Summit on Sustainable Development (WSSD)* in Johannesburg and the adoption of the *Johannesburg Declaration on Sustainable Development* which led to an agreement on the *Plan of Implementation of the World Summit on Sustainable Development (JPOL)*. One of the main clauses of the *JPOL* was that “states should take immediate steps to make progress in the

formulation and elaboration of national strategies for sustainable development and begin their implementation by 2005” (United Nations 2002). This laid the foundation for sustainable development and green economy transition in South Africa. Following the *WSSD*, the *National Strategy for Sustainable Development (NSSD)* was formulated in South Africa. The adoption of a *National Framework for Sustainable Development (NFSD)* in 2008 was the first move in that direction (South African Department of Environmental Affairs 2011). *NFSD* encompasses the visions, goals, and strategic priorities based on the analysis of long-term economic, social, and environmental trends for sustainable development. Thereafter, based on the *NFSD*, the government endorsed the *National Strategy for Sustainable Development and Action plan (NSSD 1) 2011–2014* that builds on several initiatives to address the issues of sustainability throughout South Africa. As a proactive strategy, *NSSD* regards sustainable development as a long-term commitment and combines environmental protection, social equity, and economic efficiency with the vision and values of the growth of the country (South African Department of Environmental Affairs 2011).

In May 2010, the Department of Environmental Affairs of the South Africa government convened a *Green Economy Summit* to gather valuable insights on key focus areas and issues needed to be addressed for the transition toward the green economy (South African Department of Environmental Affairs 2010). According to the summit report, South Africa defines a green economy as a path toward sustainable development that is underpinned by a need to address the reliance and link between economic growth, social welfare, and the protection of the natural ecosystem. A suite of supportive macroeconomic policies, framework, and strategy documents emerged from this summit supporting the South African government’s commitment to green economy objectives.

In November 2011, the South African government signed a Green Economy Accord to empower South Africans to implement a series of commitments (such as rollout of renewable energy, energy efficiency, investment in green economy, and clean-coal initiatives) and mobilize all sectors in a strong partnership to promote green economy in South Africa (South African Department of Economic Development 2011).

Commitment to a green economy is also captured in both the long-term vision of the *National Development Plan* and the *New Growth Path* which specifically identify the green economy as one of the key sectors for investment (NPC 2011; South African Department of Economic Development 2010; UNEP 2013).

The resolutions adopted by *United Nations Conference on Sustainable Development (Rio +20) 2012* played a major role in the mobility of the green economy program of the South African government (United Nations 2012). In *Rio +20*, the green economy was considered as one of the important tools available to achieving sustainable development and poverty eradication. It was emphasized that green economy should contribute toward sustained economic growth while eradicating poverty, enhancing social inclusion, improving human welfare, and creating employment opportunities while maintaining the healthy functioning of the earth’s ecosystems.

The green economy drive in South Africa has been boosted significantly through all the abovementioned plans, summit reports, and initiatives. The main objectives, commitments, and strategies of some major plans, i.e., National Strategy for Sustainable Development and Action Plan, National Development Plan, National Growth Path and Green Economy Accord, Environment Culture and Sector Plan, and Strategic Plan of South African government, and outcomes of the Green Economy Summit are detailed in the next section.

Major Initiatives and Developments

The South African government approach so far toward sustainable development especially via green economy has consisted of the formulation of policies and frameworks and making funds available to implement them and/or to mobilize the action plans. To ensure these, the government is to a large extent reliant on both private sector and civil society. South Africa's green economy initiatives are built on its National Development Plan-Vision for 2030, its National Strategy for Sustainable Development and Action Plan, and National Growth Path.

Green Economy Summit Report

The Green Economy Summit, as a part of South African government's efforts toward transition to green economy, was held in May 2010. The conclusions of this summit recommended the development of a job intensive green economy and contain a resolution to deploy the plan of action through developing the supportive regulatory frameworks and policies (South African Department of Environmental Affairs 2010). The final draft of this summit summarizes the following important conclusions:

- A need exists to alter the current pattern of production and consumption toward sustainable development.
- The current and existing processes, programs, and initiatives, in key sectors, should focus toward attaining the goals of a green economy.
- Private sector and civil society should work in association with government for the development of a green economy plan and to explore science and technology solutions and finance opportunities for that.
- To accept that global climate change is a fact and that to effectively combat this threat, a green industry is required if global sustainability is to be achieved.
- The transition should be extended toward the greening of the construction industry including buildings and the built environment, towns, and cities. Infrastructure related to these including transport, energy requirements and efficiency, and water and waste management should all be included and prioritized.

