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KWAZULU-NATAL PROVINCIAL GOVERNMENT

DEVELOPING A STRATEGY FOR A GREEN ECONOMY IN KWAZULU-NATAL

VOLUME 4: GREEN ECONOMY STRATEGY FOR KWAZULU-NATAL PROVINCE

FINAL REPORT

Submitted by
School of Built Environment and Development Studies
in partnership with FutureWorks!

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1. Introduction

1.1 Project Background

The KwaZulu-Natal Department of Economic Development and Tourism (DEDT) identified the need to transform the province's economy to a green economy, in line with national policy. DEDT therefore initiated a project in the second half of 2010 to better understand and promote the green economy in KwaZulu-Natal (KZN). The first phase of the Green Economy Project (Unlocking the KwaZulu-Natal Green Economy) was completed in February 2011 with the production of a literature review to define the green economy, and a sector analysis of green economy activities in KZN Province, which identified priority areas and interventions for greening the provincial economy. Sector and multi-stakeholder workshops were conducted to augment the sector analysis, and to initiate a collaborative process with key stakeholders to stimulate and unlock the green economy. By harnessing interest around the green economy, this interactive process resulted in the beginning of a green economy 'community of innovation', or green economy hub. Most of the stakeholders interviewed and those involved in the workshops indicated that they would like to develop partnerships with government to drive the green economy initiative forward.

The findings of the research were presented to DEDT and the provincial government economic and infrastructure clusters in Pietermaritzburg during 2011. As a result of these presentations, DEDT indicated that it would be appropriate to develop a Green Economy Strategy for the Province of KwaZulu-Natal. Both the process and the products of this second phase of the project will facilitate, support and enhance the relationship between provincial government (in this case DEDT), the private sector and civil society through the development of a Green Economy Strategy. The outcomes of this phase are both:

a) Process orientated, in that a green economy 'community of innovation' (competency group or forum) have been further developed and supported by DEDT and the project team, and
b) Product driven, as a Green Economy Strategy has been developed.

1.1.1 Aims and Objectives

The aim of this project was to support DEDT in developing a Green Economy Strategy for KwaZulu-Natal.

The objectives of the project were to:

a) Produce a literature review of green economy strategy approaches (Volume 1);
b) Review legislation and policy in relation to the green economy (Volume 2);
c) Develop a set of guiding principles for the green economy in KwaZulu-Natal (Volume 3); and
d) Develop a short and medium term strategy for the green economy in KwaZulu-Natal (Volume 4)

This report (Volume 4) responds to the final objective by presenting a Strategy for the Green Economy in KwaZulu-Natal, the implementation of which will be championed by DEDT.

1.1.2 Project Team

The project has been undertaken by the School of Built Environment and Development Studies (BEDS) (formerly the School of Development Studies), of the University of KwaZulu-Natal (UKZN). The School is interdisciplinary in that it focuses on 'development' in its broadest sense, including its economic, social, environmental and governance dimensions. The project team comprises both academics and consultants as follows:

a) School of Built Environment and Development Studies, UKZN: Cathy Sutherland, Dianne Scott, Vicky Sim and three Masters students– Francis Sibanda, Nduta Mbarathi and Marita Lervik.
b) FutureWorks!: Nicci Diederichs, Myles Mander and Michael van Niekerk.

1.1.3 Methodology

The project is an action research project as the research process forms part of both the development and enhancement of the Green Economy Strategy and the 'Community of Innovation' for the green economy in KZN. The project has produced knowledge and empirical research as part of its research and development component using a wide range of research methodologies. The process of action research is an iterative process that shares the knowledge produced by the research with the participants. This in turn generates further learning amongst participants which has been supplemented by their involvement in the development of the Green Economy Strategy. The project has contributed to the production of knowledge around the green economy both from an academic and practical perspective and it has led to tangible outcomes in the form of a Green Economy Strategy that can be supported and funded by the Province, as well as continuing to build capacity, knowledge and relationships within the Community of Innovation.

The methodology used to develop the KwaZulu-Natal Green Economy Strategy included a range of research approaches:

1. A literature review of green economy approaches and strategies was completed by the research team and submitted as Volume 1 of this report.
2. Legislation and policy that is relevant to green economy approaches in South Africa was reviewed. The primary legislation and policy that is aligned with the green economy in KwaZulu-Natal was abstracted and used to inform the development of the Green Economy Strategy. This review is presented in Volume 2 of this report.
3. The research team held a planning workshop to define the main principles for the green economy in KwaZulu-Natal and to identify the three goals against which the objectives of the strategy would be implemented.
4. The literature and legislative policy review, as well as the knowledge produced in the first phase of the project, Unlocking the Green Economy in KwaZulu-Natal, was used to inform the development of the green economy principles
5. The research team held a workshop on 31 January 2012 with the main stakeholders from DEDT to define the principles of the green economy and to obtain their insights as to how the green economy could be positioned institutionally within the Province (see Appendix A for list of interviewees and workshop participants).
6. Interviews were conducted with the main stakeholders in the project to obtain their input in to the development of the strategy for the Province (see Appendix B).
7. A draft Green Economy Strategy for KwaZulu-Natal was compiled by the research team and presented to DEDT on 13 March 2012. Feedback from this presentation as well as DEDT's review

of the draft report has been integrated in to the strategy to produce the 'Strategy for a Green Economy in KwaZulu-Natal'

As a point of departure for developing the strategy, the research team considered different definitions and approaches to developing strategies both globally and in South Africa. The outcomes of this research are presented in Volume 1 and are summarised below.

1.2 What is a Strategy?

"A strategy is a roadmap for the future – the direction an organisation is headed, the position it intends to stake out, and the capabilities it plans to develop" (Thompson and Strickland 2003). The principle behind the development of a strategy is to position KwaZulu-Natal is in such a way that it can claim its place in the emerging national and global green economy by building on its inherent strengths. In order to do this, KwaZulu-Natal has to develop its distinct green economy competencies or capabilities, which will over time, build the competitive position of the province.

"Strategic thinking is about making the best use of what will always be a limited amount and quality of resources" (Hanford 1983). A realistic and focused strategy is therefore crucial when it comes to decision making regarding the allocation of resources, both public and private[1]. This is particularly important in KwaZulu-Natal where resources are limited or where the benefits associated with the use of available resources are not maximised. A strategy is also important for mobilising and aligning the vision and efforts of different stakeholders who are operating within the various sectors that interface with, or are part of the work that is facilitated by DEDT. There is often a tendency within government to focus on planning and not strategy, resulting in short-term, ad-hoc, quick fixes, which do not contribute to a long-term vision.

"Above all, strategy is about understanding what you do and don't control, and what is certain and uncertain about the future – and knowing when to change direction to avert unintended, and possibly tragic, consequences" (Sunter and Ilbury 2007). Strategy is therefore about developing a better understanding of the value of the economic and social-ecological systems within KwaZulu-Natal and responding to them through the development of short, medium and long term visions, principles, objectives and actions. This includes identifying where comparative and competitive advantages exist, and what is and is not within provincial governments' sphere of control. In doing this, KwaZulu-Natal will be better able to build on its strengths in the face of resource constraints, future uncertainty and global market conditions, thereby reducing the dependency of the province on stakeholders outside of its sphere of influence, as well as, its vulnerability to external shocks beyond its control.

2. Defining the "Green Economy"

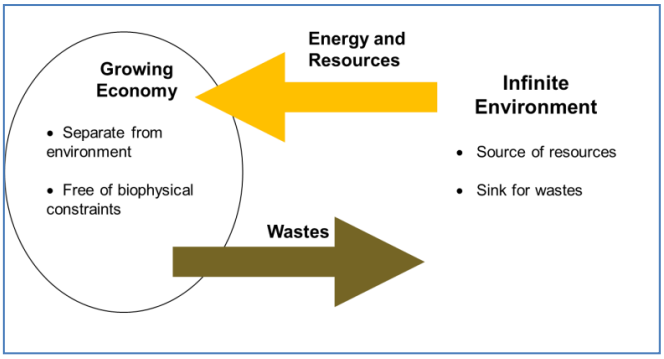
2.1 What is the Green Economy?

[1]Based on a 2010 working paper entitled *Sustainability Strategy Formulation Framework* prepared by Colin Mitchell of MesoPartner for the Jozini Sustainable Development Plan.

"New ideas are by their very nature disruptive, but far less disruptive than a world running low on drinking water and productive land, set against the backdrop of climate change, extreme weather events and rising natural resource scarcities" (Steiner, 2011)

A green economy approach reflects a shift in thinking from a 'business as usual' neo-liberal economic approach, which considers the environment as an infinite resource from which to grow the economy, to one that recognises that the environmental system has thresholds or limits, and that the economic sub-system should be embedded within, and shaped by, the environmental assets and services available in a particular region – see Figure 1 below. A shift to the green economy thus involves the restructuring of business, infrastructure and institutions towards more sustainable (green) production, consumption and distribution processes, creating new economic opportunities and green jobs. Beyond this, the green economy needs to respond to issues of social justice, equity and the creation of decent jobs and sustainable livelihood opportunities, particularly important in KZN's economic and social context. The green economy is therefore defined as an economy that "results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP, 2010). This integrated definition of the green economy thus includes concerns for both the 'green' and the 'brown' issues in the green economy.

From "Business as Usual": Environment is Infinite



To Green Economy: Emerging Business Realisation that Environment in Finite

Figure 1: Green economy shifts in thinking

The green economy is not only about "greening the brown" i.e. retrofitting how we do things and ensuring that issues of social justice and equality are incorporated into economic growth. It is also about "unlocking the green", which involves a fundamental change in how green resources are perceived, i.e. unlocking a market for both the rehabilitation and use of environmental (public) goods and services, which currently does not exist. The green economy approach represents a

number of important shifts: a shift to the goal of 'resilience' rather than growth, a shift to greater social justice and equity, and "investing in the management of the environmental asset base", all of which contribute to the resilience of the economy (IIED, 2009, 4).

Consequently the definition of the green economy specific to KwaZulu-Natal is:

"The development of an economy where there is a shift toward the goal of 'resilience' rather than growth, greater social equity and justice, and investment in the protection and enhancement of the environmental asset base, thereby reducing environmental scarcities and risks."

2.2 Why Shift Towards a Green Economy?

The shift towards a green economy both globally and in South Africa has been driven by four main factors:

1. The dominant economic paradigm of neo-liberal economic growth has been challenged by the recent global economic crisis and this presents an opportunity to replace the previous economic paradigm with one that is more resilient, i.e. more green.
2. Growing global fear of irreversible environmental damage, which is, in part, reflected in the need for climate change adaptation due to increased vulnerability and risk.
3. Recognition of increasing global inequality and poverty and the inability of millions of people across the world to meet their basic needs in terms of food, shelter, water, energy and quality of life and to participate fully in society (Stiglitz *et al*., 2010).
4. A shift in economic theory and policy toward the goal of 'resilience' rather than growth. This includes a shift to greater social justice and equity, and "investing in the management of the environmental asset base" – both of which contribute to the resilience of the economy (IIED, 2009, 4).

2.2.1 Addressing the global economic crisis

In 2008, the world experienced the greatest economic depression since the Great Depression of the 1930s. For the first time in decades, the global economy experienced negative growth (-10.6%) and the loss of millions of jobs (between 18 and 51 million jobs worldwide)[2]. In South Africa alone, over 1 million jobs were lost between 2008 and 2009[3]. The financial crisis had an adverse impact on economic and social conditions in many parts of the world as it generated increasing government debt and pressures on international funding institutions.

In addition to the financial crisis,

- The price of staple foods nearly doubled between 2005 and 2007, peaking in 2008. As a result, the number of people threatened by hunger and malnutrition rose to one billion.
- Oil prices increased to almost US$ 150 a barrel in 2008. As a result, the rising production and transport costs increased the price of goods, such as staple foods.

At the same time, South Africa experienced a severe energy crisis with demand exceeded supply, resulting in rolling electricity blackouts.

[2] Barbier (2009)
[3] RSA (2010)

As with the 1930s recession, a similar initiative to Roosevelt's 'New Deal' was needed to revive economic growth, ensure financial stability, and create jobs. A number of countries began to develop and implement direct stimulus packages which totalled more than US$ 2,760 billion[4]. The value of South Africa's fiscal stimulus package was US$ 7.5 billion[5].

During the height of the global financial and economic crisis, the United Nations Environment Programme (UNEP) launched the Green Economy Initiative. The purpose of this initiative was to encourage governments to apportion a significant percentage of their stimulus packages to the following five critical areas[6]:

- Energy efficiency in old and new buildings.
- Renewable energy technologies e.g. wind, solar, geothermal and biomass technologies.
- Sustainable transport technologies e.g. hybrid vehicles, high speed rail and bus rapid transit systems.
- Restoring ecological infrastructure e.g. freshwater ecosystem, forests, soils and coral reefs.
- Sustainable agriculture e.g. organic production.

UNEP referred to the use of these targeted investments to promote low-carbon economic growth and clean production as the 'Global Green New Deal'. Their research showed that these targeted investments have the potential to not only revive the global economy and to create jobs, but also to address emerging environmental challenges, such as climate change and ecosystem degradation. Further to this, governments can use these investments, when coupled with domestic policy reforms, to green their economies and to initiate the transition towards a 'green economy'. The Global Green New Deal and Green Economy Initiative (2010) were launched by UNEP "as both an antidote to current economic woes and as a springboard to a low carbon, low impact, high job generating and better managed global economy".

