

System of Environmental Economic Accounting



United Nations



System of
Environmental
Economic
Accounting

National Plan for Advancing Environmental-Economic Accounting

(NP-AEEA)

-- South Africa --

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This version expands the scope of the original Assessment Report to ensure that SEEA-CF accounts are also considered.

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Convention on
Biological Diversity



1 Executive Summary

The purpose of this document is to link current South African environmental-economic accounting initiatives and policy requirements with the United Nations (UN) System of Environmental Economic Accounting (SEEA) and other international statistical frameworks. It provides the foundations for initiating statistical development towards improving decisions related to sustainable development and green economy. It is based on the **South Africa - Country Assessment Report** that has identified the policy priorities, stakeholders and capacity for South Africa to engage in such development. It has done so by reviewing the most recent relevant policy documents in collaboration with Stats SA, SANBI and other key stakeholders. It positions the work within internationally accepted best practices for statistical development. This document will serve as a basis for engaging stakeholders and developing focussed proposals for support. It does so by:

- (a) establishing the rationale for an integrated statistical system for sustainable development information;
- (b) summarizing the priorities and opportunities in South Africa for further improvement of the National Statistical System (NSS) with a focus on SEEA;
- (c) using an Investment Logic Framework (ILF), it identifies the enabling factors (preconditions for engaging in activities), activities, outputs, impacts and long-term outcomes of engaging in these activities; and by
- (d) outlining the foundational activities needed to implement environmental-economic accounting ready for use in fully developed and costed funding proposals.

The lack of coherence among environmental measurement initiatives imposes challenges in answering fundamental questions about natural resources including ecosystems and their contribution to human well-being in South Africa. The degree of dependence of South Africa's population on ecosystems for water, food, materials and employment is not well known. What is the contribution of ecosystems and their services to the economy? How can natural resources and ecosystems be best managed to ensure continued services such as energy, food supply, water supply, flood control and carbon storage? What are the trade-offs between resource exploitation and land allocation with long-term sustainability and equity?

There is increasing international interest in establishing integrated statistical systems for this purpose. The SEEA has been established as an international statistical standard and is recommended as a common measurement framework for several environment, biodiversity and sustainable-development related international initiatives including the Post-2015 Development Agenda Sustainable Development Goals (SDGs). SEEA Experimental Ecosystem Accounting (SEEA-EEA) expands the scope of the SEEA Central Framework (CF) to link ecosystems to economic and other human activities.

This document is intended to focus the efforts of the National Statistical Office (NSO) (StatsSA in the case of South Africa), the NSS and other stakeholders, including international agencies, to develop cost-effective, ongoing and effective statistical systems and related institutional mechanisms to inform South Africa's sustainable development policy objectives.

Text Box 1: South Africa's National Development Plan vision statement

“South Africa faces urgent developmental challenges in terms of poverty, unemployment and inequality, and will need to find ways to “decouple” the economy from the environment, to break the links between economic activity, environmental degradation and carbon-intensive energy consumption. In the past, resources were exploited in a way that was deeply unjust and left many communities excluded from economic opportunities and benefits while the natural environment was degraded. The country must now find a way to use its environmental resources to support an economy that enables it to remain competitive, while also meeting the needs of society. Thus, sustainable development is not only economically and socially sustainable, but environmentally sustainable as well.”

South Africa, National Development Plan 2030

The Government of South Africa's policy priorities, as reflected in the National Development Plan 2030 (NDP), are to achieve sustainable economic growth, poverty reduction, employment creation, a more equitable society, a low-carbon economy, food security and water security. Government plans and strategies propose to accomplish this by implementing green economy and climate change adaptation initiatives, while conserving and managing South Africa's ecosystems and natural resources. These are consistent with international policy drivers such as the Sustainable Development Goals (SDGs) and Aichi Target 2.

The NDP 2030 embraces environmental sustainability and resilience. Within this theme, the objectives include: indicators for natural resources; renewable energy and waste; reducing emissions; and conserving and rehabilitating ecosystems and biodiversity assets. The NDP vision is reflected in the Medium-Term Strategic Framework (MTSF) that South Africa transits to an environmentally sustainable, climate-change resilient, low-carbon economy.

A key focus of the MTSF is addressing natural resource degradation and depletion of ecological infrastructure. An Environmental Management Framework will be put in place to ensure that policies and programmes address long-term needs, and that unavoidable environmental losses are offset by investments in related areas. The framework will also ensure that appropriately targeted land, estuaries, coastal areas and oceans are protected. Legislation to address air pollution has been passed, and measures to ensure water security and healthy catchments, rivers and wetlands will be reinforced.

Monitoring these priorities can be addressed by developing SEEA accounts and thematic indicators that inform the SDGs as well. To support this, the National Plan for Advancing Environmental-Economic Accounting (NP-AEEA) proposes to develop a cost-effective, ongoing and effective statistical system and related institutional mechanisms. The key actions recommended by the NP-AEEA are: (a) developing a comprehensive environmental-economic accounting information system; (b) enhancing statistical coordination within South Africa and between levels of government and initiatives; (c) conducting training and capacity building in environmental-economic accounting; (d) enhancing coordination with international and donor agencies; (e) addressing challenges of resourcing, data quality, access, technical capacity and statistical infrastructure; and (f) immediately beginning work on priority accounts. These priority accounts have been identified as: national land accounts, ecosystem extent and condition accounts, water accounts, and accounts for selected ecosystem services related to food security and water security.

It is proposed that rather than implementing a complex statistical system at the outset, this be done in stages. This document presents the first stage – a specific set of activities related to the implementation of the UN SEEA. High-level activities and impacts are listed below.

National Plan for Advancing Environmental-Economic Accounting 2015
-- South Africa --

Activities	Impacts
Building priority accounts based on policy needs	<p>Providing Ministers and their agencies with empirical evidence of changes resulting from sustainable development policies</p> <p>Improved knowledge on natural resources including ecosystems and well-being</p> <p>Better policies, decisions on trade-offs between development and conservation</p> <p>Foundations to build integrated indicators on sustainable development</p>
<p>Capacity building</p> <p style="text-align: right;">Human resources</p> <p style="text-align: right;">Infrastructure</p>	<p>The ongoing capability to integrate environmental-economic information into government decision making</p> <p>Training for agency and academic staff to support the ongoing implementation of environmental-economic accounts</p> <p>A civil service and civil society that is informed about environment and development</p> <p>The ongoing cost effective production of environmental-economic accounts that meet the needs of policy in a timely manner</p> <p>Improved statistical collaboration between sectors and agencies</p>
Development of integrated indicators	Provide Ministers and their agencies with a set of indicators linking government policies to sustainable development goals

2 Introduction

There is little doubt that at global, national and local scales, humanity is pushing against a web of environmental boundaries. This message has been growing clearer and clearer through multiple scientific, social and economic studies ((MA 2005), (Rockström, Steffen et al. 2009), (TEEB 2010), (Cardinale, Duffy et al. 2012)). At the broadest level, the risks associated with breaching environmental boundaries are at the centre of concerns about sustainable development and, given the inter-connected nature of our economies and societies, environmental concerns are relevant to all people in all countries. It is unsurprising that the demands from governments, international agencies and the general public for a response have been growing stronger and stronger. This message was emphasized at the Rio+20 conference and culminated in the Post-2015 Development Agenda.

