

A report from the first international conference on:

“Innovation for Sustainability under Climate Change and Green Economy”,
convened by the University of South Africa, in partnership with Exxaro Resources Ltd., Department of Environmental Affairs, SEED and the South African Local Government Association from 26-28 May 2015



Partnerships Drivers
Transition Initiatives
Support Action
Innovation long-term integration
Mainstreaming



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“Innovation for
Sustainability under
Climate Change
and Green Economy”

Contents

Key messages for policymakers	1
1. Introduction	2
2. Environment sector evidence-policy-practice interface	2
3. Selected deliberations highlights	4
3.1 Local, national, regional and international pathways	4
3.2 Private sector sustainability initiatives, innovations and the economy	5
3.3 Green economy leapfrogging – The Case of Electric Vehicles	7
3.4 Green entrepreneurship and SMMEs	8
3.5 Local government green economy and climate change readiness	9
4. Conclusion and recommendations	10
5. Bibliography and references	11

List of acronyms

DEA	Department of Environmental Affairs
EV	Electric Vehicles
GDP	Gross Domestic Product
GGGI	Global Green Growth Institute
GHG	Green House Gas
MINMEC	Minister and Members of Executive Council
NDP	National Development Plan
NSSD	National Strategy for Sustainable Development
R,D&E	Research, development and evidence
SADC	Southern African Development Community
SALGA	South African Local Government Association
SEED	A global organisation founded by the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), and the International Union for Conservation of Nature (IUCN) in 2002 in South Africa at the World Summit for Sustainable Development to promote entrepreneurship for sustainable development
SMME	Small, medium and micro enterprise
UAE	United Arab Emirates
UNEP	United Nations Environment Programme
UNISA	University of South Africa

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The following DEA, Provinces and Entities representatives participated at the conference as part of the DEA/UNISA partnership and were among more than 400 participants: Mapula Tshangela, Najma Mohamed, Kiruben Naicker, Wadzi Mandivenyi, Anna Mampye, Faith Nkohl, Antoaneta Letsoalo, Henry Roman, Kogilam Iyer, Godfrey Muneri, Kgoale Mphahlele, Shanna Nienaber, Leluma Matooane, Masilo Manoko, Vinesh Naidoo, Mbulaheni Maseda, Gert Rossouw, Tlou Ramaru, Gertrude Matsebe, Mashudu Mundalamo, Reneilwe Mampuru, Nthabeleng Montsho, Lindiwe Tshabalala, Abraham Shoba, Kennedy Msibi, Gaopalelwe Moroane, Riaan Fourie and Michelle Layte

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Delegates at the first international conference on Innovation for sustainability under climate change and green economy.

Key messages for policymakers



1. In driving the green economy transition, there is a need to establish and or grow active government and public interventions, global and local **partnerships** and active network engagements.
2. Large corporate and private sector sustainability **initiatives** and **innovations** that consider overall company performance in areas that include manufacturing, intellectual, human, social, financial and natural capitals have the potential to scale transition efforts. South Africa needs to look at the opportunities and developments in a structured way that feeds into solutions and which have economy wide impacts.
3. SMMEs play a key role in South Africa's economy and there is therefore a need for focused **support** for green SMMEs. This much-needed support includes those from universities, industry, finance institutions and government.
4. In preparing local government **action**, tools such as first and second order green economy readiness assessment of municipalities are important as they assist in identifying those municipalities that may benefit from immediate leapfrogging and those that may still require readiness support. Suggestions were therefore made for using the green economy transition as an opportunity to do things differently.
5. Implementing and managing sustainability **transitions**, the Sustainable Development Policy Action Plan should facilitate "*policy shedding*" into one-stop policy by allowing appropriate alignment and consolidation, thus mobilising the vision of the National Development Plan in a structured way.
6. **Innovative** solutions which promote environmental sustainability should be oriented towards meeting the key social challenges facing South Africa, poverty, unemployment and inequality and should extend beyond technological innovation.
7. Environmental sustainability is critical to economic transformation and in implementing the transition to a green economy, we have to find ways of **mainstreaming** climate and environmental considerations in economic and development planning.
8. Creative engagement and dialogue between research, industry and policy sectors is critical to enable research and innovation to emerge as one of the key **drivers** of South Africa's low carbon transition.
9. Sustainability is a **long-term** issue. It is not an additional burden or obstacle but integral to growth.
10. Harnessing South Africa's high level of **integration** is key in the global system of innovation towards greater levels of cooperation.