Table 1: Summary of stimulus packages and their green components[7]

				Power		Energy efficiency				
Country	Total stimulus (US$ billion)	'Green' stimulus (US$ billion)	'Green' stimulus (%)	Renewable	CCS/other	Building efficiency	Low carbon vehicle	Rail	Grid	Water/ Waste
Korea	38.1	30.7	80.5			6.19		7.01		13.89
EU	38.8	22.8	58.7	0.65	12.49	2.85	1.94		4.86	
China	586.1	221.3	37.8				1.5	98.65	70	51.15

[4] Strand and Toman (2010)
[5] UNEP (2009)
[6] Barbier (2009)
[7] Strand and Towman (2010): 8

France	33.7	7.1	21.2	0.87		0.83		1.31	4.13	
Germany	104.8	13.8	13.2			10.39	0.69	2.75		
US	972	112.3	11.6	32.78	6.55	30.74	4.76	9.92	11.92	15.58
SA	7.5	0.8	10.7			0.1		0.59		0.1
Australia	26.7	2.5	9.3			2.48				
Canada	31.8	2.6	8.3		1.08	0.24		0.39	0.79	0.13
UK	30.4	2.1	6.9			0.29	1.38	0.41		0.83
Other EU	308.7	6.2	2	1.9		0.4	3.9			0.03
Spain	14.2	0.8	5.8							
Italy	103.5	1.3	1.3					1.32		
Japan	485.9	12.4	2.6			12.43				
India	13.7	0	0							
Thailand	3.3						1.8			
Denmark				0.9			0.9			
Chile	4									
Total	**2,796**	**436**	**15.6**	**38**	**20.1**	**66.8**	**15.9**	**121.8**	**91.7**	**81.6**

As shown in Table 1 above, approximately US$ 436 billion or 15.6% of the world's stimulus packages were directed into the critical green sectors identified by UNEP. South Africa invested US$ 800 million, or 10.7%, of its direct stimulus package into reviving its rail infrastructure (US$ 590 million), energy efficiency in buildings (US$ 100 million), and water and waste management (US$ 100 million)[8].

2.2.2 Growing concerns about environmental degradation and risk

There has been growing awareness and concern about the impact of human activities on the world's environmental systems. These concerns are not new and have been debated throughout history, emerging as a collective set of ideas around the 'environmental crisis' in the 1960s, as the global environmental movement began to take form. These concerns have gained political favour at certain times and have been less prominent at others, as economic growth and political security have dominated the global agenda. However, global concerns about climate change, which have increased over the past decade, have re-asserted and raised the political profile of the environmental crisis and environmental risk. The scientifically well-established argument that the current economic system is not sustainable and is having significant impacts on the integrity of the worlds' ecosystems has once again been highlighted. According to UNEP (2011) several connected environmental crises have unfolded during the last decade: climate, biodiversity, fuel, food, water, and more recently, the global financial system. Figure 2 below shows the extent to which the world's major systems have been degraded and stressed by human activities. There is thus growing concern that environmental degradation is happening at a pace and scale that threatens social, economic and ecological systems both globally and locally. It is argued that these "seemingly far off concerns are becoming a reality with sobering implications for not only achieving the UN's Millennium Development Goals, but challenging the very opportunity for seven billion people – rising to nine billion by 2050 – to be able to thrive, let alone survive" on the planet (UNEP, 2011, p 7).

This is supported by the critical environmental challenges raised in UNEP's (2011) Green Economy Report:

- Freshwater scarcity is already a global problem, and forecasts suggest a growing gap by 2030 between annual freshwater demand and renewable supply (McKinsey and Company 2009);

[8] UNEP (2009)

- Over 1.1 billion people lack adequate sanitation and 844 million people still lack access to clean drinking water (World Health Organization and UNICEF,2010);
- There are persistent social problems, such as job losses, socio-economic insecurity, disease and social instability in many parts of the world;
- These crises are severely impacting on the possibility of sustaining prosperity worldwide and achieving the Millennium Development Goals(MDGs) for reducing extreme poverty.

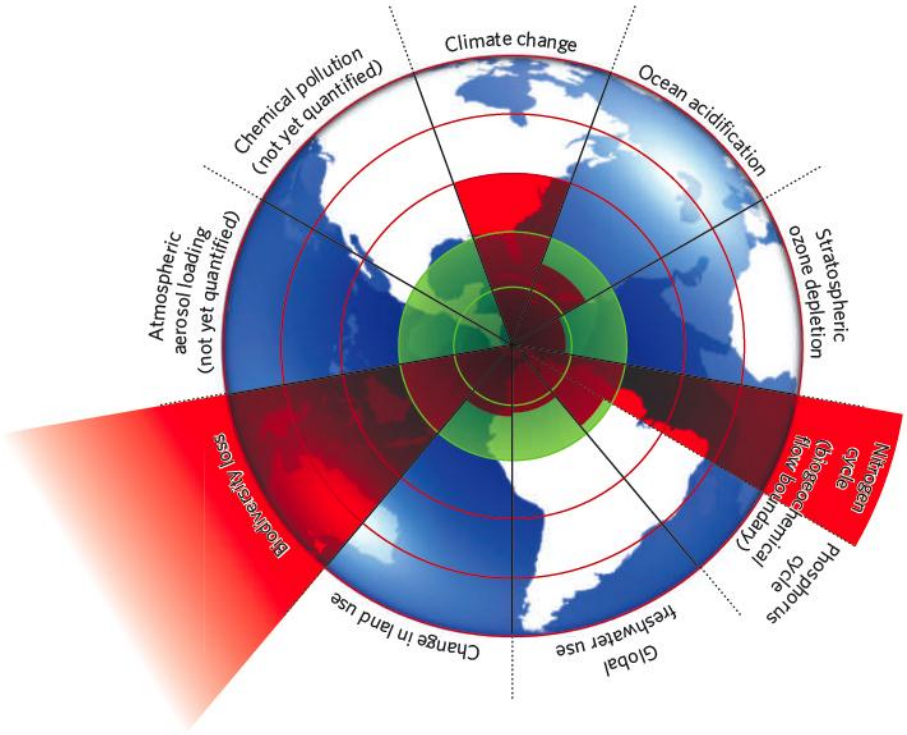


Figure 2: The impact of human activities on the earth's main environmental systems – the inner green shading represents the proposed safe operating space for nine planetary systems. The red wedges represent an estimate of the current position for each variable. The boundaries in the three systems (rate of biodiversity loss, climate change, and human interference with the nitrogen cycle), have already been exceeded.

There are many social, economic and political factors that underpin these crises, but current thinking suggests that they all share a common feature: the gross misallocation of capital (UNEP, 2011). Growth strategies have focused purely on economic growth and the accumulation of financial, physical - and in some cases - human capital. Capital has been invested into property, structured financial assets and fossil fuels. Many argue that the current global economy is a fossil fuel economy, which, by its very nature, is unsustainable. Very little investment has taken place in renewable energy, energy efficiency, public transport, sustainable agriculture, ecosystem and biodiversity protection, and land and water conservation (UNEP, 2011). Rather, this form of economic growth has taken place at the expense of the natural environment, through the continued degradation of natural resources and ecosystems upon which life depends. This pattern of growth and development has detrimental impacts on the wellbeing of current generations and presents tremendous risks and challenges for the future as is evident in the environmental crises we struggle with today (UNEP, 2011).

There is thus increasing recognition that economic growth needs to be de-coupled from environmental resource use, risk and degradation (see Figure 3). Just as the global economic financial crisis has triggered a response to shift toward a new economic paradigm and way of doing things, so too has the environmental crisis. According to UNEP (2011) "there is increasing evidence

of a way forward, a new economic paradigm – one in which material wealth is not delivered perforce at the expense of growing environmental risks, ecological scarcities and social disparities" (UNEP, 2011).

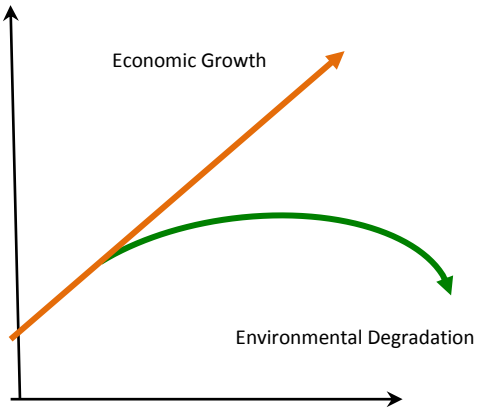


Figure 3: Decoupling economic growth from environmental degradation

2.2.3 Inequality and social justice

Using the term 'green economy' infers that this shift towards a new economic paradigm is about the protection and enhancement of natural environmental systems. However, this is misleading as the green economy is as much about job creation and addressing social inequality and justice as it is about securing and enhancing the natural environmental resource base. The definition used for the green economy, as well as the reasons for shifting towards a green economy, clearly reflects the importance of addressing poverty and social inequality in this new economic paradigm. Although development indicators, such as the HDI[9], suggest an improvement in development across the world over the past 40 years, there is growing concern about increasing inequality and high levels of poverty, particularly in sub-Saharan Africa. This is of particular relevance to South Africa given its history and the inequality produced by the system of apartheid. The Lorenz Curve for South Africa, shown in Figure 4 shows the increasing inequality evident in the country between 1993 and 2008.

[9]Human Development Index.

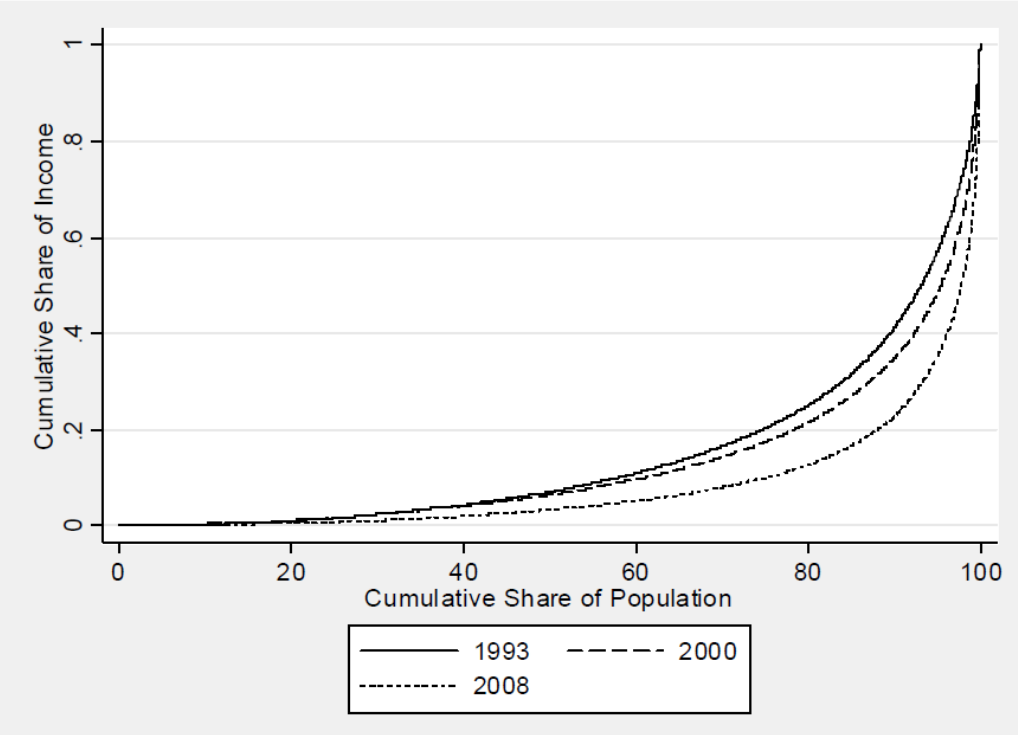


Figure 4: The Lorenz Curve for South Africa (Source Leibbrandt et al, 2010)

Inequality in South Africa is also reflected in the distribution of income across deciles. This is shown in Figure 5. The graph reveals that the top ten percent of earners in South Africa earn approximately 58% of the country's income, while the bottom 50% of earners only earn 7.8% of the country's income. From 1993 to 2008 the share of income accruing to the richest ten percent has increased at the expense of the cumulative share of the bottom 50% of earners.

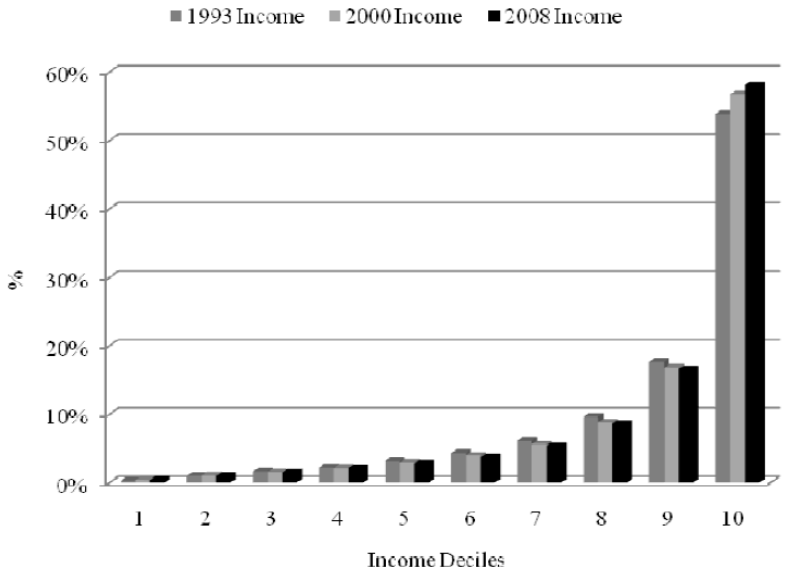


Figure 5: The distribution of income in South Africa (Source: Leibrandt et al 2010)

The data presented above reveals why South Africa is considered to be the most unequal country in the world, and it provides a strong argument for a pro-poor focus in the development of the green economy. As challenging as this problem appears, opportunities for shifting this highly unequal profile exist as a shift towards a green economy has significant benefits and opportunities for the

poor. Research has revealed the nature and extent of job creation that is supported by the green economy, as well as the extent to which it contributes to household income by lowering household costs (IDC, DBSA, TPS, 2012; Euston-Brown, 2012; UNEP, 2011).

The green economy offers the opportunity of securing and improving the environmental resource base, which is critical to poor people, who often survive because of their direct use of environmental resources and who live at a close interface with the environment. Environmental risks and shocks have the greatest impact on the poor and recent research on climate adaptation reveals the impact that climate change will have on the poorest in society, due to their reliance on environmental resources. Figure 6 shows the impact of climate change on mortality globally with the greatest impact being in sub-Saharan Africa. This impact is as a result of the political ecology and political economy of climate change, and not because Africa will experience the worst weather impacts.