One barrier in working towards the appropriate responses is the lack of well accepted, broadly based and globally integrated information on the nature of humanity's connection to the environment – our dependence on its services and our impact on its condition and future capacity to generate these services and hence to sustain future human wellbeing. We have much integrated information concerning national and global economic activity where, via the standard economic accounts and gross domestic product (GDP), we have a strong understanding of our combined economic performance and history. On the social side, while the information is more diverse, we have relatively standardized approaches to assessing changes in population, education and health, among many other variables, and a reasonably common understanding of the links between economic and social activity.

However, on the environmental dimension, our information set is far more disparate and a common understanding of the relevant issues is undeveloped. While we have much scientifically based data it is often discipline specific; based on observations in specific areas; not scalable to national or global level; measured using different methods and definitions; and most often, not presented in reference to economic or human activity. Given these characteristics, it is not surprising that public and academic discourse on environmental matters has been fractured and lacking momentum. The development of integrated environmental information is clearly needed.

Both the SEEA-CF and SEEA Experimental Ecosystem Accounting (EEA) use the accounting concepts, structures, rules and principles of the System of National Accounts (SNA). The SEEA-CF starts from the perspective of the economy and its economic units and incorporates relevant environmental information concerning natural inputs, residual flows and associated environmental assets. In contrast, SEEA-EEA starts from the perspective of ecosystems and links ecosystems to economic and other human activity. Together, the approaches provide the potential to describe in a complete manner the relationship between the environment, and economic and other human activity.

SEEA-EEA is a synthesis of the current knowledge in this area and can provide a starting point for the development of ecosystem accounting at national or sub-national levels. While the SEEA-EEA does not give precise instructions on how to compile ecosystem accounts, it represents a strong and clear convergence across the disciplines of ecology, economics and statistics on many core aspects related to the measurement of ecosystems and thus there is a strong base on which further research and development can build.

This report is set out in three parts. The first part (**Section 3**) provides a global and country rationale for undertaking environmental-economic accounting. This provides the context and rationale for the NP-AEEA, the high-level needs of South Africa based on the assessment report and finally a summary of the key outcomes that could be achieved for South Africa by implementing the NP-AEEA.

The second part (**Sections 4 and 5**) presents a brief overview of the building blocks and methods needed to implement the NP-AEEA. The aim of this section is to provide generic guidance on a

standardised approach based on current frameworks, system, methods and guidance and training material.

The third part (**Sections 6, 7 and 8**) outlines the details of a national program of work following an investment logic framework (ILF). The focus on the ILF is to identify what work is required in order to achieve the objectives and translate them into outcomes for the country. This section is specifically tailored to the needs of South Africa using the building blocks and methods outlined in Sections 4 and 5. The use of an ILF provides detail on the work program participation requirements (institutional needs), enabling factors (resources, systems, processes), the work program (a series of actions described as work phases over time), outputs (a clear set of deliverables), impacts (what will change substantively) and finally the outcomes which are linked to the objectives of the country.

The advantage of providing the three-part approach to developing an NP-AEEA is to identify commonalities across countries to target international research and enable better coordination and collaboration in sharing best practices between countries. The activities and priorities for each country's NP-AEEA identified in Section 7 will be used in the future to focus resources, research and training efforts.

3 Environmental-economic accounting rationale

There are a number of global and national drivers that provide the rationale for the development of an environmental-economic accounts program of work.

3.1 Global perspective

Seizing the opportunities and facing the new challenges requires greater efficiency and integration of the functions of national statistical systems through modernizing the institutional environment and the statistical production processes. The traditional way of organizing and managing the statistical system is not appropriate for making the transition to a modern integrated national statistical system that can meet the requirements of producing and reporting data for the Post-2015 Development Agenda and providing information for integrated decision-making.

In 2013, the *Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development*¹ called for a data revolution for sustainable development, with a new international initiative to improve the quality of statistics and information available to citizens. The report states, "We should actively take advantage of new technology, crowd sourcing, and improved connectivity to empower people with information on the progress towards the targets".

The report also noted that better data and statistics would help governments track progress and make sure their decisions are evidence-based; they can also strengthen accountability. The Panel further proposed that, in the future – at latest by 2030 – all large businesses should be reporting on their environmental and social impacts, and governments should adopt the UN's SEEA, with help provided to those who need help to do this.

Also in 2013, the UN published the *Guidelines on Integrated Economic Statistics*² highlighting the need to move from the traditional silo approach to a more integrated approach to the production of statistics matched by the reform of the institutional arrangements, including access and use of administrative sources for statistical purposes. It recognised the significance of an integrated approach for increasing the consistency and coherence of economic statistics to enhance the quality and analytical value of the information the statistics convey for short-term, annual and benchmark economic and macroeconomic statistics. The guidelines present the integration framework of economic statistics based on current best practices for the entire spectrum of statistical agencies,

¹ www.un.org/sg/management/pdf/HLP_P2015_Report.pdf

² <http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf>

including countries with centralized and decentralized statistical systems and countries at different stages of economic and statistical development.

Integrated economic statistics depict a consistent and coherent picture of economic activities for policy, business and other analytical uses. In addition, a number of recent emerging initiatives on the measurement of sustainability, social progress and well-being have raised the need for integrated and coherent official statistics to shed light on those complex issues, and therefore pose challenges to statistical offices to produce integrated economic, environmental and socio-demographic statistics.

In 2014, the report *A world that counts – mobilising the data revolution for sustainable development*³ published by the Secretary-General's Independent Expert Advisory Group (IEAG)⁴ calls for a better coordination of statistical programmes developed by international organisations. The recent *Synthesis Report* published by the UN Secretary General has picked up the IEAG recommendation of considering the “statistical capacity building” dimension as an important part of the new investments for development. Moreover, “*all countries are encouraged to adopt their own national sustainable development financing strategies*”.

The SEEA is proposed as a common measurement framework for several environment, biodiversity and sustainable-development related international initiatives including the Post-2015 Development Agenda Sustainable Development Goals (SDGs), the OECD Green Growth initiative, the World Bank WAVES, IPBES, BIOFIN, Sustainable Consumption and Production, and the CBD Aichi Targets.

Intergovernmental negotiations on the Post 2015 Development Agenda have produced a draft document: *Transforming Our World: The 2030 Agenda for Sustainable Development*⁵. This document sets out 17 Sustainable Development Goals (SDGs) and 169 targets that build on the Millennium Development Goals (MDGs).

Regular reporting on SEEA accounts will support the production of indicators to monitor several of the SDG goals:

- Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 6: Ensure availability and sustainable management of water and sanitation for all
- Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all
- Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12: Ensure sustainable consumption and production patterns
- Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development.

Therefore, implementing the SEEA addresses not only national development objectives, but serve the purpose of international reporting as well.

³ <http://www.undatarevolution.org/>.

⁴ Independent Expert Advisory Group on a Data Revolution for Sustainable Development.

⁵ <https://sustainabledevelopment.un.org/post2015/transformingourworld>.

3.2 Country perspective

There is a strong commitment from the Government of South Africa to environmental-economic accounting that has grown from a range of policy drivers, past and existing work on environmental-economic accounting and environmental information initiatives more generally. Academics and staff from international and non-government organisations are also strongly supportive of progressing environmental-economic accounting in South Africa.

The strong support for environmental-economic accounting is based on a clear general understanding of the SEEA-CF in particular. It also builds on past and existing activities. For example, projects have been undertaken on accounting for energy, fisheries, water and minerals. National training on the SEEA-CF and SEEA-EEA has been provided for a range of stakeholders including government, non-government organisations (NGOs) and academia. There is also substantial experience in assessing terrestrial and aquatic ecosystems, ecosystem services and the benefits of biodiversity.