1. Introduction

South Africa committed all stakeholders to “pursue and explore opportunities” in the green economy. In terms of the May 2010 national green economy summit deliberations, National Strategy for Sustainable Development (NSSD) and National Development Plan (NDP), South Africa views a green economy as a sustainable development path based on addressing the interdependence between economic growth, social protection and the natural ecosystem. The national summit identified nine green economy focus areas to facilitate multi-stakeholder action. These focus areas are (1) resource conservation and management; (2) sustainable waste management practices; (3) water management; (4) environmental sustainability: greening & legacy-major events & tourism, research, skills, financing and investments; (5) green buildings and the built environment; (6) sustainable transport and infrastructure; (7) clean energy and energy efficiency; (8) agriculture, food production and forestry and (9) sustainable consumption and production.

The NDP acknowledges that South Africa faces urgent developmental challenges in terms of poverty, unemployment and inequality, and will need to find ways to “decouple” the economy from the environment, to break the links between economic activity, environmental degradation and carbon-intensive energy consumption. The NDP vision is therefore that “by 2030, South Africa’s transition to an environmentally sustainable, climate change resilient, low-carbon economy and just society will be well under way”. The NDP chapter 5 and NSSD identified five strategic priorities (steps towards the vision) as firstly a just transition towards a green economy (managing a just transition), secondly sustaining South Africa’s ecosystems and using natural resources efficiently, thirdly responding effectively to climate change, fourthly building sustainable communities and lastly enhancing systems for integrated planning and implementation.

This 1st International Conference on “*Innovation for Sustainability under Climate Change and Green Economy*” is timely and contributes to unpacking the commitments outlined in the key policies. Held from 26-28 May 2015 in Boksburg, the conference sought to share and contribute knowledge and practical solutions to the global challenge of climate change within the emerging context of the green economy transition. The conference brought together more than 400 multi-stakeholders from government, business, academia and civil society. The four thematic areas for the conference were: business and biodiversity, energy and energy management, water connections, global change and sustainability, climate change and green economy transition. Deliberations took place through various platforms, including symposia, academic paper presentations, workshops, and displays that provided opportunities for conference participants to actively engage.

2. Environment sector evidence-policy-practice interface

This report highlights key messages from selected sessions of the conference deliberation and therefore does not represent all the deliberations. The report is compiled as a contribution to the environment sector’s promotion of evidence-policy-practice interface. The Environment MINMEC approved the Environment Sector Research, Development and Evidence (R, D & E) Framework in June 2012. The R, D & E framework aims to enhance the sector’s evidence-policy-practice interface and evidence-based policy making. The Framework outlines the environment sector’s policy thematic areas namely: biodiversity, sustainable development & green economy (including sustainable consumption & production), oceans & coast, air quality, climate change, impact management, chemicals & waste management and lastly compliance & enforcement. The environment sector’s approach to evidence-based policy making outlines three levels of interface. The third level involves the development and implementation of individual policy themes evidence strategies. The second level is identified as the environment sector R, D & E framework to which the individual policy themes evidence strategies draw the common approach. These first and second levels build from the overarching foundation of evidence level that is responding to the 2002 National Research and Development Strategy, 2008 Ten Year Innovation Plan and 2012 Global Change Research Plan coordinated through the Department of Science and Technology (see Figure 2.1).



Figure 2.1: Environment sector approach to science-policy-practice interface

(Source: Adapted from DEA, 2012)

These three levels represent the overview signals for policy relevant evidence needs for the environment sector. The framework encourages the prioritisation, gathering and use of evidence for policy consideration across the various policy themes.

It is in the context of the environment sector R, D & E framework approach to evidence informed policy making that the Department of Environmental Affairs (DEA) partnered with the University of South Africa (UNISA) and SEED in delivering this first international conference as one of the opportunities for policymakers to engage with evidence generators, knowledge brokers and practitioners. This report seeks to consolidate the key messages that emerged from the selected deliberations of the conference as a means to contribute to the strengthening of evidence-policy-practice interface.