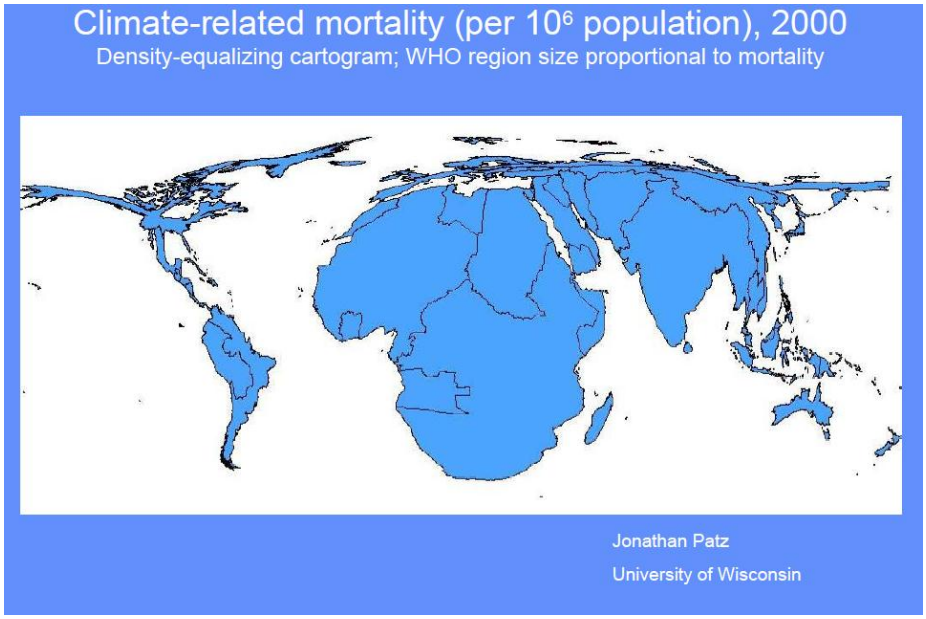


Figure 6: Climate related mortality (Source: Euripidou, 2012)

New forms of employment will be created in the shift towards the green economy which will offer opportunities for those marginalised in the current economic system. The greening of an economy can present substantial opportunities for the creation of sustainable employment through the introduction of new activities in the primary, secondary and tertiary sectors, as the Green Jobs Report reveals (IDC, DBSA, TPS, 2012). The rehabilitation of the environment offers significant employment opportunities for the poor and unskilled, who often live in areas where there is the potential to rehabilitate, develop and maintain critical environmental resources and services, such as in rural KwaZulu-Natal. The green economy will also address spatial inequalities as green infrastructure and industries can be developed in spaces that are currently under-developed but offer significant opportunities for urban centres as they contain the environmental services required for these urban centres to prosper and grow in the future. Urban areas are not self-sufficient in many environmental resources such as water, food and energy and they require critical environmental services from regions outside of their boundaries. This is evident in a comparison of the carbon footprints of the eThekwini Municipality (7.7 tons per capita) and the rural areas of KwaZulu-Natal (1 ton per capita).

Shifting towards a green economy and the resources derived from it, such as renewable energy, food production, clean water and sustainable transport for example, will lower the daily costs incurred by households, thereby directly addressing poverty and reducing the financial load on households in meeting their basic needs. This has significant benefits for those living in poverty and is another way of increasing household income without significantly increasing employment or wages.

2.2.4 Shifting towards resilience rather than growth

Both economic theory and policy has begun to shift toward the goal of 'resilience' rather than growth. This includes a shift towards investing in the environmental asset base and ensuring greater social and spatial equality (IIED, 2009). The type of economic growth that occurs and the extent to which it is coupled with the use of non-renewable or unsustainable resources needs to be examined and challenged as pathways to resilience and the green economy are developed. Figure 7 below provides evidence of the level of economic growth (GDP per capita) in relation to the energy use per person for the BRICS countries. Figure 7 reveals the extent to which economic growth occurs at the expense of the environment, given that energy use is still largely dependent on a fossil fuel economy.

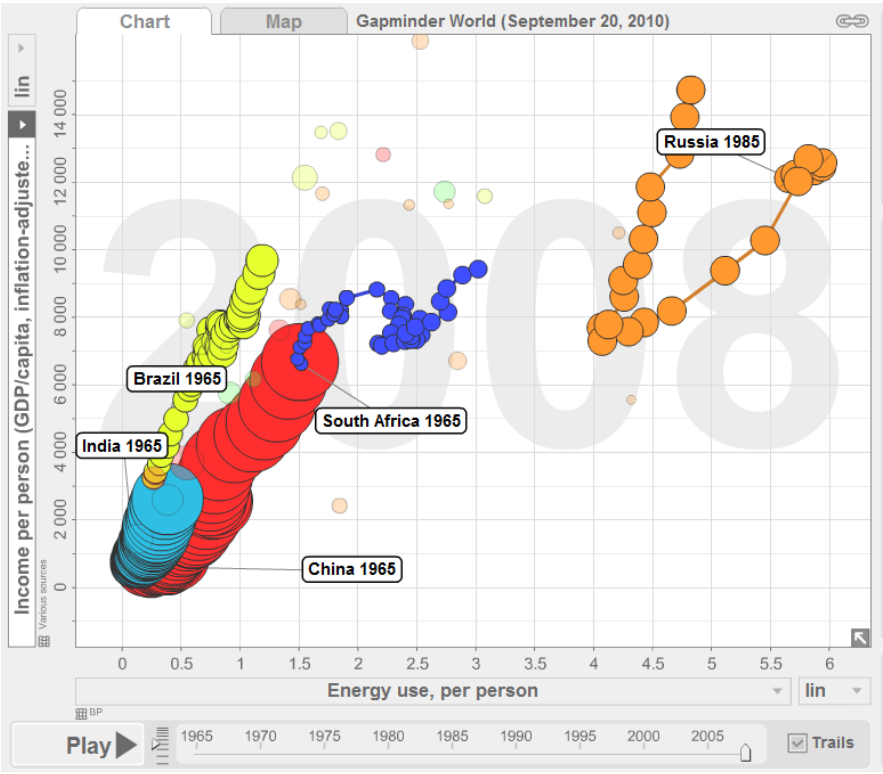


Figure 7: Economic growth measured as GDP per capita and energy use per person for the BRICS countries (Source: du Plooy, 2012)

What is apparent in this graph is that the economies of Brazil, India and China are growing vertically, which means that their economic growth is not dependent on increasing energy use. However, in South Africa's case the situation is very different, as the economy of South Africa is growing, but this growth is highly dependent on energy use, which reveals the country's unsustainable carbon intensive economy (du Plooy, 2012; IDC, DBSA, TPS, 2012). This is shown by the horizontal pattern of South Africa's graph. South Africa therefore needs to find a new growth path that de-couples its growth from the carbon intensive and environmentally destructive path it is currently following. This

requires that the relationship between the different capitals that drive and support economic growth are considered and new ways of using capital (natural, social and economic) are found that creates real wealth rather than merely increasing GDP at the expense of the other forms of capital. As Figure 8 shows, natural capital is currently being depleted which is not a sustainable path to follow.

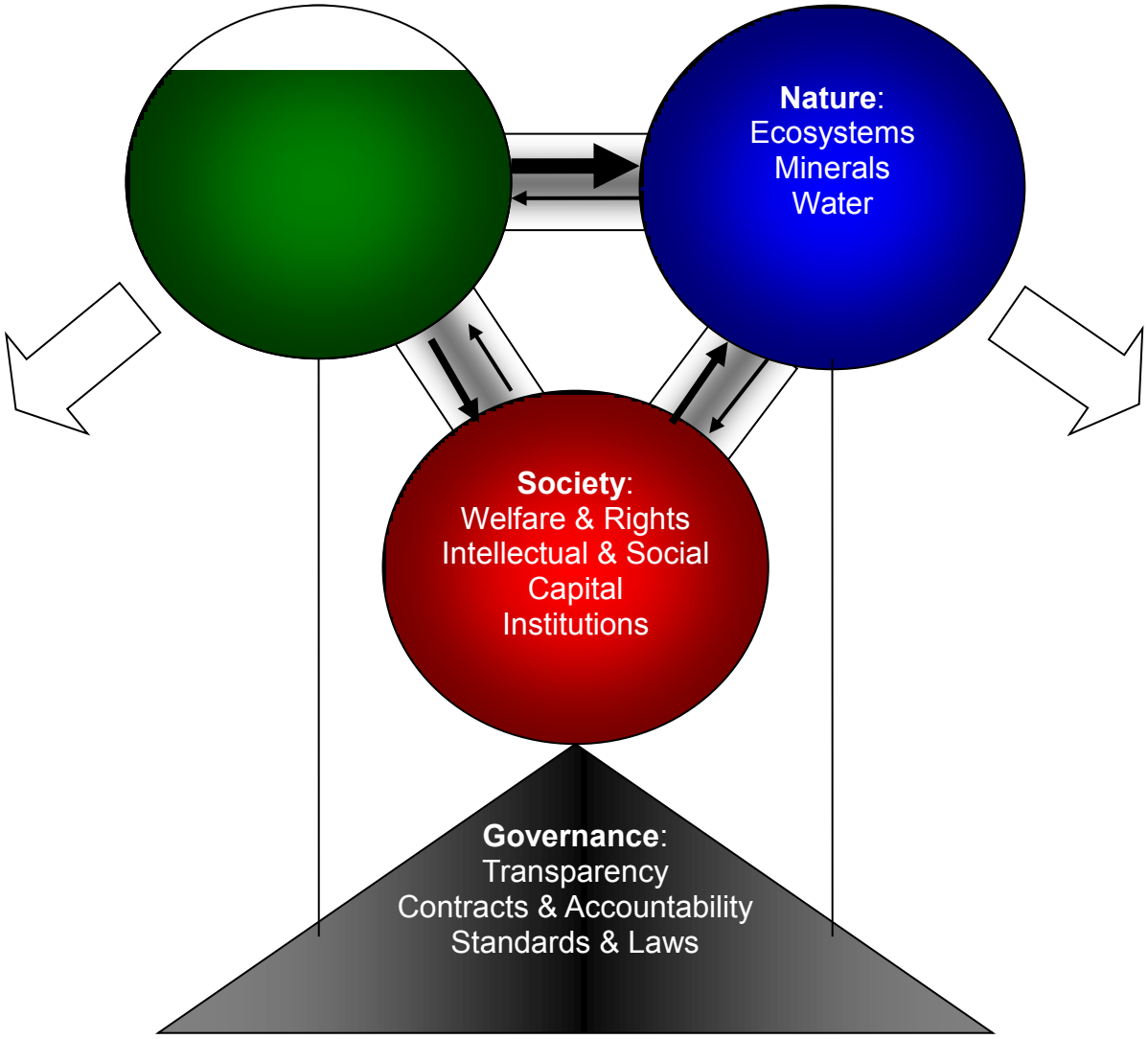


Figure 8: The relationship between the three forms of capital and governance (Source: du Plooy, 2012)

Real wealth is created when all the forms of capital are considered in the development of an economic paradigm that includes social equality, environmental asset enhancement and protection and green economic growth (du Plooy, 2012).

This brief review of green economy definitions and the reason for the shift toward the green economy provides an understanding of existing international, national, and regional green economy approaches so as to inform the development of a green economy strategy for KwaZulu-Natal.

2.3 Definition of Green Infrastructure

Green infrastructure is defined as the physical and organisational structures that support green economic activity. It includes the infrastructure of natural ecosystems, such as forests, grasslands, woodlands, rivers and the natural corridors that link these; and built systems, such as energy, sanitation and water infrastructure, buildings, transport networks and green economic parks and green agricultural zones.

2.3.1 Natural/ecosystem Infrastructure

Natural ecosystem infrastructure (often called bio-infrastructure) includes all natural assets that produce ecosystem services[10]. KwaZulu-Natal's economy is built on its natural assets and their ability to produce ecosystem services, and thus depends fundamentally on these for its ongoing growth and development. In addition to this, many households in the province, particularly those in low income groups or rural areas, depend on the sustained supply of ecosystem services from this natural infrastructure to meet their basic needs and to participate in the informal economy.

While the importance of KwaZulu-Natal's ecosystems is fundamental to both the wellbeing of its residents and sustained growth of its economy, recognition is needed of the fact that these ecosystem services cannot be supplied at optimum levels unless investment is made into managing and enhancing the natural assets / ecosystem infrastructure that produces them.

2.3.2 Green built infrastructure

Green built infrastructure helps shift business and daily life toward reduced use of resources such as energy and water, and reduces waste outputs. Green built infrastructure includes improved public transport systems, such as railroads and mass transit systems, telecommunications infrastructure and ICT, efficient energy, water and sanitation systems, green investment parks, green buildings and green agricultural zones. The development of sustainable agriculture markets that benefit rural communities can be stimulated by the development of green infrastructure, such as improved transport systems and ICT, in spatially marginalised rural areas.

Green economy programmes and projects aim to develop alternative approaches to routine consumption through the provision of green infrastructure. Consumer campaigns will shift ordinary people's behaviour towards these more sustainable options for daily life, ensuring the greatest benefits for the poor as their household costs are reduced. These changes include poverty reducing policies and programmes which are aligned with aspects of green infrastructure such as improved transport, decentralised systems and energy and water saving technologies (UNEP, 2011).

Zoning regulations play an important role in co-ordinating and integrating green infrastructure investments and in prioritising the development of poor areas in an environmentally sustainable way. Zoning regulations which are well designed can play a critical role in creating green corridors that protect ecosystem services. Financing vehicles such as green economy funds are necessary for the development of green infrastructure (UNEP, 2011).

[10] Ecosystem services are produced by functioning natural ecosystems. There are a wide range of ecosystem services which are commonly grouped into the following four categories: Provisioning (e.g. the supply of wood for fuel, water, and medicinal plants), Regulatory (e.g. flood mitigation, water quality improvement), Supporting (e.g. pollination, fish nurseries) and Cultural (e.g. education, recreation) services.