The conclusions jointly advocate the transition toward a resource-efficient, low-carbon, and pro-employment growth path.

New Growth Path (NGP) and Green Economy Accord

New Growth Path (NGP), released in 2010, outlined the government's approach to accelerate growth and to support employment creation in the green economy sector (South African Department of Economic Development 2010). The New Growth Path aims to create 300,000 new direct jobs by 2020 with the specific objective of "greening" the economy. The majority of these jobs are to be in manufacturing (80,000) with the rest in construction, operations, and maintenance of new environmentally friendly infrastructure. Subsequently, in 2011, the Green Economy Accord, Accord no. 4 of NGP and an outcome of social dialogue between government and its social partners was signed. In order to achieve the broad goals of NGP toward green economy, several commitments were identified by government and its social partners and were set out in Green Economy Accord. These commitments are (South African Department of Environmental Affairs 2010):

- Installing a million solar water-heating systems at household level by 2014
- To increase investment levels into the green economy with the help of the Industrial Development Corporation, private sector investing, and the responsible use of retirement instrument capital
- Actively promoting alternative and renewable energy sources on a national level along with the promotion of biofuels in the transport sector
- To actively manage the emissions of the current energy reliance on coal-based technologies by investigating and implementing clean-coal technologies
- To actively advocate and advance the idea of energy efficiency nationwide and in all aspects of the economy
- To modernized existing buildings and structures for greater energy efficiency
- To promote the ideas of recovery, recycling, and reuse
- To reduce the carbon emissions related to transport in general and mass transport in particular. Revitalize and reestablish rail transport as a primary mass transport vehicle
- Reduce the reliance of poor communities on the burning of fossil fuels for heat and food preparation by large-scale electrification
- Drive localized green economic development with youth employment programs, skill development, and cooperatives

To carry out these commitments and in the framework of NGP dialogue, both government and its social partners meet biannually to review the progress and to discuss the specific areas to be addressed toward the green economy transition.

National Development Plan (NDP)

In 2011, the National Development Plan was announced and adopted by the South African government as a road map for the nation's overall development to 2030. It is the overall strategy of the South African government in pursuit of the country's vision. Considering green economy transition, various measures and approaches were proposed under chapter five of the plan themed as "Environmental sustainability and resilience." Some of the important recommendations of NDP toward South Africa's transition to green economy are (South African Department of Economic Development 2011):

- Industrial processes should be more energy-efficient and less carbon-intensive.
- Increase the use of renewable energy sources to generate electricity.
- Modernize the current fleet of coal-fired power stations with retrofitting of cleaner technologies. Investigate the viability of carbon capture and storage technologies.
- The establishment of a carbon budget and the subsequent implementation of associated carbon taxes on vehicles and industries.
- Improve governance, communication, and coordination of and between state departments.
- To actively promote green economy awareness, green product design, and recycling ideas along with the goal to eventually aim for a society that produces no waste ("zero waste").
- To ensure that development planning is flexible enough to ensure a clean and resilient environment.
- Gather and develop knowledge (focused research) that has as its main aim the understanding of the link between climate change and water and agricultural resources.

The following actions were taken against the backdrop of the abovementioned recommendations:

- To support the actions of government, business, and civil society, an independent *Climate Change Centre* in partnership with academic and other appropriate institutions has been established.
- Significant investments were made while international assistance programs were put in place to ensure appropriate research is conducted as far as the climate and its link to development is concerned.
- Policies and strategies pertaining to land, water, and agriculture are more regularly reviewed at to keep them aligned and effective toward sustainable development.
- There implemented national recycling strategy aims to reduce the total volume of waste production and therefore the reliance on waste disposal by land filling.
- Ecosystem conservation and rehabilitation after possible ecological disasters are being prepared for, researched, piloted, and implemented with a medium-term view as goal.

- The overall effect of carbon pricing has been researched, and final proposals are in place to be implemented over the full economy.
- A “Green Fund” was established that aims to encourage the private sector and smaller public entities to invest creatively in reduced carbon technological projects.

Fundamentally with the actions above, the NDP hopes to decouple resource use and environmental impact from economic growth and facilitates the government’s action toward green economy transition.