From left: Mr Alf Wills, Dr Helen Marquard, Prof Memory Tekere, Dr Geraldine Reymentants, Prof Martina Keitsch, Mr Titus Baloyi and Prof Godwell Nhamo.

3. Selected deliberations highlights

3.1 Local, national, regional and international pathways

The session brought together high-level international and national perspectives on multiple pathways towards a greener economy. The national perspective highlighted the importance of the National Development Plan (NDP) as a framework that provides for long-term planning by balancing the need for long-term vision with short-term activities, particularly related to sustainability issues. The NDP confirms the assertions of the National System of Innovation and provides a framework for thinking about where to invest public resources to achieve the desired outcomes of addressing unemployment, poverty and inequality. The NDP highlights the importance of research and development (R&D) to develop an innovation system in support of a low carbon economic transition. Taking into consideration the limited resources available, the DST's Deputy Director General Mr Imraan Patel indicated that it is vital that efforts are elevated to coordinate R&D investments, integrate the national system of innovation in the global system, and support catalytic instruments to stimulate R&D in this space. There is furthermore a need for knowledge brokers and specialised institutions with evidence to reach policy and action. The extent of the social and environmental challenges SA (and the world) is facing requires fast and decisive action which makes effective use of available resources and evidence to inform planning and decision-making processes across the innovation value chain.

The Southern African Development Community (SADC) plays a key role in regional integration, and is active in coordinating environmental and sustainable development activities in the region. Updates on the development of a SADC green economy strategy and action plan was shared. It is envisioned that this strategy and action plan has potential to guide the overarching green economy priority actions for the region.

The Global Green Growth Institute (GGGI) shared some international experience of green growth planning and implementation at the sub-national level in India. As two of the BRICS countries, South Africa and India can learn from each other on their approaches to green economy including at the local government level. The Indian experience was shared on in terms of both strategic and operational context at local government. The importance of integrating visions, and illustrating how economic growth and job opportunities can emerge from green growth initiatives, was showcased.





Presentations were also made on the principles of green economy transitions in diverse contexts, including the experience of the GGGI in Ethiopia, UAE and South Korea, distilling some of the key factors which could drive this economic shift. The experience and approach of South Korea was of particular interest since the country had adopted green growth as the official development strategy since 2008. This interest stems from South Korea investing 2% of GDP in greening key economic sectors- an approach that South Africa only assessed through its South Africa green economy modelling (SAGEM) report produced in partnership with UNEP in 2013. South Korea has limited natural resources, is facing severe impacts from climate change, and was undergoing an economic slowdown and energy

challenges among others. Green growth was viewed as an ‘engine of growth’ by the government, and the country has a green budget of about \$90 billion. Since the green growth strategy development, the government has ensured increases in R&D investment and private sector investment in green technologies. Stakeholder engagement at all levels was key to the South Korea green growth strategy development and planning, and the government provided clear policy signals with timelines, capacity building support, data management, regulations and incentive systems. The implementation scheme for the green growth strategy in South Korea cuts across all tiers of government, i.e. national, sectoral and local government. From the South Korean experience, as well as the GGGI work in 24 member countries, some of the critical factors of supporting a green growth transition were highlighted as: high-level political engagement and buy-in of the green economy paradigm; active government intervention; comprehensive approaches; long-term and consistent policy and regulatory reform in support of green interventions; active participation from the public, and local and global partnerships.

An overview was also shared around the developments in the CO₂ capture and storage sector as well as other novel technologies in the oil and gas sector in Canada. Some of the key drivers for shift towards greener technologies in the sector were highlighted, including global activities in GHG regulations, and more specifically the setting of ambitious targets to reduce GHG emissions which has significant impacts on the way the oil and gas sector operates. Solutions to the energy crisis will require that we increase research and investment in renewable energy technologies, and also develop innovative solutions to “deal with the consequences of fossil fuels”.

3.2. Private sector sustainability initiatives, innovations and the economy

This Blank Canvas session shared updates on sustainability initiatives in the private sector. With the private sector’s realisation that there is a need to identifying alternative solutions beyond business as usual to promote active network engagement, a six capitals model, regarded as one of the blueprints for sustainable development was shared. Through this model, the six capitals identified are manufacturing, intellectual, human, social, financial and natural capital. It was indicated that some industries have already begun using this model in their systems thinking approach to assess overall company performance.