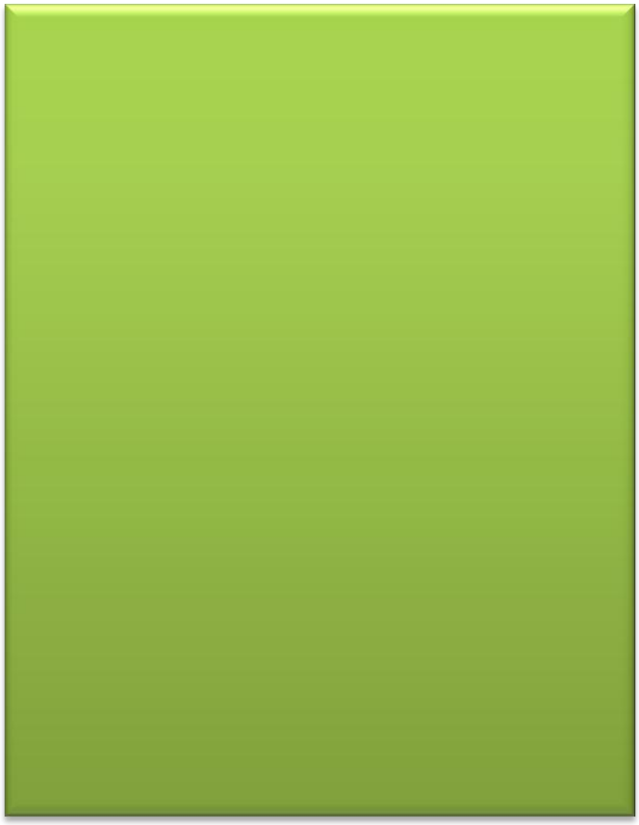
2.4 Benefits of the Green Economy

The transition towards a green economy can provide a range of benefits across all sectors of the economy. Greening the economy "can generate consistent and positive outcomes for increased wealth, growth in economic output, decent employment and reduced poverty"[11]. As stated in the Green Economy Accord[12] the green economy provides South Africa with "a unique opportunity to create jobs at scale and address the concerns about climate change". The New Growth Path sets a goal of five million new jobs by 2020, projecting that a large proportion of these can be created through the growth of the green economy. More than pure job creation, however, the green economy can reduce poverty and create opportunities for more sustainable livelihoods. It can improve quality of life and social equity, particularly in rural areas where people depend on the natural environment for their livelihoods, through the protection and enhancement of the natural environment (and the ecosystem services it provides), hence reducing environmental risks and ecological scarcities[13]. A useful way of unpacking the benefits of the green economy is to divide the key economic sectors into those derived from natural, built and social capital as discussed below.

The New Growth Path (2010) and the Green Economy Accord (2011) focus more strongly on green economy opportunities in the built capital sector. However, it important to note that the greening the natural capital sectors is less capital-intensive and can have far wider impacts in terms of job creation and poverty reduction.

2.4.1 Natural capital sectors

Sectors derived from natural capital (agriculture, fishing, forests and water) have "a material impact on the economy as they form the basis for primary production, and because the livelihoods of the rural poor depend on them" [14]. Green economy opportunities revolve around bringing more sustainable and equitable management to these sectors by restoring and maintaining the ecosystem services on which they are based. Table 2 overleaf provides an overview of some of the key benefits to be gained by greening these natural capital sectors. Research has shown that by taking a greener and more responsible approach to natural resource management (including land-care) in these sectors results in more profitable and productive outcomes (Refer to Box 1).



[11] UNEP (2011: 24)
[12] National Department of Economic Development (2011:6)
[13] UNEP, 2011
[14] UNEP, 2011:24

Table 2: Some of the benefits of greening natural capital sectors:

Agriculture	Fisheries	Water	Forests
Increased profits and incomes for farmers	Increased fishing stock if allowed to be rebuilt to sustainable stock sizes	Quality of life improvements	Climate change adaptation (carbon sinks)
Macro-economic gains	Renewed profitability	Improved health	Biodiversity (natural forest management)
Food security	National cost savings through elimination of subsidies	Time-saving for poor rural communities	Forward linkages to other sectors which have real opportunities for growth and wealth creation (e.g. wood products)
Poverty reduction	Retaining jobs	Enhanced water quantity and quality	Ecosystem services enhanced
Adaptation to climate change		Catalyst for development	
Ecosystem services enhanced			

2.4.2 Built capital sectors

In the built environment sectors (transportation, energy, manufacturing, buildings, waste, cities), there are large benefits to be gained from energy and resources saving. These savings can be "scaled up and become drivers of economic growth and employment, as well as having important equity effects" (UNEP, 2011: 24). Resource efficiency cuts across all of the built environment sectors, and can lead to cost savings, job creation, and the development of new sectors, with the added benefit of improved environmental quality. Table 3 provides an overview of some of the key benefits to be gained by greening some of these built capital sectors. Table 4 illustrates the investment and environmental returns from energy-saving initiatives in a number of manufacturing enterprises in the developing world.

Table 3: Some of the benefits of greening built capital sectors

Renewable Energy	Manufacturing	Waste	Buildings	Transport	Tourism
Enhance energy security	Resource use efficiencies (water, energy and materials)	Reduction in landfill space requirements, thus environmental benefits and cost savings	Resource use efficiencies (water, energy and materials)	Exceptional returns from investment in public transport and vehicle efficiency	Enhanced employment potential
Climate change mitigation	Associated cost savings	Recycling opportunities – labour- intensive, creates more jobs than it replaces	Associated cost savings	Climate change mitigation	Resource-use efficiencies (water, energy, waste)
New employment opportunities	Climate change mitigation	New business opportunities	Climate change mitigation	Job creation in public transport, alternative fuels, and green transport technologies	Greening acts as a selling point
More labour-intensive than traditional energy	New job opportunities in re-manufacturing and new green technologies and innovations	Waste-to-energy opportunities	Health and productivity benefits	Opportunities afforded by increased mobility	Indirect growth opportunities from culture and nature tourism
Cost savings	RE manufacturing	Substantial resource and energy savings	New job opportunities in retrofitting and new buildings		Local economic development and poverty reduction
Process efficiencies	Reduced air pollution, toxic waste and hazards	Reduced CO_2 emissions			Multiplier effects into other sectors of the economy
Mitigation of health and social problems in involved in non-renewable energy production (e.g. pollution)	Improved health and quality of life of surrounding communities	Environmental, health and social equity benefits			
Help to eliminate energy poverty		Compost production supporting organic agriculture			

Table 4: Returns on investments in energy-efficiency interventions in manufacturing enterprises in developing countries (UNEP, 2011: 265)

Countries	Sector	Energy-efficiency initiatives	ROI	Payback	CO_2 savings
Bangladesh	Steel	Reparation of leaks and insulation of pipelines.	260%	3.5 months	137 tons/year
China	Chemicals	Installation of a heat recovery system to recover heat for a CHP.	96%	7 months	51,137 tons/year
Ghana	Textiles	Installation of hi-tech de-scaling equipment for the boiler and steam pipes. Water conservation measures resulted in comparable savings.	159%	4 months	N/A
Mongolia	Cement	Improvements in the dust control system (filter bags) using new electric motors.	552%	2 months	11,007 tons/year
Honduras	Sugar	Replacement of steam turbines in the crushing mill with electric motors, powered by CHP, surplus electricity sold to the grid.	N/A	1 year	N/A

2.4.3 Social capital sector

The green economy supports a wide range of social benefits with a particular emphasis on the poor. It aims to reduce poverty by creating new forms of employment and targeted wealth transfers (UNEP, 2008). It also ensures improved access to and flow of ecosystem goods and services to lower income groups, which will improve their livelihoods and quality of life (UNEP, 2008). The green economy can provide decent work and the prospect of well-being and dignity for all in the face of rapid population growth worldwide and the current exclusion of over a billion people from economic and social development (UNEP, 2008). The green economy will raise living standards by improving access to energy and water, providing reliable and accessible public transport, lowering household costs, cleaning up the environment thereby improving health, and providing higher quality living environments which enhance both physical and social wellbeing. It also supports a participatory approach to knowledge production and so it ensures greater engagement of all actors in decision making.

The informal economy reflects the inequality in the global economy as it reveals the inefficient use and marginalisation of social capital. The green economy may benefit those working within some sectors of the informal economy as it focuses on addressing poverty and inequality and offers opportunities for addressing the harsh working conditions experienced in the informal economy. The Wildlands Conservation Trust Integrated Greening Programme, which has been developed as a special purpose vehicle within the Province of KZN[15], and which includes developing self-employed "greenpreneurs", provides a good example of an approach that could be adopted in using green economy interventions to improve activities within the informal economy.

The informal economy is defined as the diverse set of economic activities, enterprises and workers that are not regulated or protected by the state (www.wiego.org, 23/03/2012, p 1). The informal economy is also defined by the locations within which informal work takes place such as in homes, on the pavement, and in spaces where work is seasonal or temporary (Becker, 2004). The rapid

[15] The KZN Integrated Greening Programme is a partnership programme between the KZN Premier's Office and Wildlands Conservation Trust, aiming primarily to create green jobs through investment in environmental restoration, conservation management, food production and waste management.

increase of informality in terms of income generation is evident in countries of both the north and the south with three quarters of the non-agricultural labour force in developing countries and one quarter of the labour force in developed countries being absorbed into the informal economy (Watson, 2009; www.wiego.org, 23/03/2012, p 1). The informal economy therefore represents a significant share of the global economy and workforce. It has emerged in response to the lack of growth in the formal economy and as a result of jobless economic growth. The recent global recession has also impacted on the growth of the informal economy. Inequality in access to economic opportunities and services has forced the poor to create their own work in the informal economy, which is insecure and often has very poor working conditions (www.wiegro.org, 23/03.2012).

The role and value of the informal economy in economic development has always been contentious. The informal economy can be viewed positively, as it reflects self-sufficiency and innovation in the face of poverty, economic crises and lack of access to formal economic activities. Some would argue that it is problematic as it enables informal workers and entrepreneurs to operate outside of the regulatory and financial (taxation) controls of the state. The informal economy can also serve as a safety net for the working poor as they move in and out of formal employment. In whatever way it is construed, the informal economy is receiving renewed attention as it continues to grow and is emerging in new forms and spaces. The informal economy links poverty, growth, inequality and self-sufficiency. Principles and approaches to the green economy may provide a way of transitioning between the informal and formal economy because of the new forms of employment the green economy creates at a low skill level in local spaces. It may also offer a way of improving working conditions in the informal economy by creating green jobs and green infrastructure that service the public sector. Waste picking and informal recycling activities provide one such example of integrating the informal economy into interventions developed for the green economy.

3. The KwaZulu-Natal Context

3.1 Current Opportunities and Constraints for Building a Green Economy

In 2010, a situational analysis was undertaken of the KwaZulu-Natal (KZN) economy. The purpose of the analysis was to better understand the green economy opportunities and constraints within selected sectors of the economy.

The analysis focused on 15 sectors of the KZN economy. These sectors were identified by the team drawing on an extensive literature review. This included the following:

- Energy – focusing on renewable energy (e.g. biomass) and energy efficiency.
- Sustainable waste management – focussing on recycling.
- Green building and building technologies.
- Agriculture.
- Forestry.
- Fisheries.
- Cities, town and villages.
- Manufacturing.
- Retail.
- Transport.

- Tourism.
- Nature conservation.
- Indigenous natural products e.g. medicinal plants.
- Environmental consulting, policy-making and research.

A review and analysis of each of these sectors was undertaken using a survey of a range of role players in each of the sectors, including government, NGOs, businesses, and professional and technical representative organisations (See Appendix C). These interviews yielded a rich body of information on what was currently taking place in each sector with respect to greening intentions and activities.

As part of the situational analysis, a series of workshops was held to facilitate more focused discussion around four key sectors (i.e. water, food, energy and tourism), to identify critical interventions in specific focus areas per sector, as well as the appropriate support structure/s needed at sector and province level to promote the green economy. The intention was to also use these workshops as a platform for bringing together key stakeholders from different sectors into a collaborative group which would form the start of the 'Community of Innovation' which would drive the development of the KZN Green Economy.

Table 5: Green economy opportunities and constraints for each of the 15 sectors

Sector	Opportunities	Constraints
Agriculture	○ Organic beef sourced from Traditional Authority Areas (60% of beef cattle in SA) – supply markets in Europe. ○ Establish auction yards in rural areas – platform for selling cattle at fair price. ○ Organic farming - allows emerging famers to enter market with fewer barriers. ○ Organic farming - alternative to large-scale land distribution projects which often fail. ○ Traditional crops (e.g. maize) and indigenous vegetables (e.g. African potato). ○ Pack houses in rural areas to sort and package produce – supply (1) formal market (2) informal market (3) subsistence	○ Impacts of poor farming practices are often not immediate – impacts only felt in near future. ○ Lack of incentives for commercial farmers to farm sustainably – maximise returns. ○ Lack skills and capacity – extension officers lack necessary skills and capacity. Emerging farmers also don't fully understand supply chain. ○ Lack of capital for emerging farmers – farming is high risk business – no track record. ○ Supply chain issues in rural areas – unreliable supply. Specialised equipment also required for certain products e.g. refrigerated trucks. ○ Technology available, but difficult to access e.g. finance. ○ Lack of R&D on alternative / organic pesticides, fertilisers etc. ○ Lack of municipal infrastructure in rural areas – good access roads needed to get products to market. ○ Organic farming is viewed as second-rate to commercial farming – not government priority. ○ Lack of market demand for organic products – need to be more visible.
Fisheries	○ Non-consumptive industries - charter fishing boats (catch & release), whale watching, scuba diving, shark diving etc. ○ Potential source of revenue for management of fisheries from recreation sector. ○ Providing alternative fishing / diving experiences e.g. shark diving at Protea Banks. ○ Aquaculture / Mari-culture – But must be done properly. ○ Establish more Marine Protected Areas. ○ Employ and train more monitors to monitor subsistence fishers. ○ Establishment of exclusive subsistence harvesting areas.	○ Low fish stocks do not support viable commercial sector. ○ Subsistence fishers livelihood not sustainable in long-term – need to look at alternatives. ○ Slow transformation of sector – need greater empowerment / equity. ○ Lack of overarching body and standards for some industries e.g. scuba diving. Some boat / dive charters operate unprofessionally. ○ Current fishing permits system – inefficient. ○ Lack of incentives for fringe fishers to comply. ○ Lack of skills and capacity. ○ Lack of R&D – research lacks focus. Funding of marine research not government priority – funding decreased. ○ Lack of institutional support – some government departments do not recognise organisations managing fisheries. ○ Lack of capital – struggle to secure funding for medium to long-term. ○ Lack of local regulations – some of national policies not applicable in KZN.
Forestry	○ Huge opportunities for green economy growth within the forestry sector because of focus on a renewable resource. ○ Significant shifts are taking place within the forestry industry in SA where forestry will become an 'energy industry', rather than being dominated by the current products it produces. ○ Green economy principles and approaches should be integrated into this restructuring. ○ Carbon trading offers opportunities within the forestry sector. ○ Bio-fuels offer particular opportunities.	○ Major constraint is lack of institutional support for green economy initiatives. ○ Collapse of rail system will have a major impact on transport and its impact on the environment in the forestry sector. ○ Need to attract committed youngsters to train in the forestry sector ○ Public knowledge of green economy in forestry needs to be developed.
Indigenous Natural	○ Supply of durable decor fibre products.	○ Poorly organised sector.