National Strategy for Sustainable Development and Action Plan (NSSD)

The *National Strategy for Sustainable Development and Action Plan* (2011–2014) envisioned as “South Africa aspires to be a sustainable, economically prosperous and self-reliant nation state that to safeguard its democracy it needs to meet the fundamental human needs of its people.” This implies in short that the limited ecological resources at hand be responsibly managed with the current and future generation’s needs in mind. Effective management implies dedicated and focused planning and governance regionally, nationally, and globally with specific emphasis on collaboration. Ecological sustainability is seen as the overall goal of NSSD. It identifies *transition toward green economy* as one of the important strategic priorities within the context of sustainable development.

For promoting a low-carbon, resource-efficient, and employment-intensive green economy, the following nine priority sectors and areas (may be referred to as major interventions towards a green economy) were identified by the *Department of Environmental Affairs* to promote a reduced carbon and resource-efficient and employment-aligned green economy. These are:

- Sustainable consumption and production: Production techniques and methods should be aligned with sustainability as one of the key goals within the context of the specific industry involved.
- Green buildings and the built environment: Current and future buildings need to be retrofitted and/or designed and constructed with energy efficiency as a prime driver.
- Sustainable transport and infrastructure: This needs to include more energy efficient mass transport systems, revitalization of rail transport, and promote nonmotorized eco-friendly modes of transport.
- Clean energy and energy efficiency: On the short term, large-scale rollout of solar heating is effective. Cleaner and specifically off-grid options for the rural and urban areas should be explored and implemented.
- Environmental sustainability with research and capacity development: It is important to create awareness of environmental sustainability among the population at large. At the other end of the scale, research and skills development aligned with sustainability should be actively promoted.

- Resource conservation and management: This includes making adequate resources available and the providing of management support for ecosystem services, infrastructure resilience, and wildlife management.
- Sustainable waste management practices: The reduction of total waste production along with an active waste recycling community scheme with the aim to reduce the waste production of 500,000 households to zero.
- Agriculture, food production, and forestry: An integrated sustainable agricultural industry closely tied to a minimum food security requirement.
- Sustainable water management: This includes improved usage of current water resources including water harvesting and a more efficient demand side management on municipal level, in mining, and agriculture by reducing water losses and inclusive and accurate water metering. Explore alternative technologies for dealing with effluents.

The overall enablers to the implementation of the green economy programs as regards the above nine areas include innovations in science and technology, regular supervision and follow-up, encouraging investments in green manufacturing techniques, leveraging green fund and budget for development of skills, institutional capabilities, and mutual collaborations.

The *NSSD* was developed to create employment opportunities and industrial development, for an economic boost and environmental benefits. Financial commitments, i.e., \$ 65 million from Department of Economic affairs, \$ 800 million from the Development Bank of South Africa, \$ 2 billion from Industrial Development Corporation, and private finance of \$ 8 billion, were identified to initiate and accelerate the *NSSD* programs for green economy drive.

Environment and Culture Sector Plan 2014/2015–2018/2019

The aim of the Environment and Culture Sector Plan is to implement and expedite the government's poverty alleviation program (UNEP 2013). Moreover, the promotion of green economy initiatives is also one of the intrinsic objectives of this plan. Therein, a wide variety of programs targeting various aspects of sustainability were recognized whose organization can lead toward a green economy scenario, some of these are based on:

- Effective use and management of SA's land and water resources
- The greening of specific identified regions into sustainable settlements that will be less sensitive to climate change through the effective use of indigenous plants and other associated technologies
- Making society aware of the importance of sound waste management and recycling practices while actively managing biodiversity and ecosystems for improved performance
- Promote labor-intensive energy management while focusing on renewable energy technologies

This plan recommends the collaborative cooperation of municipal corporations including the Department of Economic Development and Environmental Affairs, Department of Rural Development, Mineral Resources, Tourism, and Arts and Culture to organize the abovementioned programs successfully.

Strategic Plan 2015/2016–2019/2020

The Department of Environmental Affairs (DAE) developed a strategic plan toward the realization of NDP vision 2030 focusing on the following four strategic goals (South African Department of Environmental Affairs 2014):

1. Optimizing the contribution of the environmental sector to economic development
2. Safeguarding and enhancing ecological/environmental integrity
3. Facilitating and supporting social transformation
4. Influencing the global agenda on environmental management and sustainable development

The DEA's approach for environmental sustainability and resilience toward a green economy is then supporting and catalyzing investment, aligning sector plans and policies, and promoting conservation and sustainable use of natural resources in the accelerated implementation of the green and low-carbon economic growth path. The strategic plan also enlists some of the programs of DEA in which the "Environmental Programme" aims to implement the green economy projects in the environmental sectors.