South Africa has produced a range of policy documents, strategies and assessments that could be informed by and guide priority setting for environmental economic accounting. These include:

- The National Development Plan 2030 (NDP)⁶ (see **Text Box 2**)
- The Medium-Term Strategic Framework (2014-2019) (MTSF)⁷
- The New Growth Path (2010)⁸
- The National Infrastructure Plan (NIP)⁹
- The National Strategy for Sustainable Development (NSSD1)¹⁰
- National Biodiversity Strategy and Action Plan 2015 - 2025

The long-term perspective of South Africa's development is laid out in the **National Development Plan 2030** (NDP, 2012 version). The plan focuses on eliminating poverty and reducing inequality by growing an inclusive economy through employment creation. Chapter 5 of the NDP is titled "*Environmental sustainability - an equitable transition to a low-carbon economy*", and includes several principles (**Text Box 2**) consistent with environmental economic accounting, such as:

- **Ecosystems protection:** Environmental-economic accounting provides a platform for the collection, analysis and reporting of information on natural capital, including ecosystems and their services, so that it can provide accountable and transparent evidence to development decisions.
- **Full-cost accounting:** Environmental-economic accounting provides a means of assessing long-term environmental and social costs against short-term economic gains of natural resource exploitation and land allocation.
- **Strategic planning:** Environmental-economic accounting provides a systematic approach to prioritizing, compiling, analysing and reporting on sustainable development information, which can support and strengthen strategic planning at national and sub-national levels.

⁶ <http://www.gov.za/issues/national-development-plan/>

⁷ <http://www.thepresidency-dpme.gov.za/Pages/default.aspx>

⁸ <http://www.gov.za/documents/download.php?f=135748>

⁹ <http://www.gov.za/issues/national-infrastructure-plan/>

¹⁰

https://www.environment.gov.za/documents/strategicdocuments?q=content/documents/strategic_docs/national_strategy_sustainable_development/

- **Managed transition:** Environmental-economic accounting offers a flexible and modular approach that can be adapted to existing processes for collecting, analysing and reporting on sustainable development information.
- **Opportunity-focused.** The implementation of environmental-economic accounting will focus on opportunities for synergies between sustainability, growth, competitiveness and employment creation.
- **Effective participation of social partners.** One principle of implementation of environmental-economic accounting is to develop inclusive processes to achieve consensus on priorities and information needs.
- **Balance evidence collection with immediate action.** Environmental-economic accounting is a tool for improving evidence, but also provides the principles upon which immediate action can be supported.
- **Sound policy-making.** Environmental-economic accounting is a simple, feasible and effective means of providing important signals to policy making.
- **Accountability and transparency:** Environmental-economic accounting is a transparent means of monitoring and reporting on the transition to an environmentally sustainable,

Text Box 2: Guiding principles for the transition to an environmentally sustainable, climate-change resilient, low-carbon economy and just society

The following principles can guide the transition to an environmentally sustainable low-carbon economy, moving from policy, to process, to action:

Just, ethical and sustainable. *Recognise the aspirations of South Africa as a developing country and remain mindful of its unique history.*

Global solidarity. *Justly balance national interests with collective action in relation to environmental risks and existential threats.*

Ecosystems protection. *Acknowledge that human wellbeing is dependent on the health of the planet.*

Full cost accounting. *Internalise both environmental and social costs in planning and investment decisions, recognising that the need to secure environmental assets may be weighed against the social benefits accrued from their use.*

Strategic planning. *Follow a systematic approach that is responsive to emerging risk and opportunity, and which identifies and manages trade-offs.*

Transformative. *Address the structural and systemic flaws of the economy and society with strength of leadership, boldness, visionary thinking and innovative planning.*

Managed transition. *Build on existing processes and capacities to enable society to change in a structured and phased manner.*

Opportunity-focused. *Look for synergies between sustainability, growth, competitiveness and employment creation, for South Africa to attain equality and prosperity.*

Effective participation of social partners. *Be aware of mutual responsibilities, engage on differences, seek consensus and expect compromise through social dialogue.*

Balance evidence collection with immediate action. *Recognise the basic tools needed for informed action.*

Sound policy-making. *Develop coherent and aligned policy that provides predictable signals, while being simple, feasible and effective.*

Least regret. *Invest early in low-carbon technologies that are least-cost, to reduce emissions and position South Africa to compete in a carbon-constrained world.*

A regional approach. *Develop partnerships with neighbours in the region to promote mutually beneficial collaboration on mitigation and adaptation.*

Accountability and transparency. *Lead and manage, as well as monitor, verify and report on the transition.*

National Development Plan 2030

climate-change resilient, low-carbon economy and just society.

Chapter 5 in the NDP highlights the need to sustain South Africa's ecosystems and use natural resources efficiently, including the need for "*programmes to conserve and rehabilitate ecosystems and biodiversity assets*". Other aspects of sustainability can be seen in elements such as food and nutrition security, clean water, health and well-being, and clean and accessible energy.

Strategic government planning is prioritized through a set of 14 outcomes embedded in South Africa's **Medium-Term Strategic Framework** (MTSF, 2014-2019). These outcomes link back explicitly to the NDP and identify Actions, Ministers, Indicators, Baseline indicators and Targets according to sub-outcomes. Although Outcome 10 focuses explicitly on "Environment", several of the other 14 outcomes are closely linked to the effective use of natural resources (e.g., Health, Safety, Economy, Infrastructure, Rural development). Outcome 10, "Protect and enhance our environmental assets and natural resources", includes five sub-outcomes¹¹:

- Sub-outcome 1: Ecosystems are sustained and natural resource are used efficiently
- Sub-outcome 2: An effective climate change mitigation and adaptation response
- Sub-outcome 3: An environmentally sustainable, low-carbon economy resulting from a well-managed just transition
- Sub-outcome 4: Enhanced governance systems and capacity
- Sub-outcome 5: Sustainable human communities

The MTSF includes several Action Plans that are addressed to specific sectors. Many of the Action Plans related to economic development can also be linked more generally to sustainable development. These include: Agricultural Policy Action Plan (APAP), Agriculture, Forestry and Fisheries Market and Trade Development Strategy, Water and Sanitation Infrastructure Master Plan, Sustainable Land Reform, Comprehensive Food Security and Nutrition Strategy, Strategic Water Source Areas, and Research in Climate Services.

South Africa's **New Growth Path (2010)** includes targets to create five million jobs and reduce unemployment from 25% to 15% by 2020. It proposes to do this by supporting employment creation in:

- Infrastructure
- The agricultural value chain
- The mining value chain
- The green economy (e.g. natural resource management, renewable energy construction)
- Manufacturing sectors, which are included in IPAP¹² (Industrial Policy Action Plan), and
- Tourism and certain high-level services.

This emphasizes South Africa's priority for employment creation. It also highlights the opportunities for expanding the implementation of the SEEA-CF and testing the SEEA-EEA to provide integrated and comprehensive statistics on the links between natural resources, ecosystems and socio-economic priorities, including the return on investments made in natural resource management.

The government has recently embarked on a **National Infrastructure Plan** (NIP) to "*transform our economic landscape, while simultaneously creating significant numbers of new jobs, and to strengthen the delivery of basic services.*" These are implemented through 18 Strategic Integrated Projects (SIPs), such as transportation, energy, broadband, water and sanitation.