The session further explored the ingredients for change and the development of tools that are fit for purpose. Needs were identified for assessing the current state and developing a roadmap for transformation. Importantly the building blocks of a sustainable and resilient business need to be identified in light of the global and local drivers. However,

in order to innovate, there is a need to put aside the assessment and consider an ideal state: What can be achieved without constraints? What would an ideal future state look like and operate, for example a smart city. This is recognised as a case of traditional thinking vs. innovation thinking. The roadmap was identified as a methodology that could assist with long term thinking, systems thinking and closing the gap between the current state of affairs and desired state.

Lessons from the private sector were also shared including ideas that the private sector needs to be prepared for the “Workforce of the Future” which may include dynamic groups of people and not only permanent employees. Furthermore, the private sector session recognised the possible approaches to firstly drive innovation from an organisation perspective, secondly to drive innovation from a product perspective, thirdly organisational commitment for ‘doing the right thing’ and lastly bringing in expert advice where necessary. Non-financial data is identified as key to business intelligence and to close the loop with for example regenerative systems i.e. “Cradle to Cradle” – Thinking.

Another session hosted by the National Business Initiative themed “It’s the Economy Stupid”, highlighted some important realities for a sustainability transition. It was acknowledged that environmental issues are about transforming the economy. How do we manage the economics of the resource base? What are we transitioning from and what are we transitioning to?

There is reportedly an expectation that the new economy should not have unintended consequences. There is also a degree of frustration because there are not enough platforms to discuss what we are transitioning from. The starting point is identified as the National Development Plan. The green economy: what are the urgent needs to transform to a sustainable growth path? Business is seen as a source of innovation and solutions. There is a need identified for business to show leadership in line with a diversity of businesses coming to address the issue of the environment. South Africa has this diversity and potential to lead. This is noted in context that European companies are ahead of South Africa but they are not aware of the social issues.

This private sector session was addressed by Lord Dr Michael Hastings: He framed the conversation with two quotes that: “Only the mediocre are always at their best”, and “One of the most expensive things to do is pay attention to the wrong people”. With respect to climate change, carbon tax is seen as a stick and not an incentive; and does not drive personal change. It was reflected that the global community had a rather ridiculous conversation for far too long with climate change. The 2015 Paris meeting is seen as intending to force people or nations to reduce emissions. President Obama’s views that climate change is a threat to global and national security because of the large-scale migration of people and the implications for meeting development needs, reflects this change in thinking.

It was recognised that there are opportunities to be the first generation to end poverty, and also the last generation who has the responsibility to address runaway climate change. Improving human development and climate change go hand in hand and thus business has a role to play. One of the biggest issues identified is that the world is facing the growth and maintenance of an increasing middle class which places an enormous pressure on natural capital to facilitate capital growth. Meat and dairy farming for example creates one fifth of all the GHG emissions: greater than all the cars and planes put together- to the effect that our desire to eat and feed ourselves is the issue. True long term sustainability is reportedly not about cars and planes, a bigger part of it is the demands and consumption of the growing middle class.

Wastage however has become an endemic problem. Energy demands have become a human right. But there is an emerging trend amongst many people around the world: To pay for water and energy which is a responsibility even though it is considered a human right. These short term necessities are strong economic growth drivers for job creation, a stabilised economy, and good politics. However, there is a need to combine these with the wastage reality.

In transitioning to a low carbon economy, most businesses are challenged with short term challenges. However, an accurate assessment should not stop **long term** planning. There is a need identified to know what the fact base is, and internationally who are competitors. There is therefore a need to build a different economic base. For example Saudi Arabia is exploiting their present economic base but planning for wind energy by 2050.

Measurement of growth was discussed, such that: Unless we are able to measure growth properly, perpetual growth is a myth. Reportedly, according to Robert Kennedy, GDP has become an icon of industrial measurement. But true wellbeing which is intangible is a better measure of economic health e.g. the Happiness Index embodies a different way of thinking and perhaps: the intangibles of wellbeing should have the same measure as economic growth.