Outcomes of Government Initiatives

The government has made numerous plans and implemented a number of schemes toward a transition to green economy. The green economy drive has contributed substantially to the South African economy. It has stimulated growth, enhanced competitiveness, and opened up new job opportunities while promoting poverty alleviation, energy security, economic stability, low environmental footprints, and societal wellbeing. The following section discusses the major outcomes and the progress made so far in the green economy drive (South African Department of Environmental Affairs 2015; Borel-Saladin and Turok 2013; Musango et al., 2014).

Commercial activities are being simulated by the green practices in numerous sectors of the economy. Opportunities in agriculture (organic produce and cotton production, biofuels), mining (platinum, iron ore, copper), manufacturing (energy-efficient and pollution-control equipment and machinery, renewable energy components), electricity generation (renewable energy), construction (green buildings), and services (tourism, recycling, public transportation) are being rapidly generated. Private sector companies have started investing in renewable energy and

low-carbon technologies. An investment of billions of USD has already been attracted for the world's leading procurement programs for renewable energy (essentially from wind, solar photovoltaic, and concentrated solar power technologies) being run by South African government to promote renewable energy. Loans, funding, and bonds in green economy investments are being encouraged by the banking sector.

The overall progress has been inconsistent to date considering the facts and figures of the commitments. Almost 0.5 million solar water heaters have been installed, and the work is in progress to install the remaining 0.5 million. An energy efficiency campaign initiated and run by Eskom (South Africa's power generation and distribution company) claims to save 80 Gigawatt of electricity consumption with substantial reduction in costs to consumers to the tune of Rand 80 million. A mandatory greenhouse gas emission reporting system has been implemented by the Department of Environmental Affairs which entails the reporting of over 100,000 tonnes of greenhouse gas emissions done by the companies and entities. Progress on biofuels and the electrification of poor communities have been relatively slow. The commitment to promote biofuels experienced several delays, including public opposition using land designated for agriculture for fuel production. Meanwhile, there are about three million households without electricity. The Industrial Development Corporation has allocated Rand 7.6 billion for green industry projects with an emphasis on renewable energy (mainly solar panels and wind turbines). Based upon this investment, some permanent jobs and many more temporary jobs are being created.

Accomplishing the targets of green job creation, thousands of jobs are being identified and created in manufacturing, construction, operation, and maintenance of new environmentally friendly infrastructure. The green economy already provides employment for several hundred thousand South Africans, predominately in sectors related to recycling, renewable energy production, biodiversity conservation, and ecotourism. Efforts are also being made to limit the job contraction to those areas of the economy where excessive carbon intensity is unsustainable. It is also estimated that a significant portion of job creation potential stems from natural resource management, i.e., activities associated with biodiversity conservation and ecosystem restoration along with agriculture and land management.

Ultimately, the success of green economy transition entails short-term pragmatism and long-term planning by linking business, the government, labor, non-governmental organizations, and the research community in support of green growth. Although challenges do still exist, the progress made in this regard may well see South Africa as a green front-runner.

Outlook

The goal of a transition toward a green economy includes contributions to economic growth and employment while simultaneously maintaining environmental friendliness and biodiversity and preserving natural resources. In this article an overview of

the South African government's efforts in terms of policies, frameworks, and action plans toward sustainable development through a green economy pathway has been presented. A green economy transition has been detailed through a number of plans most notably including the New Growth Path, National Development Plan, and National Strategy for Sustainable Development and Action Plan. All these plans adopted by government offer the opportunity to build and maintain new green economic sectors, create employment opportunities, grow economy, and develop international economic competitiveness scenario.

In essence, the government of South Africa has responded to the appeal of the United Nations to shift toward a green economy, and a number of policies and programs are being actively developed and implemented with the partnership of public and private sectors. Unfortunately, even with the best policies and plans, final success will only manifest itself with efficient and successful implementation. This may yet be the biggest obstacle that South Africa, and any other country for that matter with the same basic ideal set, may face toward the green economy paradigm.

South Africa has clearly shown itself to be committed to not only the ideals of a *green economy* but also to use these as tools to create an improved and greener inclusive society for its people. In this regard South Africa transcends the basic ideals of a green economy and commits its future irrevocably and in an intimate way to sustainable development.

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