In 2008, the South African Cabinet approved the **National Framework for Sustainable Development** (NFSD), which promotes the effective stewardship of natural, social and economic resources. This

¹¹ <http://www.thepresidency-dpme.gov.za/news/MTSF/Outcome%2010%20Environment%20MTSF%20Chapter.pdf>

¹² http://www.dti.gov.za/industrial_development/industrial_development.jsp

led to the release of the first **National Strategy for Sustainable Development and Action Plan** (NSSD1 2011-2014) in 2011. The strategic objectives identified in NSSD1 are:

- Enhancing systems for integrated planning and implementation
- Sustaining our ecosystems and using natural resources efficiently
- Towards a green economy
- Building sustainable communities
- Responding effectively to climate change

NSSD1 identifies 113 interventions, summarized in 20 headline indicators (**Figure 1**) linking to the development indicators (NDP), Millennium Development Goals (MDGs) and the 14 government outcomes in the MTSF. The government is now developing a second version (NSSD2 2015-2020).

South Africa's second **National Biodiversity Strategy and Action Plan (2015 – 2025)** has six high-level Strategic Objectives:

- Enhance the management of biodiversity assets and their contribution to the economy, rural development, job creation and livelihoods.
- Invest in ecological infrastructure and to secure sustained benefits for society.
- Mainstream biodiversity considerations into policies, strategies and practices of a range of sectors.
- Mobilise people to adopt practices that enhance the long-term benefits of biodiversity.
- Develop an equitable and suitably skilled workforce to improve the conservation and management of biodiversity.
- Build effective knowledge foundations, including indigenous knowledge and citizen science, to support management, conservation and sustainable use of biodiversity.

There are several specific initiatives aimed at strengthening the NSS and improving information on sustainable development:

- **Statistics South Africa (Stats SA):**
 - In 2014, Stats SA released an integrated report on Environmental-Economic Accounts

Figure 1 NSSD1 Headline indicators

STRATEGIC PRIORITY	HEADLINE INDICATORS
Enhancing systems for integrated planning and implementation	<ul style="list-style-type: none"> • Establish an effective National Committee on Sustainable Development (NCSD) [established by March 2012] • Number of government entities and private sector companies that report against sustainability indicators [King III sustainability reporting, Carbon Disclosure Project and Water Disclosure Project] • Number of community-based capacity building projects [begin measuring]
Sustaining our ecosystems and using natural resources efficiently	<ul style="list-style-type: none"> • Curtail water losses at water distribution systems to an average percentage reduction (saving) [from 30 to 15% by 2014] • Reduction (saving) of demand as determined in the reconciliation strategies for seven large water supply systems by 15% [assessment of water requirements and water monitoring systems implemented by 2014] • Increase the number of Blue Flag beaches [to above 29 beaches] • Rehabilitation of land affected by degradation [3.2 million ha by 2014] • Percentage of coastline with partial protection [from 12 to 14% by 2014] • Percentage of land mass protected (formal and informal) [from 6.1 to 9% by 2014]
Towards a green economy	<ul style="list-style-type: none"> • Progress on the implementation of the nine green economy programmes [Impact on social (jobs), economic (industry development) and environmental (ecosystem) benefits by 2014] • Increase percentage (or amount) of financial resources ringfenced/streamlined and spent for green economy programmes [2010/11 amount – Industrial Development Corporation: R11.7 billion, Development Bank of South Africa: R25 billion, Private: >R100 billion, National Treasury: R800 million] • Number of patents, prototypes, and technology demonstrators added to the intellectual property (IP) portfolio annually from funded or co-funded research programmes (five additions to the IP portfolio – patents, patent applications, licences and trademarks – by March 2014) • Share of GDP of the Environmental Goods and Services (EGS) Sector [3% of GDP by 2014]
Building sustainable communities	<ul style="list-style-type: none"> • Percentage of households with access to water (92 to 100%), sanitation (69 to 100%), refuse removal (64 to 75%) and electricity (81 to 92%) [by 2014] • Upgrading of 400 000 households in well-located informal settlements with access to basic services and secure tenure (approximately 2 700 informal settlements are in good locations, ie located close to metropolitan areas and basic services, have high densities and, in 2008, housed approximately 1.2 million households) • Increase in the South African Human Development Index (HDI) [2010 HDI: 0.597] • Gini coefficient (reduce income inequality) [2008: 0.66]
Responding effectively to climate change	<ul style="list-style-type: none"> • Greenhouse gas emissions (metric ton CO₂ equivalent) [34% reduction below a business-as-usual baseline by 2020 and 42% by 2025] • Percentage of power generation that is renewable [10 000 GWh by 2014] • Climate change adaptation plans developed [12 sectors by 2012 (Biodiversity, Forestry, Water, Coastal Management, Agriculture, Health, Tourism, Land and Rural Development, Local Government, Fisheries, Human Settlements, Business/Insurance)]

Source: South Africa Department of Environmental Affairs.

covering energy, fisheries, minerals and selected socio-economic indicators. The results of some of these accounts have been proposed to be used in DEA's Environment Outlook 2012 (in production).

- Also in 2014, Stats SA established a pilot training program for the SEEA-CF Accounts. This was piloted in November 2014 with participants from SANBI, DEA, CSIR, DWS, the Department of Energy (DoE), Ezemvelo KZN Wildlife, Prime Africa (Consultants), and UNEP.
- Stats SA is in the process of implementing the SNA 2008 (SNA2008¹³), which includes an enhanced focus on natural resources, their valuation, and their depletion.
- The Government of South Africa has adopted a South African Statistical Quality Assessment Framework (SASQAF¹⁴), which sets standards for not only Stats SA's products, but those of all organs of state within the NSS.
- **Department of Environmental Affairs (DEA):**
 - Besides acting as the lead organization in the development of the National Strategy for Sustainable Development and Action Plan (NSSD1 and NSSD2, above), DEA engages in publishing general environmental statistics. Under the banner of State of the Environment Reporting, they have published an Environment Outlook in 2006 with a newer version forthcoming.
 - In addition, they have published several editions of Environmental Sustainability Indicators (2008, 2009 and 2011).
 - In 2013, DEA collaborated with UNEP to produce a Green Economy Modelling Report focussing on the employment-generation potential in Natural Resources Management, Agriculture, Transport and Energy sectors.
 - DEA is leading South Africa's participation in the global Biodiversity Finance Initiative (BIOFIN), led by the UNDP.
 - DEA, along with several signatories including the Water Research Commission (WRC), has also developed a Delivery Agreement around the MTSF Outcome 10, which identifies the partnerships necessary and targets for specific outputs.
 - DEA is the CBD focal point and has produced a National Biodiversity Strategy and Action Plan (NBSAP¹⁵) in 2005. The final 2015 – 2025 NBSAP has been approved by Working Group 1 and MINTECH, and has been presented to MINMEC in August 2015.
 - DEA published the GHG National Inventory Report South Africa, 2002-2010¹⁶ in July 2014. The report is in accordance with the United Nations Framework Convention on Climate Change (UNFCCC) and was funded by GIZ.
 - DEA in partnership with the Department of Rural Development and Land Reform (DRDLR) launched the release of the National Land Cover (NLC) 2013/2014 in June 2015. These data are now freely available online¹⁷. The NLC for 1990 has been released in September 2015 to provide a comparison.
- **South African National Biodiversity Institute (SANBI):**
 - In 2004 and again in 2011, SANBI published a National Biodiversity Assessment (NBA)¹⁸, which focussed on terrestrial, freshwater, coastal and marine ecosystems. The NBA 2018 is currently underway. SANBI collaborates closely with a range of national departments, provincial conservation authorities, research institutions and NGOs, and is often the

¹³ <http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf>

¹⁴ <http://www.thepresidency.gov.za/pebble.asp?reid=14808>

¹⁵ https://www.environment.gov.za/sites/default/files/docs/nationalbiodiversit_stractandactionplan.pdf

¹⁶ https://www.environment.gov.za/sites/default/files/docs/greenhousegas_invetorysouthafrica.pdf.