Unemployment is an issue. In the SA context, the green economy is reportedly seen as creating jobs, but this is said to be a very trite statement as it has reportedly not taken the country very far. When looking at a shift in the way the SA energy economy operates, we have not actually fully looked at the realities and what the **opportunities** are. Interesting **practices** are happening amongst the South African community: large parts of the commercial sector, significant parts of industry and the wealthiest part of the residential sector are beginning to invest in alternatives to the power grid. Some of those are fossil fuel alternatives (generation of diesel in this mix), investment in solar PV, investment in energy efficiency, high market in UPSs. What is reportedly happening is that there are new economic opportunities. However South Africa is not looking at these developments in a structured macro way that feeds into **solutions**.

South Africa still has a great advantage as it still needs to build new infrastructure and thus its ability to meet this through **innovation** is key. The role of innovation in providing some of the solutions is important. However, in view of a disruptive technological age, we need to be better prepared. For example, the world economic forum in 1996 discussed the possibility of the internet transforming lives - the impact of the internet on our daily lives has been already realised. South Africa's spend on research and development relative to other emerging markets still needs enhancement.

As a way forward from the private sector session, a need was identified to initiate a dialogue about an economy that South Africa want to **transition** to. What is the transition, what are the objectives and what are the timeframes?



3.3. Green economy leapfrogging – The Case of Electric Vehicles

The experience of Norway was shared by Professor Martina Maria Keitsch (of Norwegian University of Science and Technology) to illustrate a low carbon **transition** in the transport sector. Norway currently has the largest per capita market share in electric vehicles and its experience started as early as the 1970s. The historical development in Norway includes the development phase 1970 - 1990, and design of prototypes and test phase 1990 - 1999 with the Kewet electric vehicles that were imported from Denmark. Among the regulatory frameworks put in place in Norway includes:

- I. free access to toll roads and free public parking on main city road;
- II. reduced registration tax, VAT and annual license fee removed;
- III. access to charging stations; and,
- IV. access to use dedicated bus lane.

Of note is that Norway continued importing electric vehicles (EV) while its own first electric car was manufactured in 1994. Some of the experiences of its first electric cars related to the complaints in safety, ergonomics and costs which were later improved. While environmental benefits of EVs are key, the Norwegian experience shows that the reasons for the purchasing of EVs also include economic and access benefits since an EV costs less than a conventional car in Norway. With its long experience, it is important for South Africa to note some of the rebound effects being experienced in Norway, and thus **leapfrog** in its approach to introducing electric vehicles. One of the rebound effects of note is that many families in Norway reported buying an EV only as a second car due to among others the long distance between towns' for electric cars are not an ideal option. With the increase in numbers of electric vehicles that had special incentives, the other rebound effects include:

- the increase in electric vehicles numbers in the dedicated bus lane was now dominating and blocking the bus traffic flow;
- increased accidents due to the electric vehicles low sound; and,
- few uptake by companies and public transport.



The Norwegian government clearly created a demand for EVs but they also put the required infrastructure in place. Therefore there are practical lessons and various scenarios to consider in South Africa when similar initiatives are introduced. Consideration has to be given to societal behaviour and culture, incentives, systematic mobility approaches, addressing macro level design in sustainable mobility, existing transport practices and user values in the design for solutions.



The DEA shared its experience thus far with piloting of the 12 electric vehicles, 8 Nissan Leaf that are 100% electric and 4 hybrid Toyota Auris. BMW shared its experience with the approaches to manufacturing and selling of electric vehicles. The BMW experience with electric cars is reportedly almost 40 years including research and prototype phases with some of the latest products having 95% recyclable materials at end of life.

BMW's approach to the electric vehicles considers the future of mobility being around the environment, urbanisation, policy & regulations, economics, culture and changing customer expectations. The University of Johannesburg (UJ), as a teaching, learning and research institution shared its flagship approach that also incorporates the social and manufacturing phases of energy and transport solutions. The UJ has since 2011 produced 3 prototype solar cars. The teaching approach includes the value chain solutions as part of syllabus, promoting maths & science at schools, competitions, developing entrepreneurial and business skills while solving industry problems and developing SMEs. Partnerships are identified as key in the UJ approach that includes working with volunteers such as engineers and students.