Products	○ Traditional medicinal tea products. ○ Indigenous plants for the horticultural industry.	○ Difficulty in meeting commercial volumes of supply with consistent quality. ○ Limited by a focus on art work and not handicrafts. ○ In ability of companies to own the intellectual property they develop in regard to indigenous products.
Energy	○ KZN has high potential for development of wind energy and biomass. ○ Significant opportunities in the sector servicing this market: energy auditing, carbon and GHG disclosure etc	○ High price of renewable energy technologies at household and small business level is a major constraint. ○ REFIT tariffs – hard to qualify for, and exclude small scale producers of RE. ○ Import taxes on RE technologies drive prices up. ○ Companies involved in RE and small and cannot fund R&D – community of fast followers. ○ Market demand still too low to make local manufacture viable. ○ Consumers cannot access finance for RE.
Water	○ Expand eThekwini Green Rivers Programme – EPWP which creates employment and benefits environment. ○ Water allocation reform – readdress imbalances in issuing of permits – support emerging farmers / businesses. ○ Aquifer recharge – safer and more cost effective than above ground storage. ○ The optimisation of watershed services by managing land use and impacts. ○ Watershed management can be enhanced by linkages to carbon trading and tourism. ○ Watershed management can make a significant impact on livelihoods. ○ Link to the DBSA Desertification trust being developed.	○ Lack of incentives to conserve water – low cost. ○ Lack of skills and capacity – difficult to recruit and retain experienced people in government. ○ Lack of access to capital – insufficient funding to meet MDGs. Insufficient funding for implementation of projects. ○ Lack of market demand – cost of water to low. ○ Difficult to establish Catchment Management Agencies.
Waste	○ Develop fail-safe package treatment plants. ○ Buy-back centres – buy waste from informal collectors – provide source of income. ○ Waste for Food programme – social welfare programme. ○ Establish composting centres – collect and process sludge from WWTW. ○ Incineration of non-recyclable waste – generates electricity and reduces landfilling. ○ Secondary industries which use recycled waste e.g. crafts.	○ Lack of technology – fail-safe WWTW. ○ Lack of skills and capacity – difficult to recruit and retain experienced people in government. ○ Lack of education and awareness – widespread littering. Need to target schools etc. ○ Lack of incentives – returns from recycling not high enough to stimulate viable recycling economy. ○ Lack of maintenance of infrastructure – majority of WWTW not properly maintained. ○ Lack of capital – insufficient funding to meet MDG. ○ High waste disposal costs encourage illegal dumping – limit private sector opportunities. ○ Lack of funding in smaller municipalities to effectively operate landfill sites – not priority and seen as expense with no return. ○ Insufficient volumes of waste in small municipalities to support recycling centre – also high transport costs to major urban centres. ○ Lack of regulations – Need to regulate more strictly the types of waste disposed at landfill sites. ○ Permit system for waste contractors creates monopolies. ○ Invisible actors – have hidden interests in certain value chains or materials.
Cities, Towns &Villages	○ Sustainability training programmes and green initiatives like Green Cities programme. ○ Green procurement. ○ Improvements to SDFs and Town Planning Schemes.	○ Skills and capacity ○ Institutional support ○ Regulations & standards ○ Incentives

	○ Information and training to planners. ○ Rainwater harvesting. ○ Solar and wind energy. ○ Reorientation of built form to functional design. ○ Gaps in recycling.	○ Access to capital ○ Research & development
Buildings	○ Transformation & value-add to whole supply chain associated with building & construction sector. ○ Green materials development. ○ Linking rural housing development to food security initiatives. ○ Solar water heating and water savings. ○ Life cycle cost savings. ○ Labour-intensive job opportunities; but must be decent jobs. ○ Reintroduction of apprenticeships. ○ Retrofitting of existing buildings. ○ Facilities management. ○ Second-hand building components market. ○ Neighbourhood mini-grids.	○ Incentives – needs to be thought through carefully & broadened beyond solar. ○ Skills & capacity – decent green job opportunities; apprenticeships. ○ Access to capital – linked to incentives; need to optimise capital. ○ Institutional support – government support lacking due to perceptions. ○ Research & development – dissemination and implementation. ○ Market demand – client not prepared to compromise on building size & aesthetics. Sustainability of rural initiatives. ○ Supply chain issues – importing goods & materials. ○ Green-washing.
Transport	○ Alternative fuels. ○ Materials development and wise and efficient use of materials. ○ Fully integrated and sustainable transport systems. ○ More sensitive road development including greening of road medians. ○ Greening tender requirements. ○ Use of carbon calculators to ascertain carbon footprint. ○ Green vehicle procurement. ○ Road freight transformation (e.g. green containers, improvements to vehicle design). ○ Non-motorised transport. ○ Improved handling equipment. ○ Improved efficiencies in machines and operations management (especially with respect to the port and rail service). ○ Better movement technologies. ○ Green building design (including bus stops, train stations, administration buildings), management and materials. ○ Waste minimisation. ○ Better monitoring systems and equipment. ○ Improved catchment and estuarine management (port). ○ Environmental rehabilitation offers opportunities for environmental education (e.g. barn swallows at Lake Victoria, KSIA). ○ Marketing opportunities.	○ Technology – limited investment and over-reliance on international technology and related transport components design, manufacture, maintenance & training. ○ Access to capital – insufficient government funding. ○ Incentives – these need to be properly managed. ○ Supply chain issues – inadequate and outdated rolling stock (rail and bus); unregulated taxi industry; challenges of coordinating greening efforts due to wide spectrum of stakeholders; over-reliance of road for freight transport; poorly performing rail freight service; operational inefficiencies (port). ○ Research & development – sharing of research; scoping green initiatives. ○ Skills & capacity – retaining skills; over-reliance on consultants; gaps in specialised knowledge; green re-skilling necessary, not new jobs.
Manufacturing	○ Carbon fund for the province. ○ Foreign investors focussing on Africa for growth opportunities. ○ Re-invest in key agricultural assets – making smarter use of fertile agric assets. ○ Part of a global agricultural market. ○ Little value added by port operations in Durban.	○ Not enough bankable plans for green projects for investors. ○ Companies are not investing sufficient capital into green proto-types. ○ Policy frameworks to promote greening are lacking. ○ Procurement process don't allow for innovative supply. ○ Greening is a knowledge intensive industry and we have too little skills in KZN.

		○ Insufficient funds to generate greening incentives. ○ Not enough dialogue in the province. ○ Lack of awareness and confidence for industry to engage in greening activities. ○ Greening perceived as a middle class concern. ○ Relatively weaker growth in KZN compared to other provinces. ○ Not adding value to agricultural assets. ○ Agricultural extension very weak. ○ High costs of logistics externalities being borne in KZN.
Retail	○ Small retailers should focus on niche markets – provide exclusivity, diversity etc. ○ Direct Corporate Social Responsibility towards "greening" projects. E.g. Woolworths, MassMart etc. ○ Informal traders should sell locally made products e.g. crafts in place of imports. Also potential to use waste to make products. ○ Informal traders form cooperatives to supply large retailers – need to assure supply and quality. ○ Government procurement – prioritise local cooperatives / informal traders.	○ Oversupply of retail in some areas – increases risk of failure. ○ Poor town planning – fragmented of retail, commercial and industrial clusters. ○ Lack of "green" building standards and regulations – Green Building Council is voluntary. ○ Lack of incentives for retailers to "green" business. ○ Retailers generally lack of skills and capacity to "green" their business. ○ Lack of R&D to inform retailers. ○ Lack of institutional support for retailers – government slow to respond. ○ Lack of capital for retailers – seen as nice to have rather than need to have. ○ Lack of market demand for small retailers to "green" their operations. ○ Suppliers generally inefficient – need to change mindsets. ○ Lack of diversity in informal trading sector – not viable to sell other manufacturers products. ○ Informal traders lack drive to develop into small businesses – need to change mindsets. ○ Informal traders' lack of technology. e.g. some don't have bank accounts. ○ Informal traders lack formal infrastructure – but needs to be close to market. ○ Informal traders struggle to access capital from banks and grant applications to complicated. ○ Lack of domestic demand for locally made products e.g. crafts etc.
Tourism	○ Sustainable waste management. ○ Corporate social responsibility – putting money back into surrounding communities. ○ Niche tourism e.g. adventure, cultural etc. ○ Develop beach product e.g. Blue Flag Beach initiative. ○ Clustering tourism activities – increase economies of scale. ○ Airline, tour operators – improve vehicle efficiency, offset emissions etc. ○ Establishments source products e.g. food, crafts etc. direct from local community – save transport.	○ Lack of skills and capacity – many emerging businesses lack basic business skills. Also high staff turnover – difficult to train. Government also lack skills and capacity to assist emerging businesses. ○ Lack champion to drive "greening" and has necessary skills and capacity to do so. ○ Lack of regulations – only guidelines encouraging "responsible tourism". ○ Lack of incentives for establishments to "green" operations. In community projects, communities carry all risk. ○ Lack of municipal infrastructure is a challenge. Not priority for government. Little or no infrastructure for some rural community-based projects. ○ Lacks of access to capital – established businesses view it as nice to have but not need to have. Emerging businesses battle to get funding from banks – banks wants immediate returns. ○ Poor alignment and coordination between operators and tourism authorities – no common focus, duplication and gaps. ○ Lack of technology – available, but not easy to access. ○ Lack of R&D – many unanswered questions.

		○ Lack of institutional support – too much red tape. ○ Lack of market demand for community-based tourism. Some projects stand-alone or on fringe. Generally social investment because projects are not economically viable. ○ Supply chain issues for rural community-based projects – difficult and costly to purchase building materials, food etc. ○ Fly-by-night operators. ○ Costly for existing buildings to be retrofitted – less costly for new buildings. ○ Outstanding land claims – discourage investment.
Nature Conservation	○ Watershed management to enhance water security. ○ Water harvesting. ○ Putting supply into peoples' own hands. ○ River water quality management a key opportunity in urban systems. ○ Payments for ecosystem services necessary to promote increases in supply. ○ Large numbers of volunteers in civil society that could be engaged. ○ 10% KZN of land in KZN is fallow agric land - move to organic agric. ○ Recycling waste from schools and households. ○ Protected area expansion to secure strategic resources like water in the southern and northern berg. ○ A KZN carbon fund to finance sustainable land use. ○ Tourism is under-marketed. ○ Green tourism accreditation. ○ Alien plant control programme to improve water and biodiversity security. ○ Develop a schools greening programme.	○ Lack of regulations and standards ○ Lack of formal accreditation processes with common goals and standards ○ Rural areas operate outside of regulatory frameworks ○ Population growth is high with a growing demand for services ○ Perceptions of an 'acceptable standard' of living ○ Agric extension services out of date – selling inappropriate or Eurocentric technology
Environmental Consulting, Policy and Research	Many opportunities to do things differently. CSIR - climate change has led to demand for services from the state. The market is growing and demanding green services. Clients are much more aware – don't have to be pushed to go green. SA has lots of scope. Substantial growth. The green economy is framing environmentalism in economic terms. Knowledge transfer from the North. Very good research infrastructure in SA -opportunities for innovative.	Government must play the key role and get private sector to work with them Lack of regulations and standards & incentives. Government at all levels lacks vision– the tender process is particularly constraining. The municipalities lack incentives to consider the green agenda – they are not compliant with sustainability goals. Lack of institutional support. Lack of market demand for green products. Lack of public awareness and buy-in. Lack of skills particularly at the lower levels in companies. Lack of infrastructure, e.g. rail system for movement of goods. Good policy but lack of implementation. Research needs to be popularised & accessible. Lack of knowledge/ access to information. Lack of integrated thinking. Lack of funding for research – CSIR.

As shown above, there are a number of green growth opportunities within each of the fifteen sectors of the KwaZulu-Natal economy.

There are however also a number of constraints limiting the transition of the KwaZulu-Natal economy towards a greener economy. The majority of these are systematic challenges which affect all sectors of the emerging economy. This is to be expected in new or evolving markets, where there is little history or experience to draw on.

These challenges are outlined below:

- Lack of regulations and standards for the emerging green goods and services.
- Lack of positive incentives to stimulate innovation and adoption.
- Lack of knowledge and/or research and development to reduce the transaction costs of moving into new product or service offerings.
- Lack of skills and capacity in these new green services.
- Limited access to capital to finance untested market opportunities.
- Limited market demand due to public ignorance and lack of regulated standards for green products and services.
- Lack of institutional support for emerging green markets.

Thus, in order to facilitate the transition towards a green economy, this strategy must take cognisance of these constraints and to put in place measures which begin to address these challenges.

3.2 KwaZulu-Natal's Competitive Advantages

KwaZulu-Natal is well endowed in terms of its natural, social, and built capitals. In economic terms, these are referred to as the factors of production which are necessary for producing goods and services, and thereby growing the economy. As shown in Figure 9 below, all three capitals work together like the cogs of an engine, to drive the car i.e. the KZN economy, forward.