¹⁷ <http://egis.environment.gov.za/frontpage.aspx?m=27>.

¹⁸ <http://bgis.sanbi.org/nba/project.asp>; http://bgis.sanbi.org/nba/NBA2011_SynthesisReport_lowres.pdf.

convenor of partnership initiatives including assessments, demonstration projects and building communities of practice. A key focus of SANBI's work is to provide science-based information to inform policy and decision-making across a range of sectors.

- SANBI is also formalising South Africa's National Ecosystem Classification System, which includes maps and hierarchical classification systems for all ecosystem types across terrestrial, freshwater, coastal and marine environments. This differs from land cover classification in that it is "based on the pre-development extent of each ecosystem type, independent of current land cover, land use or ecological condition" (SANBI - South African National Biodiversity Institute 2013). As part of the National Ecosystem Classification System, SANBI has developed an approach to mapping and classifying coastal, inshore, offshore benthic and offshore pelagic habitat types, as well as rivers, estuaries and wetlands.
- SANBI has begun work on National River Ecosystem Accounts in partnership with Stats SA, CSIR and the Department of Water and Sanitation (DWS), using DWS's data on Present Ecological State of rivers (available for 1999 and 2011). SANBI is also working on provincial land cover accounts in KwaZulu-Natal in partnership with the CSIR and the provincial conservation authority, Ezemvelo KZN Wildlife, based on Ezemvelo's time series land cover data for 2005, 2008 and 2011.
- SANBI has developed a Framework for Investing in Ecological Infrastructure,¹⁹ which sets principles to guide the efforts of multiple partners, including the need for monitoring and evaluation of the benefits of such investment.
- **Council for Scientific and Industrial Research (CSIR):**
 - CSIR has collaborated with DWA to produce State of Rivers Reports (see below) and is also working with ProEcoServ²⁰ on mainstreaming ecosystem services in planning and decision-making (See Data Availability).
 - The CSIR is a key partner in the National Biodiversity Assessment, as well as a partner in the work currently underway on the National River Ecosystem Accounts and KZN Land Cover Accounts (see discussion under SANBI above).
 - The CSIR through their Water Sustainability Flagship (WSF) contributes to South Africa's sustainable use of water resources, which will lead to an increase in usable water by 2025.
- **Department of Water and Sanitation (DWS):**
 - DWS is responsible for the management, conservation, protection and sustainable use of South Africa's water resources.
 - DWS has worked with CSIR to produce State of Rivers Reports as part of the River Health Programme. They maintain an ecological status database for rivers, including two comprehensive national assessments in 1999 and 2011.
- **Water Research Commission (WRC):**
 - The WRC was a co-funder of the *Atlas of Freshwater Ecosystem Priority Areas in South Africa*²¹: maps to support sustainable development of water resources, developed through a three-year partnership project by the CSIR, SANBI, DWS, DEA, WWF-SA, SANParks and SAIAB.
 - Water Environmental Economic Accounts research in partnership with Stats SA. The WRC is funding a project to establish data sources and methodologies to develop water accounts for South Africa.

¹⁹ <http://www.sanbi.org/sites/default/files/documents/documents/framework-ieimarch2014sanbi.pdf>.

²⁰ <http://www.proecoserv.org/>.

²¹ <http://bgis.sanbi.org/nfepa/project.asp>.

- **Department of Planning, Monitoring and Evaluation (DPME):**
 - DPME falls under the Presidency and is responsible for setting governmental priorities, monitoring and evaluation. The main instrument for setting priorities is the National Development Plan and the approach used is to define 14 high-level Outcomes as part of the MTSF.
- **National Treasury:**
 - The National Treasury, under the Ministry of Finance, is responsible for macro-economic policy and manages the government's budget preparation process and implementation. The National Treasury is considering a national carbon tax and has been conducting modelling and forecasting in preparation.
- **Department of Energy (DoE):**
 - With respect to environmental issues in the MTSF, the Department of Energy is responsible for indicators on (1) an effective climate change mitigation and adaptation response and (2) sustainable human communities (in terms of renewable energy).
 - Stats SA compiles the energy accounts for South Africa in terms of physical supply and use for the energy sources used, i.e. coal, crude oil, petroleum products, renewables and waste, gas and geothermal that are based on the Energy Balances from the DoE.
- **Ezemvelo KZN Wildlife:**
 - Ezemvelo KZN Wildlife is a provincial governmental organization responsible for maintaining protected areas and biodiversity in KwaZulu-Natal province. The organization is actively involved in biodiversity planning and has produced case studies²² on valuing ecosystem goods and services in the province. Ezemvelo has produced time series land cover data which is being used to pilot provincial land cover accounts (see earlier discussion under SANBI).
- **The Department of Rural Development and Land Reform (DRDLR):**
 - DRDLR is responsible for topographic mapping, cadastral surveying, deeds registration, and land reform. Their responsibilities under the MTSF include: (1) improved land administration and spatial planning for integrated development in rural areas and (2) sustainable land reform contributing to agrarian transformation. DRDLR is in the process of developing a national land use classification²³. They maintain a spatial cadastral data viewer²⁴.
- **The Department of International Relations and Cooperation (DIRCO):**
 - DIRCO is responsible for reporting internationally on progress towards the MDGs and SDGs. Under the MTSF, this is included in terms of enhancing global cooperation through governance systems and capacity.
- **The Department of Agriculture, Forestry and Fisheries (DAFF):**
 - DAFF is responsible for supporting and overseeing the agricultural sector as well as ensuring food safety and security. Under the MTSF, they are responsible for reporting

²² <http://biodiversityadvisor.sanbi.org/wp-content/uploads/2013/11/10-Phadima-KZNESEconomicContribution.pdf>.

²³ <http://www.ruraldevelopment.gov.za/services/299-spatial-planning-and-land-use-management/466-spi-national-land-use-classification-workshop-26-27-june-2013#.VAYS8cU7tcY>.

²⁴

<http://csgmapguide.ruraldevelopment.gov.za/mapguide2011/mapviewerjava/ajaxviewer.jsp?WEBLAYOUT=Library%3a%2f%2fSouth+Africa+-+Geospatial%2fmap%2fSouth+Africa+Cadastral+Set.WebLayout&LOCALE=en>.

on: (1) the implementation of the Agricultural Policy Action Plan, (2) the Agriculture, Forestry and Fisheries Market and Trade Development Strategy, (3) spatial imbalances in economic opportunities with respect to agriculture, (4) rural poverty and hunger reduction, (5) improved land administration and spatial planning for integrated for integrated development in rural areas, (6) improved food security, (7) agrarian transformation, (8) impact indicators with respect to selected marine fish stocks and (9) combat land degradation.

- DAFF compiled the Status of South African Marine Fishery Resources, 2014, third edition.
- Stats SA compile the physical stock and flow accounts for the main commercial fisheries, i.e. hake, West Coast rock lobster, abalone, Cape horse mackerel, and South Coast rock lobster. The University of Cape Town is responsible for the modelling that provides the data for these fish resources.
- **The Agricultural Research Council (ARC):**
 - ARC conducts research in support of the development of the agricultural sector. In collaboration with DAFF and provincial agriculture departments, they have developed Agricultural Geo-referenced Information System (AGIS)²⁵, an online, integrated spatial database of selected agricultural, climate, soil and demographic data.
- **The Department of Mineral Resources (DMR):**
 - DMR oversees the mining industry in South Africa. It sets as its vision “to enable a globally competitive sustainable and meaningfully transformed minerals and mining sector.” Under the MTSF, they are responsible for reporting on (1) increasing mining exploration and investment, (2) a national coal policy, and (3) mitigating negative environmental impacts in the exploitation of mineral resources. They also maintain an inventory of large land owners.
 - Stats SA compile the mineral accounts for coal, gold and the platinum group of metals (PGM) in physical and monetary terms.
- **The National Planning Commission (NPC):**
 - The [National Planning Commission](http://www.npconline.co.za/)²⁶ is an independent agency, answering to the President. It is responsible for developing a long-term vision and strategic plan for South Africa. The Commission also advises on crosscutting issues that impact on South Africa’s long-term development.