3.4 Green entrepreneurship and SMMEs

The session tone was set through high-level engagements including the address by Mr Alf Wills Deputy Director General from the Department of Environmental Affairs. Government coordination and the Vision 2030 as outlined in the NDP are seen as critical in driving a transition to a low carbon economy and responding to climate change. Furthermore, government key roles in the green economy transition were shared including the need to ensure the development of policy-based incentives, creating an enabling environment and setting up an evidence-based framework for decision-making. It was acknowledged that South Africa's transition to a green economy must address social and environmental challenges – be inclusive, just and job-creating. As such, the role of social and environmental enterprises is key in providing innovative (and grassroots) solutions to drive global change towards green and inclusive growth. The challenges faced by social and environmental entrepreneurs, including access to finance, markets research and capacity needs to be continually engaged. The economic case for green investments needs to be demonstrated.

Entrepreneurship is an important vehicle. There is a need to identify the barriers particularly to green entrepreneurship. Therefore, entrepreneurs and researchers need to work together. There needs to be platforms for such engagements. The market place therefore needs to cater for green entrepreneurship while policy makers should consider an enabling framework. Through engagement between SMMEs and policy makers, this session aimed to reveal grassroots

initiatives and barriers for green economy action by SMMEs. This Symposium was coordinated by SEED, a key partner and global organisation that was co-founded during the 2002 World Summit for Sustainable Development in Johannesburg. SEED's role was defined as one that provides much-needed research and innovation support for SMMEs in the green economy space, including capacity building and funding of social and environmental enterprises. SEED research focuses on investigation of the triple bottom line, performance, analysis of SMMEs and case studies on seed winners, with research outputs recommendations made for policy makers consideration. Through an innovative format, which promoted debate and discussion among the symposium participants, a number of critical issues were raised in relation to grassroots innovations that support a green economy transition.

Some of the key discussions included the need to consider a manufacturing value chain that has value add within the communities. The need was identified on addressing SMMEs limited routes to market and finding experts in areas of value chain analysis. Another area identified is long procurement processes. Within the national system of innovation coordination, there is a need to ensure that SMMEs start-ups are assisted from conceptualisation with Universities to partnering with industry for development. In the context of green jobs, skills such as those of artisans are to be considered over and above Masters and PhDs. Such artisans are identified to play a role in areas such as retrofitting and manufacturing. Partnerships and incubation business development models are also identified as useful to support green SMMEs particularly in minimising operating and labour costs. Some of the challenges identified include:

- Survival
- Research and innovation not naturally seen as priority in a formal way
- Basics of running enterprise
- Scalability and sustainability
- Financial management skills
- Cost of technology often high
- Youth engagement

Innovative programmes such as the incubation programmes of the Innovation Hub and the Industry Meeting Science workshops of DST, could play a role in supporting green SMMEs. Key questions require attention such as, how are we managing the gaps between national and local spheres? And what tax benefits are in place for green SMMEs?

While green innovations in waste and energy are often facilitated, it was indicated that those in biodiversity and land use practices are also important. Such initiatives in the biodiversity sector included the national biodiversity and business network (NBBN), IPBES on science-policy-practice, fellowship programmes, capacity building and technical support centres. The co-benefits between climate change and biodiversity are also identified as crucial. Initiatives such as the Biodiversity Economy Strategy can ensure an embedded value chain approach is adopted to address the role of SMMEs in the biodiversity sector.

A detailed report for this SEED Symposium on the role of entrepreneurship and SMMEs is available on SEED's Website: https://www.seed.uno/images/reports/SEED_SA_Symposium_151002.pdf

3.5. Local government green economy and climate change readiness

Local government is identified as key to implementing green economy action. The DEA presentation on the green economy policy framework provided the policy context for local action. The enabling “green economy” policy environment, including key frameworks, was outlined as an introduction to the proposed environmental sustainability policy action plan, a 3-point plan to mainstream and scale-up green policies in the context of sustainable development. The approach to developing the environmental sustainability policy action plan was discussed as a potential successor tool for the National Strategy for Sustainable Development and thus for implementing the National Development Plan environmental sustainability transition. The tool was described as intending to implement and manage the transition in line with NDP commitments such that it prioritises actions for firstly supporting the emerging green initiative, secondly scaling existing green sectors and lastly facilitating the greening and retrofits in resource inefficient sector. Such an instrument should facilitate “policy shedding” and allow appropriate alignment and consolidation of the vision of the NDP.