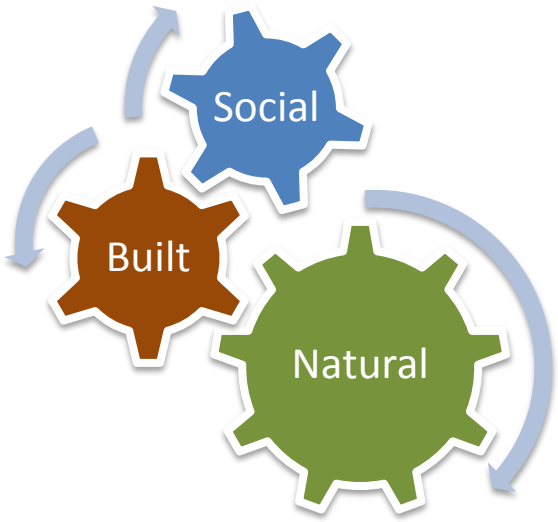


Figure 9: Three factors of production

In comparison to other regions, KwaZulu-Natal has advantages with regards to its natural, social, and built capitals which allow it to produce goods and services more cost effectively. These are referred to as its comparative advantages, some of which are listed below:

3.2.1 Natural Capital

Advantage	Example of benefit to the economy
Reliable rainfall	Reliable water supply for growth of manufacturing and industrial sectors.
Fertile soils	Support productive agriculture and rich biodiversity.
Favourable climate	Popular tourist destination when other regions are experiencing winter.
Variety of bio-climates	Suitable for growing a range of crops.
Diverse landscapes	Contribute to scenic beauty of province and supports a range of tourism attractions and activities.
Unutilised / under-utilised land	Open space for expansion of agriculture / tourism sectors.
Relatively low land costs	Attractive for investment due to greater returns on investment.
Warm ocean	Attractive tourist destination for range of water sports including swimming, surfing and kayaking.
Large natural open spaces	Space for eco-tourism accommodation facilities and adventure activities e.g. mountain biking.
Safe swimming beaches	Attractive tourist destination, particularly for domestic tourists from the hinterland.
Rich floral kingdom	Contributes to scenic beauty of province and therefore its attractiveness as a tourist destination.
Large number of bird species	Popular birding destination (e.g. Isimangaliso Wetland Park has more than 526 bird species).
Wildlife	Popular game viewing destination.
Coral reefs	Popular diving destination (i.e. Sodwana Bay rated as one of top 10 dive spots in world).

3.2.2 Social Capital

Nature destabilizes economy
(e.g. peak oil or climate change)

Advantage	Example of benefit to the economy
Rich cultural heritage	Supports growing cultural tourism sector.
Large skilled / semi-skilled labour force	Particularly in rural areas - support expansion of agriculture and tourism sectors.
Supportive institutions	CEDARA supports improvement and expansion of agricultural sector.
Supportive regulatory frameworks	Financial incentives for manufacturing sector.

3.2.3 Built Capital

Economy destabilizes nature (e.g. greenhouse gas or pollution)

Advantage	Example of benefit to the economy
High level of industrialisation	Support further expansion of industrial sector - second highest in South Africa.
Established manufacturing sector.	Support expansion and diversification of manufacturing sector - contributes 18.4% of province's GDP and 15% of jobs.
Economic activities are generally centred in large urban areas.	Rural hinterland supports large urban areas - Durban, Pietermaritzburg, Richards Bay, and to lesser extent, Ladysmith and Newcastle.
Two large ports i.e. Durban and Richards Bay	Support growing logistics industry.
Good infrastructure i.e. roads, rail, airport, ports, ICT	Support manufacturing and industrial sectors.
Government prioritisation of infrastructure upgrades	Support construction industry, particularly during global recession.
Relatively low building costs	Attractive for investment due to greater returns on investment.
Existing processing / packing facilities	Add value to primary products e.g. fruits and vegetables.
Good tourism facilities e.g. Durban's promenade	Attractive tourist destination.

4. KwaZulu-Natal Green Economy Strategy

4.1 Vision

By 2025, KwaZulu-Natal will be a province where the economy provides opportunities for all its residents to prosper, and where the natural resources are enhanced and used sustainably in supporting basic needs as well as 'green' economic growth.

4.2 High level Aim of the Green Economy Strategy

The green economy is not an additional component of the existing economy or a separate approach to economic development. There is only one economy – the green economy, which means that the current economy must be re-orientated to become the green economy.

The principal aim of this Green Economy Strategy is to support and direct the re-orientation and growth of the KwaZulu-Natal economy to become increasingly competitive and resilient, by:

- Increasing resource use efficiency in business and government infrastructure and development;

- Increasing the supply of renewable energy;
- Securing the supply of ecosystem services from the province's natural assets; and
- Reducing environmental and climate related risks;

and in so doing

- Create sustainable jobs for local people;
- Reduce poverty; and
- Address social equity throughout all regions of the province.

4.3 Principles

The following principles underpin the strategy for unlocking the development of a Green Economy in KwaZulu-Natal:

- **Transformative and growth orientated:** development of a green economy must create green jobs and take place both through the transformation of existing businesses towards more resource efficient practice and the development of new business in green products and services. It must ensure that KwaZulu-Natal focuses on its comparative and competitive advantages.

- **Promotes provincial self-sufficiency:** development of a green economy must strive to improve the capacity of the province to produce its own food, water, energy and local jobs in the formal and informal economy, produce and supply green products and services, thereby improving economic, social and environmental resilience through reduced import dependencies.

- **People focused:** the development of a green economy must place people and their needs at the forefront of its concern. The creation of jobs for local people, and alleviation of poverty in KwaZulu-Natal are primary desired outcomes. The development of a green economy must reduce spatial bias by creating opportunities for people and address environmental risks and capacities in rural as well as urban areas across all parts of the province.

- **Prioritises reducing risks and scarcities**: in order to support the development of a resilient green economy, scarcities and risks associated with water, energy, food, biodiversity and climate change must be prioritised.

- **Recognises different scales of needs and benefits:** the importance of household-level resource efficiency / renewable energy / greening initiatives for poverty reduction and livelihood improvement must not be neglected in favour of only large scale high technology green economy initiatives.

- **Technology-neutral:** government support and investment into green economy development is focused on the desired outcomes of green jobs, reduced resource dependencies, increased supply of renewable resources, and development of green infrastructure, rather than on specific technologies.

- **Evolutionary and responsive**: as global and local economies are rapidly developing in new directions in response to the global recession and increasing environmental scarcity and risk, the development of a green economy in KZN must be allowed to be evolutionary and responsive to changing market conditions over time.

- **Participative and builds knowledge and capacity:** the development of a green economy in an evolutionary and responsive way requires ongoing participation, collaboration, production and sharing of knowledge and building of capacity amongst a wide range of government, private, parastatal and civil society stakeholders.

- **Supports legislative and policy frameworks:** the green economy must be promoted and developed in a way that supports and strengthens achievement of national and regional growth and development targets, and compliance with legislation and policy.

4.4 Goals and Objectives

The strategy is focused around three key goals:

GOAL 1: Leverage the green economy through greening provincial government investments, activities and operations –provincial government can become an active participant in the green economy through using its leverage as a major purchaser of goods, services and utilities to support the transformation and growth of green businesses.

GOAL 2: Create 'Enabling Conditions' for the development of the green economy – provincial government has a key role to play in establishing and/or advocating appropriate conditions for the private sector, NGOs, CBO's, municipalities and consumers to become active in developing the green economy. This may be through setting appropriate regulatory frameworks and incentives, establishing special purpose vehicles, developing green infrastructure, building capacity knowledge and awareness, and measuring change in the green economy.

GOAL 3: Unlock the green economy through turnkey / pilot projects in the green economy – provincial government can support the private sector, municipalities, NGOs and CBOs to participate in and develop the green economy by helping them overcome barriers to the transformation of existing businesses to greener practice, or barriers to the development of new green products and services, where they cannot do this on their own. In some cases, provincial government's role may be to demonstrate, through the development of pilot projects, that an approach, technology or product works which can help to unlock the market for it.

Research and analysis conducted in Phase 1 of this project (DEDT, 2010) identified five key sectors that have the greatest combined job creation and greening potential in KwaZulu-Natal, while also playing to the province's comparative strengths, enhancing rural-urban linkages, and anticipating higher economic multiplier impacts. The Green Economy Strategy recommends that these five sectors, i.e. food, water, energy, tourism, waste and ICT, which was identified in Phase 2, should be the priority areas for the implementation of the Strategy in the province in order to make the greatest gains. However, this does not limit greening activities from taking place across all sectors.

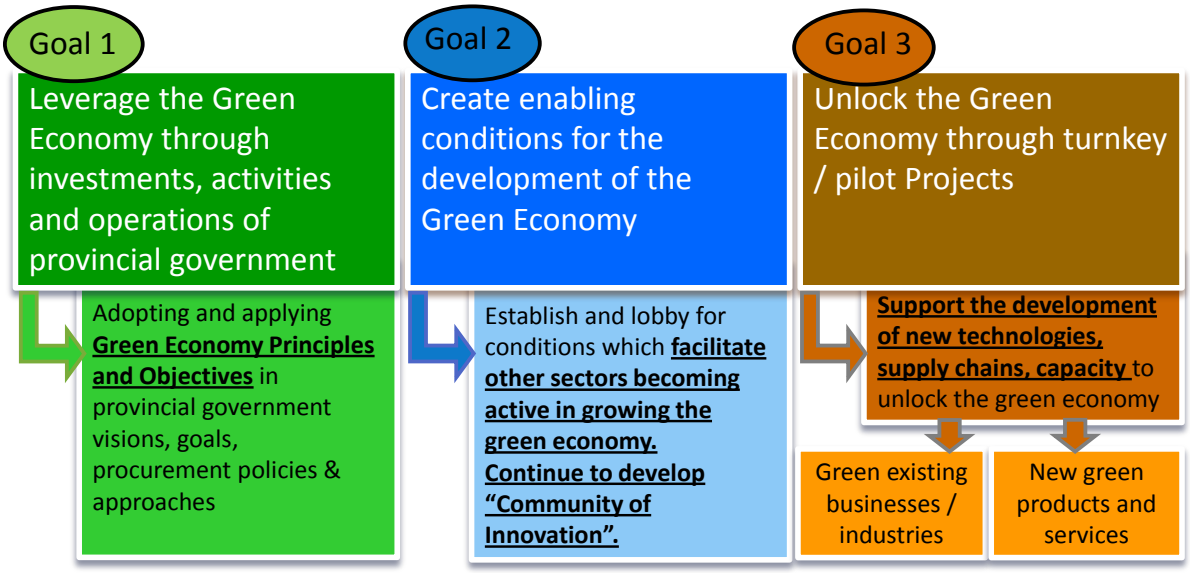


Figure 10: The three goals of the Green Economy Strategy

In order to achieve the Three Green Economy Strategy Goals, a number of objectives have been developed. The achievement of these objectives is measured through key performance indicators (KPI's).

In order to give more detailed direction to the objectives, Implementation Plans will need to be developed for each of the interventions suggested under the objectives.

Table 6: Goal 1 - objectives and KPI's

GOAL 1	OBJECTIVES	KPI's
Leverage the green economy through greening provincial government investments, activities and operations	1.1 Develop a "Green Procurement Policy" for provincial government which addresses purchasing of all goods and services.	1.1.1 Government purchases local products over imported products when available. 1.1.2 Government purchases products and services that are energy and water efficient, and waste saving. 1.1.3 Government tenders include criteria which prioritise businesses that produce locally manufactured goods, and have programmes in place that reduce resource consumption, carbon emissions and polluting outputs, as well as employ local people.
	1.2 Develop a "Green Operations Policy" for provincial government which addresses aspects of ICT, eGovernment, paperless policy, low carbon travel and meetings etc.	1.2.1 Provincial government understands its carbon, water, energy and waste footprints and is able to show reductions in these through smarter operations.
	1.3 Investigate and develop a provincial "Green Infrastructure Policy" which addresses the re-orientation of provincial infrastructure development programmes to promote greener transport, services, development and economic activity zones in KZN.	1.3.1 Green infrastructure policy for KZN. 1.3.2 Indicative carbon, water, energy and waste footprints of infrastructure investments are reduced. 1.3.3 Social costs of infrastructure development are reduced.
	1.4 Develop a "Greening Provincial Buildings" programme which retrofits energy and water efficiency measures, and waste recycling systems, into all provincial government buildings; and addresses the management and maintenance of buildings for sustaining these benefits.	1.4.1 Government buildings have undergone energy, water and waste audits. 1.4.2 Government buildings have been retrofitted in such a way that energy and water consumption is reduced to the minimum possible. 1.4.3 Government buildings use a system of waste minimisation, waste separation and recycling.
	1.5 Develop an employee campaign which raises awareness about energy, water and waste management in the office and at home, and encourages greener behaviour and reduces resource consumption.	1.5.1 Measured change in resource consumption and waste outputs in provincial buildings. 1.5.2 Employee contributions / suggestions received to improve greening of their workplace.
	1.6 Establish capacity within provincial government to champion the integration of green economy principles and objectives into provincial government departments and entities.	1.6.1 Green Economy unit with staff in place. 1.6.2 Levels of integration of green economy principles and objectives into departmental / entity policies.
	1.7 Develop branding and marketing strategy for KZN as a leading Green Economy province in the country.	1.7.1 Branding and branding strategy is developed. 1.7.2 Brand awareness survey reflects growing awareness of provincial government's role in driving the green economy.
	1.8 Regular review of the Green Economy Strategy to ensure it reflects changing understanding, conditions and opportunities.	1.8.1 Green Economy Strategy updated every 3 years.

Table 7: Goal 2 - objectives and KPI's

GOAL 2	OBJECTIVES	KPI's
Create 'Enabling	2.1 Establish a provincial green economy	2.1.1 Working group in place.