Relevant international stakeholders include:

- The **UNEP South Africa Liaison Office** is also the Regional Coordination office for Southern Africa. They have collaborated with DEA in producing the Green Economy Modelling Report²⁷. In May 2014 UNEP organized in Midrand a regional workshop²⁸ on data and information management for green economies. UNEP is also linked with regional organizations such as the African Environment Ministers²⁹ and the African Environmental Information Network³⁰.

²⁵ http://www.agis.agric.za/agisweb/?Mlval=agish_content.html

²⁶ <http://www.npconline.co.za/>

²⁷

<http://www.unep.org/greeneconomy/ResearchReports/SouthAfricanGreenEconomyModellingReport/tabid/129722/Default.aspx>.

²⁸ <http://www.unep-wcmc.org/news/developing-data-and-information-management-for-sustainable--green-african-economies>.

²⁹ <http://www.unep.org/roa/amcen/>.

³⁰ <http://www.unep.org/dewa/africa/aeoprocess/aein/aein.asp>.

- The Food and Agriculture Organisation (**FAO**) **Country Office** works with DAFF to “*provide technical support to ensure food security and rural development*”. This includes institutional strengthening and technical capacity development.
- **The UNDP South Africa Country Programme** “is guided by national policy as stated in the MTSF, draft National Development Plan: Vision 2030, the Joint Evaluation Report, the Partnership Framework Agreement and the UNDAF³¹ (2013-17).”
- Much statistical development in Africa is driven by the **Strategy for Harmonising Statistics in Africa** (SHaSA³²), coordinated by the Statistics Division of the African Union. South Africa has proposed the creation of a theme on Environmental-Economic Accounting, but this has not yet been agreed by the organizations that would need to sponsor such an activity (UN-Economic Commission for Africa, African Union Commission, and the African Development Bank).
- In 2013, the Organisation for Economic Co-operation and Development (OECD) released its Environmental Performance Review of South Africa³³: “...*the Review recommends to broaden and deepen initiatives to integrate biodiversity into economic and social development.*”

Given these policy priorities, stakeholders and current initiatives, South Africa has conducted an assessment of data, institutional mechanisms and technical capacity for implementing the SEEA. This assessment will guide how these priorities are addressed through the NP-AEEA for developing a cost-effective, ongoing and effective statistical system and related institutional mechanisms. Initial work will focus on further implementation of the SEEA and testing of the SEEA-EEA.

3.3 South Africa environmental-economic accounting needs assessment

The Government of South Africa’s policy priorities are to achieve sustainable economic growth, poverty reduction, employment creation, a more equitable society, a low-carbon economy, food security and water security. Government plans and strategies propose to accomplish this by implementing green economy and climate change adaptation initiatives, while conserving and managing South Africa’s ecosystems and natural resources. These priorities are consistent with international policy drivers such as the SDGs and Aichi Target 2.

Specific priorities have been identified for integrated land, water and ecosystem management. This is reflected in the focus of the MTSF on addressing natural resource degradation and depletion of ecological infrastructure, ensuring that appropriately targeted land, estuaries, coastal areas and oceans are protected, and reinforcing measures to ensure water security and healthy catchments, rivers and wetlands.

Government agencies at all levels, national NGOs and international NGOs have established institutional mechanisms, technical capacity, strategies and programs that support these policy priorities. However, the indicators that have been developed to monitor progress towards these priorities are often sector level and based on available data. This has downplayed the importance of integration across sectors and new statistical development that could better inform these priorities through more integrated indicators.

Substantial data development, analysis and research have already taken place to build the data and knowledge required to address the policy priorities. Stats SA, SANBI, DEA, DWS and other departments collaborate to produce public reports on, for example, environmental-economic accounts, biodiversity and the state of the environment. Universities, NGOs and civil society are also engaged in collaboration with the government on many aspects of environmental reporting. While much of this work is progressive, it does not use a common statistical infrastructure. That is, since

³¹ The UN Development Assistance Framework ([UNDAF](#)).

³² <http://ea.au.int/en/statistics>.

³³ <http://www.oecd.org/environment/country-reviews/southafrica2013.htm>.

standards, levels of quality, concepts and classifications vary across initiatives, there may be substantial duplication of effort and results are difficult to integrate. Furthermore, some key datasets, such as national land cover and land use, are not consistently and regularly produced.

The lack of coherence among environmental measurement initiatives imposes challenges in answering fundamental questions about natural resources including ecosystems and their contribution to human well-being in South Africa. The degree of dependence of South Africa's population on ecosystems for water, food, materials and employment is not well known. What is the contribution of ecosystems and their services to the economy? How can natural resources and ecosystems be best managed to ensure continued services such as energy, food supply, water supply, flood control and carbon storage? What are the trade-offs between resource exploitation and land allocation with long-term sustainability and equity?

At an international level, the Government of South Africa is engaged in reporting on and developing technical capacity for the green economy, climate change, food security and the financing of biodiversity. As with national policy priorities, these initiatives are also often sector focused and based on available data and lack coherence in term of a common statistical infrastructure.

The Government of South Africa is also engaged in related statistical development activities, such as the implementation of the SNA 2008 and the promotion of the SASQAF. These provide excellent guidance on how to create a common statistical infrastructure. Substantial benefits would be realized in improved coherence and efficiency if these standards were implemented across the NSS, especially for sustainable development information.

A government-wide statistical infrastructure based on an accounting approach, guided in part by expanding the SEEA-CF accounts and testing the SEEA-EEA, would support streamlining and mainstreaming several initiatives focussed on addressing sustainable development priorities. Streamlining would reduce costs through improving the efficiency of data collection and interpretation by working within a common statistical infrastructure (among others, the Generic Statistical Business Process Model (GSBPM)³⁴) and coherent quality guidelines provided by the SASQAF, SNA 2008 and SEEA-EEA. Mainstreaming these initiatives would support the creation of new data and indicators that could directly report on environment-economy trade-offs.

Given this context, this assessment indicates the need for a collaborative programme of work to develop a sustainable statistical infrastructure that facilitates the creation of:

- An integrated common **spatial data infrastructure**, tools and techniques for spatially-detailed and harmonized information on the characterization and use of land, terrestrial, freshwater, coastal and marine ecosystems, protected areas and other special ecosystems (e.g., key ecological infrastructure areas such as strategic water source areas), as well as local area data on the population and the economy;
- Spatially detailed **land accounts**, showing changes in land cover and land use over time, linked to socio-economic drivers and impacts, and providing foundational information for ecosystem extent and ecosystem service accounts;
- Spatially-detailed pilot **ecosystem extent and condition accounts**, recording ecosystem types and their use, their biophysical characteristics and quality or condition, as well as changes over time and the attribution of those changes to natural and socio-economic drivers;
- Spatially-detailed pilot **water accounts**, recording the stock, flow, quality and availability of water as well as changes over time and the attribution of those changes to natural and socio-economic drivers;
- **Quality assessments**, using the SASQAF of environmental data in the line ministries, e.g. energy balances from the Department of Energy, fisheries data from the Department of

³⁴ <http://www1.unece.org/stat/platform/display/metis/The+Generic+Statistical+Business+Process+Model>

Agriculture, Forestry and Fisheries, mineral data from the Department of Minerals, among others.