The 278 municipalities in SA are identified as key focal points for implementing actions which can promote green economy transition and low carbon development since they play a critical role in delivering on the mandate to deliver a safe and healthy environment for all South Africans. One of the critical challenges at the local level is reportedly to mainstream climate change and green economy in the municipal planning processes. While the work of the climate change champions committees have been active in mainstreaming climate change in municipalities, climate change responses are linked to municipal mandates in various ways such as land-use planning, building codes, water and electricity supply, infrastructure and conservation. This status overview of green economy and climate change activities at municipal level indicated that municipalities are already at various stages in the transition to a green economy. While the metros and secondary cities are already investing in some economic sectors (energy, waste, water and housing), other municipalities are still focused on delivering basic services.

Key constraints have been identified, such as financing models and institutional readiness. While municipalities could already begin to integrate climate change and green economy principles by delivering basic services in an environmentally-efficient way, there were several factors highlighted in the SALGA presentation:

- Municipalities need more adaptable investment frameworks;
- Transition to a green economy should be seen as a progression towards zero emissions;
- Local government need to craft a position on low carbon development, and provide an estimate of what it will cost (finance, skills, capacity) to transition to a green economy.

The session continued with a focused discussion of the study by Professor Godwell Nhamo that investigated the green economy readiness of several municipalities in SA. This study was conducted by UNISA and SALGA in seven district municipalities in SA using six pillars of readiness. The municipalities were discussed in context of (1) first order and second order green economy readiness, (2) risks and (3) value chain understanding and thus job creation potential of green economy transitions.

The second order readiness municipalities were highlighted as those which may benefit from **leapfrogging**. Among the municipalities identified as having second order readiness are the Amatole, West Rand and Namakwa District Municipalities. Suggestions were made for using the environmental sustainability policy action plan as an opportunity to do things differently and to address the political leadership and vision that can translate into organisational vision.

Subsequent presentations focused on local actions and initiatives which illustrate how climate change and green economy can be mainstreamed in service provision. The eThekweni Municipality Community Reforestation Programme, supported by the DEA National Green Fund, focuses on indigenous biodiversity restoration, social development & poverty alleviation by rehabilitating degraded municipal land (of high ecological value) with indigenous trees grown and supplied by surrounding communities. The programme that has been up-scaled to three communities, has yielded both environmental and socio-economic benefits, and has improved the resilience of both communities and ecosystems to climate change. Another national Green Fund supported project, the iShack project, implemented in Stellenbosch Municipality, seeks to develop and demonstrate a scalable and sustainable social enterprise model for an off-grid solar

energy service in an informal settlement. Like the previous initiative, this project has resulted in a number of economic, social and environmental benefits, most important bringing a clean, affordable source of energy to informal settlement dwellers. This project also illustrated the innovative use of the Free Basic Electricity grant which is being accessed to subsidize the provision of this energy service. A presentation by private sector initiatives in the energy sector reinforced the importance of increasing the energy mix in SA, and introducing innovative off-grid electrification solutions amid the growing energy crisis in South Africa.

4. Conclusion and recommendation

This report contributes to DEA's efforts towards understanding and implementing green economy transitions in the context of sustainable development. As part of implementation of the Environment Sector Research, Development and Evidence Framework, this report shares the key messages from selected conference deliberations. The key messages for policymakers include highlights on the role of partnerships, initiatives, support, action, transition, innovation, mainstreaming, drivers, long-term impact and integration in the green economy. Multi-stakeholder partnerships with academia, practitioners, business and society have a role in gathering and use of such evidence in the green economy policies. The conference key messages triggered a need for on-going action. To further unlock and scale efforts, it is recommended that various multi-stakeholder engagements continue beyond this first international conference on innovation for sustainability under climate change and green economy.

Key messages:

Partnerships Drivers
Transition Initiatives
Support Action
Innovation long-term integration
Mainstreaming

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