Conditions' for the development of the green economy	working group to drive the establishment of appropriate green economy enabling conditions, including lobbying other spheres of government for reform in inappropriate subsidies, integration, creation of new and appropriate certification systems, standards, subsidies and tax incentives, and access to funding.	2.1.2 Revised standards to reflect green economy principles and aims. 2.1.3 New certification systems promoting green economic activity. 2.1.4 Subsidy and tax incentive reforms successfully lobbied for with other spheres of government. 2.1.5 Delivery in terms of below KPI's.
	2.2 Establish a provincial Green Economy Fund to facilitate investment into turnkey and pilot projects.	2.2.1 Provincial Green Economy Fund established and funding streams secured.
	2.3 Establishment of a Green Infrastructure development programme focusing on ecosystem services production, using Payment for Ecosystem Services and other funding sources.	2.3.1 Measured change in hectarages of land managed for ecosystem service supply, climate change adaptation and biodiversity protection. 2.3.2 Increase in the number of people engaged in the management of ecosystem infrastructure.
	2.4 Investigate and establish appropriate special purpose institutional vehicles (including partnerships, agreements, etc) to facilitate implementation of green economy initiatives.	2.4.1 Special purpose vehicles established. 2.4.2 Implementation expenditure per annum through SPV's. 2.4.3 Number of jobs created through SPV's expenditure.
	2.5 Establish a programme to measure changes in business practice, resource consumption levels, renewable energy supply and usage, green jobs, consumer awareness of green products and services.	2.5.1 Production of annual State of the Green Economy report indicating progress in green economy development in the province.
	2.6 Continue to develop and implement the Green Economy Community of Innovation through regular workshops, conferences and campaigns targeting a wide range of stakeholders.	2.6.1 Number of and attendance at Community of Innovation events. 2.6.2 Survey of stakeholders providing feedback on needs for ongoing engagement.
	2.7 Investigate and support the development of curricula and bursary programmes within tertiary institutions which teach green economy principles and approaches.	2.7.1 Number of institutions which have included green economy principles and approaches in their courses. 2.7.2 Number of students trained. 2.7.3 Number of students trained through bursary programmes.
	2.8 Develop a capacity building programme for graduates and professionals in the government and private sectors on green design, technologies and approaches.	2.8.1 Number of professionals trained through capacity building programme. 2.8.2 Range of subjects covered. 2.8.3 Number of internships created.
	2.9 Support the development of Centres of Excellence in research, development and implementation of Green Economy initiatives.	2.9.1 Number, scope and scale of Centres of Excellence established. This is to be reported on in an annual State of the Green Economy Report for the province.

Table 8: Goal 3 - objectives and KPI's

GOAL 3	OBJECTIVES	KPI's
Unlock the green economy	3.1 Develop a renewable energy resources map for the province which identifies potential renewable energy	3.1.1 Project implementation plan. 3.1.2 Securing of funding for the project. 3.1.3 Provincial map of renewable energy resources produced.

through turnkey / pilot projects in the green economy	resources, the availability and distribution of these resources, as well as, potential users.	3.1.4 Updating of map on an annual basis.
	3.2 Establish a programme which identifies and maintains a registry of public and private waste resources, the potential users; and facilitates linking of producers to the users.	3.2.1 Project implementation plan. 3.2.2 Securing of funding for the project. 3.2.3 Provincial registry of waste resources and potential users established. 3.2.4 Registry is spatially mapped. 3.2.5 Updating of registry on an annual basis.
	3.3 Investigate and develop a Payment for Ecosystem Services pilot project in rural KZN to re-orientate the management of catchments and to facilitate the development of a market for water-enhancing activities, thereby creating jobs, increasing water supply, addressing community-climate adaptation, and energy from alien plant biomass.	3.3.1 Project implementation plan. 3.3.2 Securing of funding for the pilot. 3.3.3 Regulatory framework for PES established. 3.3.4 Number of green jobs created.
	3.4 Investigate and develop a model for integrating energy, water and food security systematically into rural developments in order to target poverty reduction and climate adaptation.	3.4.1 Project implementation plan. 3.4.2 Securing of funding for the project. 3.4.3 Number of green jobs created. 3.4.4 Number of households benefitting. 3.4.5 Measured reduction in household costs.
	3.5 Develop and implement a consumer awareness campaign to drive buying power towards products which are energy efficient, water saving, use renewable energy, reduce and recycle waste, are produced organically or under a sustainable certification standard, are safe from harmful substances.	3.5.1 Project implementation plan. 3.5.2 Securing of funding for the project. 3.5.3 Consumer awareness survey presenting extent of saturation of campaign.
	3.6 Investigate and develop green and fair trade certification programmes in a range of sectors targeting job creation, greening of supply chains, transparency in consumer choices, and access to the growing market for green products and services.	3.6.1 Project implementation plan. 3.6.2 Securing of funding for the project. 3.6.3 Number of green jobs created. 3.6.4 Number of businesses or production systems certified. 3.6.5 Volume of trade in sector operating under certification.

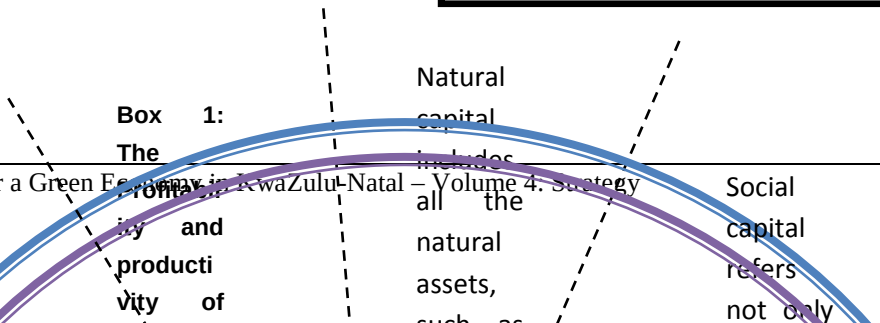
4.5 Organisational Structure

Figure 11 depicts the indicative organisational structure of stakeholders which will have a role to place in the implementation of the KwaZulu-Natal Green Economy Strategy. It consists of a number of rings expanding outwards from the centre. These rings represent groupings of key stakeholders, such as provincial government departments, government agencies, the private sector, NGOs and civil society. In addition, there are several rays which divide these rings into a number of segments. Each of these segments represents one of the 14 sectors which were previously identified as being critical for developing the green economy in KwaZulu-Natal.

As shown below, the KZN Green Economy Strategy is situated at the centre. It is proposed that DEDT will be responsible for championing the Strategy in collaboration with key stakeholders located in the adjacent rings. The second ring represents all the relevant provincial government departments, particularly those which sit on the KZN Provincial Planning Commission. This includes for example the Department of Agriculture, Environmental Affairs, and Rural Development (DAEA&RD), the Department of Water Affairs (DWA) KZN office, and the Department of Human Settlements. The third ring represents all the other key stakeholders. This includes for example government agencies, the private sector, non-government agencies (NGOs) and civil society. The final

ring represents the 'Community of Innovation'. This refers to the coming together of the above key stakeholders, as a group or through networks. This process has already started and is likely to grow through the implementation of this strategy.

Please note that only key role players which were involved in the earlier phases of this research project have been included below. There are likely to be several other key role players which will be critical for the successful implementation of this strategy that will need to be added to the figure at a later stage.



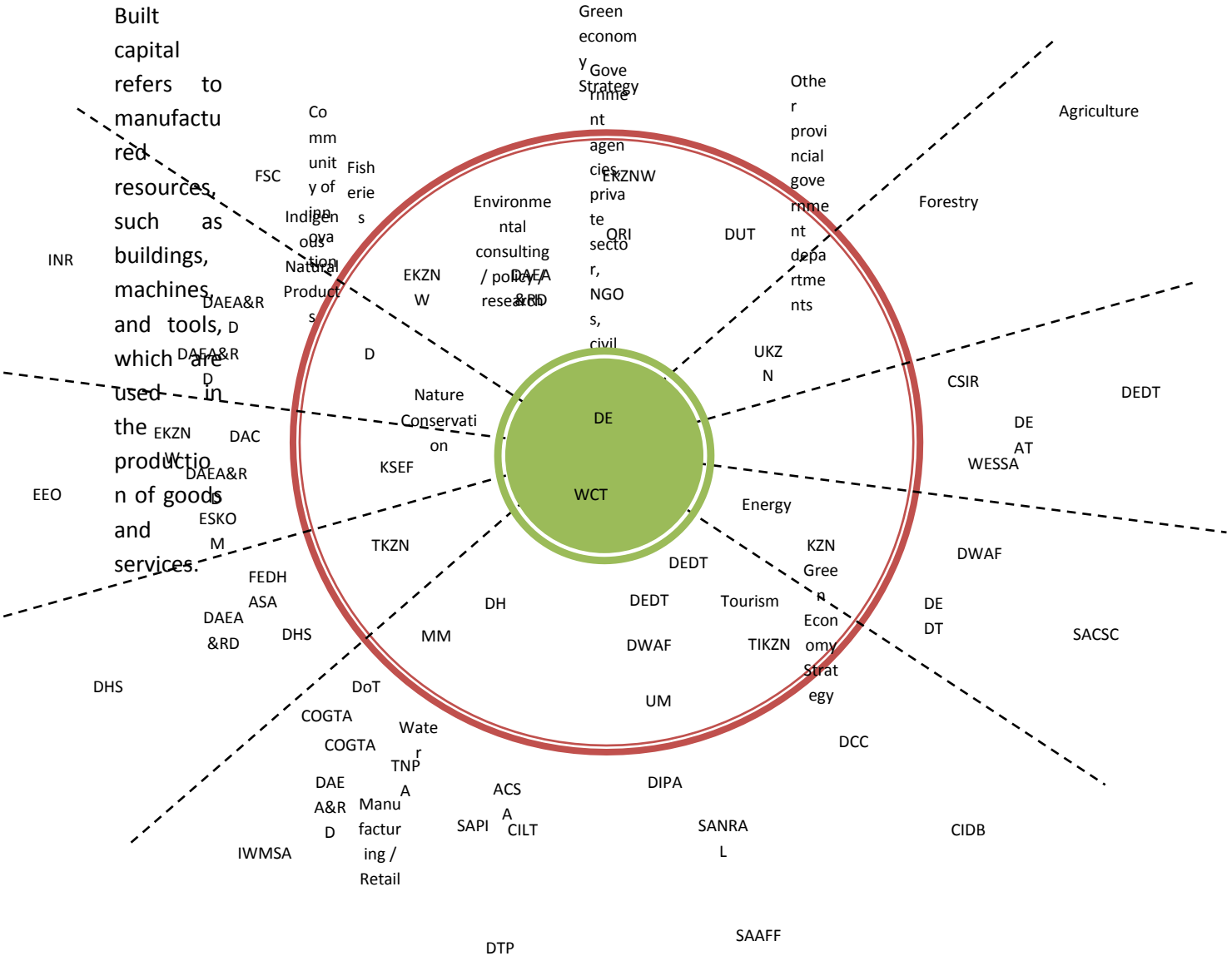


Figure 11: Indicative stakeholder organisational structure for implementation of the KZN Green Economy Strategy

Abbreviations:

ACSA	Airports Company South Africa
COGTA	Department Cooperative Governance and Traditional Affairs (COGTA)
CIDB	Construction Industry Development Board
CILT	Chartered Institute of Logistics and Transport
CSIR	Council for Scientific and Industrial Research
DAC	Department of Arts & Culture
DAEA&RD	Department of Agriculture, Environmental Affairs, & Tourism
DCC	Durban Chamber of Commerce

DE	Department of Education
DEDT	Department of Economic Development & Tourism
DHS	Department of Human Settlements
DH	Department of Health
DIPA	Durban Trade & Industry
DoT	Department of Transport
DTP	Dube Trade Port
DUT	Durban University of Technology
DWAF	Department of Water Affairs and Forestry
EEO	eThekwini Energy Office
EKZNW	Ezemvelo KZN Wildlife
FEDHASA	Federated Hospitality Association of South Africa
FSC	Forestry Stewardship Council
GBC	Green Buildings Council
INR	Institute of Natural resources
IWMSA	Institute of Waste Management of Southern Africa
KSEF	KwaZulu-Natal Sustainable Energy Forum
KZNIA	KZN Institute of Architecture
MBA	Master Builders Association
MM	Mhlathuze Water
SAAFF	SA Association of Freight Forwarders
SACSC	South African Council of Shopping Centres
SAPI	SA Planning Institute
SAPOA	SA Property Owners Association
SANRAL	SA National Roads Agency
TIKZN	Trade & Industry KZN
TKZN	KwaZulu-Natal Tourism Authority
TNPA	Transnet National Port Authority
UKZN	University of DwaZulu-Natal
UM	Umgeni Water
WCT	Wildlands Conservation Trust
WESSA	Wildlife and Environment Society of South Africa

5. Desired Outcomes of the KZN Green Economy Strategy

Successful implementation of the KZN Green Economy Strategy, and successful development of a green economy in KZN, will yield a number of important outcomes which address current issues in the province. These benefits are indicated in Figure 12.