- Case studies that link conditions of these ecosystem assets with **socio-economic benefits of ecosystem services** such as water security, food security and employment;
- **Feasibility studies** for developing further pilot SEEA-EEA accounts (e.g. carbon, species, production of ecosystem services, supply and use of ecosystem services).

The programme of work would address national priorities by building on the strengths and addressing the constraints. These strengths include a well-coordinated national planning system, good technical capacity and collaboration in environmental statistics, availability of some key datasets and broad engagement of several stakeholders on environment-economy related issues.

However, engaging in such a programme of work would need to address constraints by: (a) developing a comprehensive environmental-economic accounting information system; (b) enhancing statistical coordination within South Africa and between levels of government and initiatives; (c) conducting training and capacity building in environmental-economic accounting; (d) enhancing coordination with international and donor agencies; (e) addressing challenges of resourcing, data quality, access, technical capacity and statistical infrastructure; and (f) immediately beginning work on priority accounts. Each of these is discussed further below:

- A comprehensive environmental-economic accounting information system** to address national policy priorities including the NDP, the Sustainable Development Strategy, the MTSF, Green Economy and reporting on the SDGs. This includes the strengthening of Stats SA's current system of environmental-economic accounts to analyse revenue and investment decisions for key natural resources. The development of a land account would inform land use and planning issues. A water account would address issues of water supply and use.
- Enhanced statistical coordination within South Africa and between levels of government and initiatives:** The Assessment Report suggests that a high-level steering committee be established as an umbrella coordinating mechanism for advancing environmental-economic accounting. Suggested core membership of such a committee includes Stats SA, SANBI, DWS, DEA, CSIR and DPME at the national level. This partnership could be extended to include other key departments and agencies including DRLDR, DoE, DMR, National Treasury, DIRCO, DAFF, ARC, WRC, and NPC. International agencies, such as UNEP, UNDP and FAO could also be engaged as observers. There is a need to further explore the establishment of a regulatory approach to ensure data integrity, inter-institutional coordination and budget provision for such an activity. This would embed the SEEA within the regulatory framework for enhancing the NSS for information on environment-economy linkages.
- Training and capacity building in environmental-economic accounting** within Stats SA and institutes and policy departments, such as DEA, SANBI, CSIR, DWS, DPME, DRLDR, National Treasury, DMR, DIRCO and DAFF. There is a need to provide not only basic understanding of the concepts, but also to engage specialists in professional development through joint activities, staff exchanges and in-depth training on compilation, analysis and valuation. This will require the formal arrangements noted above, as well as MOUs between Stats SA and the other partners.
- Enhanced coordination with international and donor agencies:** International sustainable development and green economy initiatives tend to engage specific stakeholders. The measurement aspects could be better coordinated through the high level steering committee in close collaboration with existing and planned related initiatives.
- Addressing challenges of resourcing, data quality, access, technical capacity and statistical infrastructure:** There is a need to develop ecosystem accounting capacity within Stats SA and SANBI, and to enhance the resources available for environmental-economic accounting

in Stats SA, DEA, DWS and other stakeholders. This includes not only training and capacity development, but also allocating staff time to pilot projects, data acquisition, data sharing, IT infrastructure development (e.g., data warehouses, collaborative spatial platforms), case studies and research.

- f. **Immediately beginning work on priority accounts:** National land accounts, ecosystem extent and condition accounts, water accounts (stock, flow and quality), and accounts for selected ecosystem services (related to food security and water security) are required at a national level. Case studies and feasibility studies for additional accounts, for example on carbon, species diversity, accounts for protected areas, and additional ecosystem services, could be piloted.

4 NP-AEEA – High level outcomes

It is important to link proposed activities with their ultimate outcomes. This section summarises the key outcomes that could be achieved for South Africa by adopting and implementing the NP-AEEA. In the Section **NP-AEEA – Investment Logic Framework**, a program of activities is detailed showing the timelines and steps needed to achieve the outcomes:

- A comprehensive environmental-economic accounting information system that responds to the requirements for information on sustainable development and green economy;
- Enhanced statistical coordination within South Africa and between levels of government and initiatives for the advancement of SEEA, including ecosystem accounting;
- Additional training and capacity building in environmental-economic accounting, including ecosystem accounting;
- Enhanced coordination with national initiatives, as well as international and donor agencies for assistance with environmental-economic accounting and related data initiatives;
- Improved resourcing, data quality, access, technical capacity and statistical infrastructure for environmental-economic accounting; and
- A set of priority accounts, namely national land accounts, ecosystem condition and extent accounts, water accounts and accounts for selected ecosystem services (e.g. those related to food security and water security) at a national level, plus case studies and feasibility studies for additional accounts.

5 Program of work building blocks

This section and the following section on **Methodologies** provide a brief overview of the building blocks and methods needed to implement the NP-AEEA. The aim of this section is to provide generic guidance on a standardised approach based on current frameworks, systems, methods and guidance and training material.

The Guidelines on Integrated Economic Statistics (IES)³⁵ suggest three main interlinked and mutually reinforcing building blocks for developing integrated statistical systems: conceptual organizing frameworks, institutional arrangements and statistical production processes.

Linking these to the needs assessment and high-level outcomes sections above, the building blocks when applied to the **NP-AEEA – Investment Logic Framework**, are:

- 1) Mainstream the Environmental-Economic Accounting Frameworks
- 2) Rationalise and Integrate Institutional Arrangements
- 3) Integrate the Data, Tools and Statistical Production Process
- 4) Ecosystem Accounting Experimentation³⁶

³⁵ <http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf>.

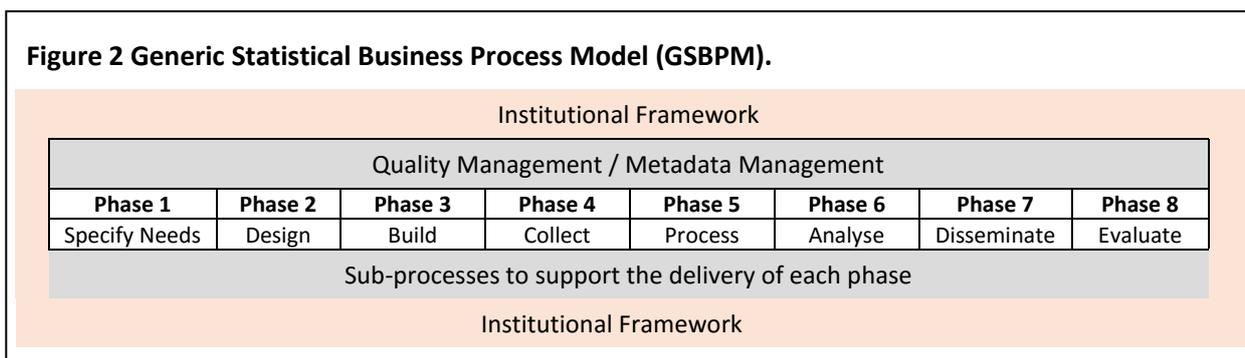
Building blocks 1-3 are the core and required to achieve the overall aim and building block 4 ensures continuous improvement including research and development, testing and experimentation to adapt the guidelines of the SEEA to the country situation. The building blocks are combined with the Generic Statistical Business Process Model (GSBPM)³⁷ shown in **Figure 2**. The GSBPM describes and defines the set of business processes needed to produce official statistics. It provides a standard framework and harmonised terminology to help statistical organisations to modernise their statistical production processes, as well as to share methods and components. The GSBPM can also be used for integrating data and metadata standards, as a template for process documentation, for harmonizing statistical computing infrastructures, and to provide a framework for process quality assessment and improvement.