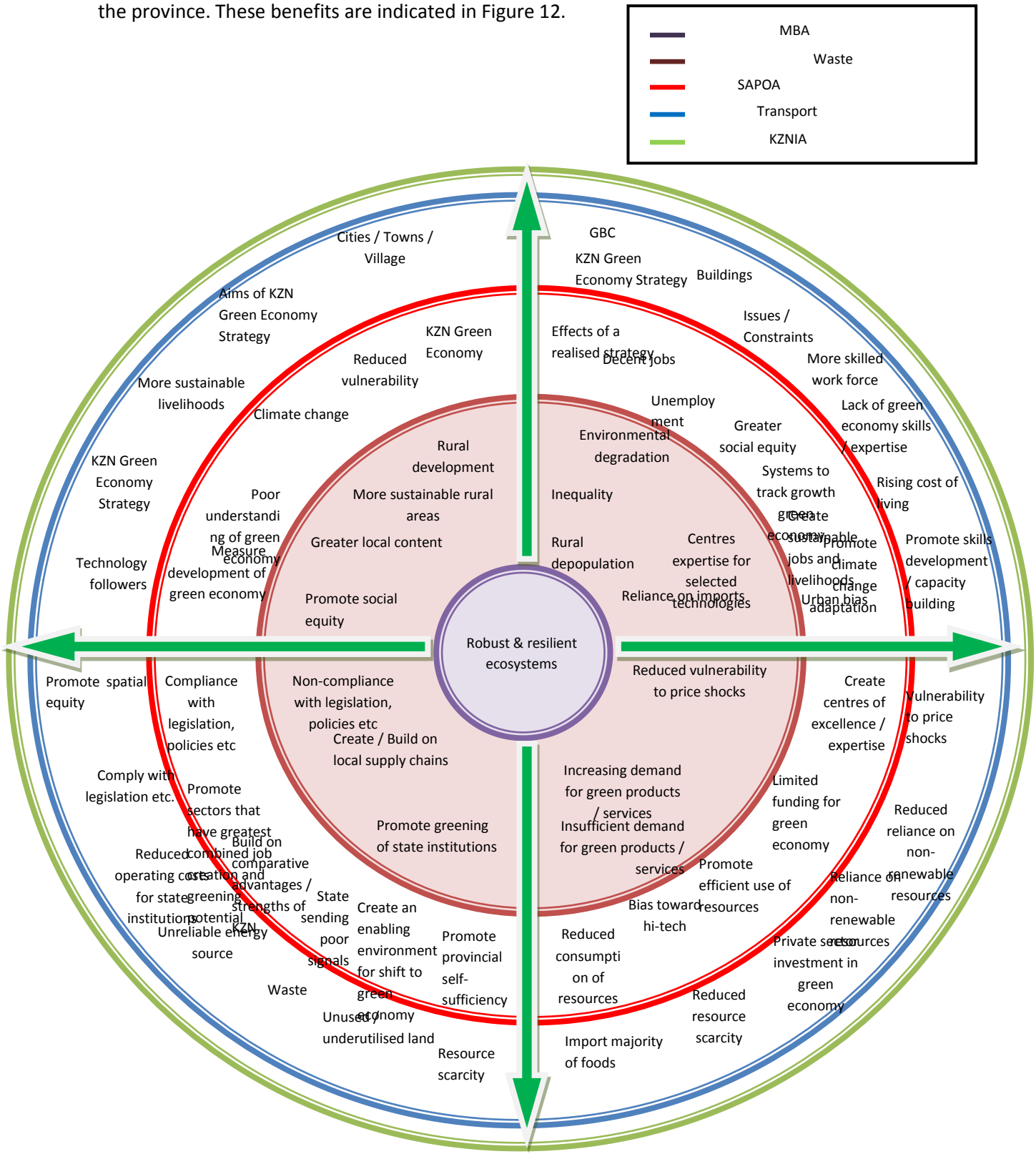


Figure 12: Desired outcomes of the KZN green economy

6. Conclusion

The shift to a green economy in KwaZulu-Natal offers significant opportunities for job creation and economic growth. The development of a green economy is not about the establishment of a new sector within the existing economy, but is rather about transformation of existing supply chains and production systems towards increased resource use efficiency, use of renewable resources over non-renewable resources, and the development of new products and services in the environmental sector. This is a response to the globally recognised need to build resilience into the economy through recognising and addressing environmental and social thresholds in how economic growth takes place.

The KZN Department of Economic Development and Tourism (DEDT) has led a process of researching and developing an appropriate route and mechanisms for unlocking the green economy in KwaZulu-Natal, which has culminated in the development of this KZN Green Economy Strategy. An important differentiator in how DEDT has undertaken this work is in its strongly participative and capacity building approach, through the development of an active "Community of Innovation". Given that the green economy concept, its definition, and how the development of a green economy can be stimulated, are new ideas for which there are no set rules or significant local precedents, the Community of Innovation has been an important aspect of ensuring that this KZN Green Economy Strategy is responsive to the conditions, opportunities and constraints associated with KwaZulu-Natal province. It has also allowed a wide range of stakeholders to engage with each other and learn together about what the green economy should be for KZN, and what it can offer, thereby setting an important base from which wide-ranging implementation can follow.

This KZN Green Economy Strategy aims to define what the green economy means for KwaZulu-Natal, and contains a collection of concepts and approaches to stimulate the changes needed to set the province on a green economy path. It sets simple goals which provincial government can work towards. The goals can be achieved through implementation of the strategy objectives – some of which are project-based and others of which point to important changes in how government can do its ordinary business if it aims to enable the development of a green economy. The successful implementation of the objectives can be measured using the Key Performance Indicators (KPI's) which have been included in this strategy.

The strategy objectives are a set of short and medium-term interventions, the implementation of which needs to be championed by the KwaZulu-Natal government. All of these will need to be further unpacked and detailed through the development of project and implementation plans which allocate responsibilities, funding requirements and funding sources. This next step is critical in taking the work done so far on unlocking the green economy in KwaZulu-Natal into implementation.

Given the scarcity of skills and resources, it is necessary to initially focus on the abovementioned objectives or interventions which are early-wins or low-hanging fruit. Listed below are a number of key objectives or interventions identified by the project team and DEDT as having the greatest potential to demonstrate the benefits of engaging in the green economy and to stimulate the shift of the KZN economy onto a green growth path.

Goal	Objective
1	○ Investigate and develop a provincial "Green Infrastructure Policy" which addresses the re-orientation of provincial infrastructure development programmes to promote greener transport, services, development and economic activity zones in KZN.
1	○ Develop a "Greening Provincial Buildings" programme which retrofits energy and water efficiency measures, and waste recycling systems, into all provincial government buildings; and addresses the management and maintenance of buildings for sustaining these benefits.
2	○ Establish a provincial Green Economy Fund to facilitate investment into turnkey and pilot projects.
2	○ Develop a capacity building programme for graduates and professionals in the government and private sectors on green design, technologies and approaches.
2	○ Support the development of Centres of Excellence in research, development and implementation of Green Economy initiatives.
3	○ Develop a renewable energy resources map for the province which identifies potential renewable energy resources, the availability and distribution of these resources, as well as, potential users.
3	○ Establish a programme which identifies and maintains a registry of public and private waste resources, the potential users; and facilitates linking of producers to the users
3	○ Investigate and develop a Payment for Ecosystem Services pilot project in rural KZN to re-orientate the management of catchments and to facilitate the development of a market for water-enhancing activities, thereby creating jobs, increasing water supply, addressing community-climate adaptation, and energy from alien plant biomass.
3	○ Investigate and develop a model for integrating energy, water and food security systematically into rural developments in order to target poverty reduction and climate adaptation.

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Appendix A: Green Economy Workshop Participants (31-01-2012)

Name	Name	Name
Beires, Liesel	Khuzwayo, Sibusiso	Mqedlana, Lwandlekazi
Blose, Zodwa	Masuku, Precious	Nadasen, Linley
Buthelezi, Sipho	Matiwane, Nkosinathi	Naidoo, Logan
Court, Paul	May, Naledi	Ngcamu, Sanelisiwe
Dladla, Sizwe	Mkhize, Sihle	Njilo, Khumbulani
Hamadziripi, Cosmas	Mkhwanazi, Eric	Nkumla, Ngane
Khanyezi, Thembi	Moloi, Buti	Pillay, Demitra
Khanyile, Dumisani	Mngoma, Jabu	Rabotapi, Lucky
Khuzwayo, Caesar	Mntambo, Boyce	Sibiya, Lindokuhle

Appendix B: Phase 2 Interviews

Name	Organisation: Department	Interview Date
Beires, Liesel	KwaZulu-Natal Department of Economic Development and Tourism	14/02/2012
Brooks, Frikkie	Provincial Planning Commission: Head of Secretariat	02/28/2012
Mkhize, Sihle	KwaZulu-Natal Department of Economic Development and Tourism: Economic Planning	21/02/2012
Mkhwanazi, Sipho	KwaZulu-Natal Department of Economic Development and Tourism	02/29/2012
Mohammed, Nissar	Trade and Investment KwaZulu-Natal: Investment Opportunities	16/02/2012
Morgan, Derek	eThekwini Energy Office	15/02/2012
Naidoo, Thamoney	KwaZulu-Natal Department of Agriculture, Environmental Affairs, and Rural Development: Landcare Programme	02/15/2012
Persad, Ranveer	KwaZulu-Natal Department of Economic Development and Tourism: Local Economic Development	02/22/2012
Pupuma, Fukiswa	KwaZulu-Natal Department of Economic Development and Tourism: Trade and Sector Development	28/02/2012
Venter, Andrew	Wildlands Conservation Trust	24/03/2012

Appendix C: Phase 1 Interviews

Name	Organisation: Department	Interview Date
Abdinor, Brandon	Master Builders: South Africa	29/10/2010
Balfour, Peter	Transnet National Port Authority	22/11/2010
Bateman, Lawrie	Chartered Institute of Logistics and Transport	02/11/2010
Beires, Liesel	KwaZulu-Natal Department of Economic Development	30/11/2010
Bellingham, Chris	KwaZulu-Natal Sustainable Energy Forum	25/11/2010
Breezke, Tandi	SSI	24/11/2010
Brzozowski, Aleksandra	Imagine Durban	11/11/2010
Byerley, Mark	eThekwini Housing Unit	10/11/2010
Celliers, Louis	CSIR	30/11/2010
Clark, Bruce	KwaZulu-Natal Institute for Architecture	03/11/2010
Coetzee, Cedric	Ezemvelo KZN Wildlife	11/18/2010
Constable, Lisa	ERM: Cape Town	29/11/2010
Dorkin, Pat	Department of Transport	28/10/2010
Everard, Dave	Forestry South Africa (FSA)	11/16/2010
Exner, Brett	South African Council of Shopping Centres	15/11/2010
Goodman, Peter	Ezemvelo KZN Wildlife: Strategic Planning	17/11/2010
Haffejee, Miriam	Transnet National Port Authority	22/11/2010
Kahn, Mike	South African Planning Institute- KwaZulu-Natal	15/11/2010
Khuzwayo, Sbu	KwaZulu-Natal Department of Economic Development and Tourism	22/11/2010
Kloppers, Roelie	Wildlands Conservation Trust	22/11/2010
Kohler, Karen	KwaZulu-Natal Tourism Authority	16/11/2010
Kriek, Johan	ERM: Cape Town	29/11/2010
Lees, Joanne	KwaZulu-Natal Institute for Architecture	11/11/2010
Lewis, Fonda	Institute of Natural Resources	29/11/2010
Madingani, Jeffrey	Transnet National Port Authority	22/11/2010
Man, Bruce	Oceanographic Research Institute (ORI)	11/10/2010
Mander, Myles	Eco-Futures	12/2/2010
Marais, Christo	Department of Water Affairs: Natural Resource Management	12/2/2010
Martin, Keith	The South African Association of Freight Forwarders	28/10/2010
Mchunu, Vumi	eThekwini Business Support Unit	25/10/2010
McInnes, Alistair	eThekwini: Environmental Planning and Climate Protection (EPCPD)	16/11/2010
McKean, Steve	Ezemvelo KZN Wildlife: Resource Ecologist	30/11/2010
McKelvey, Bianca	WESSA	30/11/2010
Milne, Martie	Department of Human Settlements	15/11/2010
Mkhize, Nkosi	Department of Water Affairs - Catchment Management	11/15/2010
Modi, Albert	Moses Kotane Institute & University of KwaZulu-Natal Agricultural Science	11/15/2010
Morgan, Derek	eThekiwini Energy Office	01/12/2010
Mthembu, Zama	Department of Agriculture, Environmental Affairs, and Rural Development (DAEA&RD): Waste Management & Pollution	18/11/2010
Mthimkhulu, Oscar	Ezemvelo KZN Wildlife: Biodiversity Conservation	30/11/2010
Muswema, Aubrey	SiVest	01/12/2010
Naidoo, Vivandran	Department of Water Affairs - Water supply	11/15/2010
Nivette, Michelle	SiVEST	01/12/2010
Noir, Eric	Green Building Council	11/11/2010
Nowele, Siphumelele	Department of Agriculture, Environmental Affairs and Rural Development (Environmental Planning)	28/10/2010
Ozard, Warren	Federated Hospitality Association of South Africa	25/11/2010
Padalkar, Atul	Durban Investment Promotion Agency (DIPA)	29/11/2010
Philips, Raj	Department of Water Affairs	15/11/2010
Pillay, Perumal	Construction Contact Centre KwaZulu-Natal: Construction Industry Development Board	16/11/2010
Ralfe, Kate	DubeTradeport	10/11/2010
Ramayia, Jonathan	Durban Industry Climate Change Partnership Programme	03/12/2010

Rampersad, Manoj	eThekwini Transport Authority	12/11/2010
Reddy, Pat	Institute of Waste Management of Southern Africa (IWMSA)	15/11/2010
Rhodes, Gillian	National Subsistence Fisheries Management Unit (EKZNW)	11/16/2010
Robbins, Glen	University of KwaZulu-Natal: School of Development Studies	29/11/2010
Ronny, Ravi	SANRAL- Eastern Region	28/10/2010
Rushworth, Ian	Ezemvelo KZN Wildlife: Ecological Advice	30/11/2010
Scotcher, John	Forest Stewardship Council	11/17/2010
Shongwe, Shongwe	KZN Department of Agriculture, Environmental Affairs, and Rural Development: Agricultural Development Support Services	11/17/2010
Sooklal, Amar	Durban Chamber of Commerce	29/11/2010
Sultman, Charmaine	Wildlands Conservation Trust - Sustainable Communities	22/11/2010
Taylor, Jim	WESSA	29/11/2010
Theron, Henk	Department of Local Government and Traditional Affairs (Directorate Municipal Strategic Planning)	28/10/10
Tiffen, Wayne	KwaZulu-Natal Tourism Authority	16/11/2010
Van der Valk, Sean	ACSA	02/11/2010
Whitehead, Neil	KZN Department of Agriculture, Environmental Affairs, and Rural Development: Support Service	11/17/2010
Wilson, Stewart	SANRAL – Eastern Region	28/10/2010
Worthmann, Cedric	Eskom- DSM Programme	25/10/2010
Zondi, Ayanda	KwaZulu-Natal Department of Economic Development and Tourism	22/11/2010
Zungu, Mandisa	Department of Local Government and Traditional Affairs	01/11/2010