The GSBPM should be applied and interpreted flexibly and used to provide guidance. It is not a rigid framework in which all steps must be followed in a strict order. Instead, it identifies the possible steps in the statistical business process, and the inter-dependencies between them.

Although the presentation of the GSBPM follows the logical sequence of steps in most statistical business processes, the elements of the model may occur in different orders in different circumstances. In addition, some sub processes will be revisited a number of times forming iterative loops, particularly within the Process and Analyse phases.

GSBPM is a matrix, through which there are many possible paths. In this way, the GSBPM aims to be sufficiently generic to be widely applicable, and to encourage a standard view of the statistical business process, without becoming either too restrictive or too abstract and theoretical.

The building blocks are expanded on below followed by a discussion of methodologies to support



their implementation.

5.1 Mainstream the environmental-economic accounting frameworks

The fundamental objective of this building block is to communicate with and engage national and international partners for the implementation of environmental-economic accounts. The foundations of the GSBPM are quality management and metadata management frameworks of which the SEEA is one.

This building block aims to mainstream the environmental-economic accounting frameworks, and to structure it in stages that can be implemented and monitored. The framework builds on SNA principles, but is extended based on ecological foundations, and under the umbrella of SEEA-CF and SEEA-EEA. Novel concepts and ideas need to be mainstreamed for the purposes of experimentation and familiarisation across government agencies and academia. It is an umbrella block of work that guides the development of the others and is necessary for their success.

³⁶ Experimentation has been added as an additional building block in support of SEEA EEA and the experimental nature of work needed.

³⁷ <http://www1.unece.org/stat/platform/display/GSBPM/GSBPM+v5.0>.

Building and publishing environmental-economic accounts relies on a number of related processes, all geared towards the advancement of organizational design (institutions), technical (data collection and processing), scientific discovery (generating new data) and ultimately an improved understanding of natural resource and ecosystem values as assets that provide essential services.

These processes combine available knowledge from many disciplines and agencies including national statistics and accounting, management of energy, minerals, land, water, ecosystems and biodiversity and studies of key ecological processes to name a few. All these require clear communication tailored to their needs so that mainstreaming, adaptation and application of the available knowledge can occur.

5.2 Rationalise and integrate institutional arrangements

The “One-UN” process recommends that countries move towards one integrated National Statistical System. That is, all agencies should work within the same quality guidelines and seek opportunities for reducing duplication of effort by improving coordination in statistical production.

Clearly for any new system, process or framework that affects so many agencies to be adopted by government requires very careful assessment of current institutional arrangements and possible impacts on those arrangements. The GSBPM recognises this as a condition to achieving adoption, funding, monitoring and enforcement of any new system. Further, it can be applied to all stages in the process and, at each stage, institutions and agencies will understand clearly their roles and responsibilities.

There are many agencies involved in the collection and publication of data. In many instances, the need has arisen from within individual agencies to meet their reporting and policy requirements. For instance, an environmental agency may focus on the classification and measurement of important ecosystem assets in the landscape whereas an agricultural agency will focus on agricultural resources and economic benefits of the same landscape. Both approaches are valid in their own right, but the aim of environmental-economic accounting is to build an integrated set of information to support decision making and trade-offs across domains. Further, the movement towards a more integrated and streamlined process for the collection and publication of data provides opportunities for lowering the overall cost and increasing its use and efficacy.

This does not imply reducing the control that agencies have over their own data collection processes, but it does require rationalising the standards used for data collection and strengthening the NSS to share data in real time where appropriate. It is important to recognise that individual agencies have the greatest strength in understanding specific subject areas, but are not necessarily expert in statistical production systems – this is the role of NSOs.

5.3 Integrate the data, tools and statistical production process

Environmental-economic accounting is a transdisciplinary activity. That is, the concepts and tools require a common language between disciplines. Integrating existing concepts and tools that have been developed for specific purposes will require adaptation to a common framework, provided by the SEEA.

This building block links to GSBPM Phases 3, 4, 5 and 6 and addresses the main challenges of data gaps, scientific credibility, comparability and data uncertainties that can be bridged by building on the existing data systems, methods and tools. Building environmental-economic accounts provides new challenges for both economic and environmental data collection and production. There is a need to harmonise concepts and rationalise the principles of both disciplines to maintain the integrity of both areas. In many instances there will be a need to adjust to a shared conceptual framework to facilitate an integrated outcome.

Many of the tools and infrastructure required already exist. However, they operate on different platforms and standards making integration costly in both time and resources. In the medium to

long term, the aim of the NP-AEEA is to leverage current systems that offer the flexibility needed to support future demands for integration. Key to achieving this will be the review and assessment of current systems and approaches. This would be followed by the development of a strategic investment plan for their integration.

This integration will also identify opportunities for further research and experimentation.

5.4 Ecosystem accounting experimentation

There remains some uncertainty in the science and its application in *ecosystem accounting* within the broad umbrella of environmental-economic accounting. A cost-effective approach to determining the best pathway is to experiment on a number of fronts at the same time whilst keeping in mind the long-term aim of full integration and publication at the national level. Testing the SEEA-EEA is part of a global experiment to develop effective ecosystem accounts. In this respect, the experience of all countries will contribute to this experiment.

Experimentation also serves as an important vehicle for mainstreaming ecosystem accounting. During the experimentation phase, agencies less familiar with ecosystem accounting can be involved and grow to understand how demands for data are changing and how the accounts can be tailored to their policy needs.

South Africa is well placed to participate in this experimentation, given its excellent scientific and technical capacity, the high-level interest in sustainable development and the need articulated among a range of stakeholders to assess the economic benefits of the sustainability initiatives undertaken. This establishes the conditions for broad support of the SEEA approach in South Africa.

6 Operational framework

This section relies heavily on the current and new material being produced that will support the ongoing production of environmental-economic accounts. This section provides a brief overview of some of the approaches and options that may be considered when formulating a program of work that delivers on the building blocks and the longer-term aim of the country.

The advantage of having common operational frameworks is to enable coordinated progress towards advancing environmental-economic accounting.

6.1 Institutional framework

The institutional framework should facilitate exchange of knowledge, expertise and even experts between the partners. The creation of the integrated systems of statistics should be the shared responsibility of the top management of all agencies involved. When agreement on the more detailed programme, the roadmap and the specific roles and responsibilities has been reached, then periodic high-level meetings may be very fruitful to discuss progress, solve bottlenecks, strengthen commitment and ensure that the outputs satisfy the needs of the stakeholders.

Designing, developing and implementing an integrated system of statistics is a large programme and requires a broad management strategy. For the programme and all the sub-programmes, programme boards and programme managers are needed. The programme boards are chaired by the senior manager of the domain involved. If the (sub-) programme goes beyond the borders of organizational units, it is preferable to have a senior manager as chair.

The programme boards and the programme managers may be supported by a small bureau in operational and administrative tasks. The programme boards consist of the chair, the programme managers and directly involved management. All members should seek to have a mandate to make decisions within the scope of the (sub-) programme. Elements that may be adapted to conditions in South Africa include:

- High level commitment, and engagement of partners; common coordination; data collection/sharing implications
- Advisory committees (IES³⁸, p. 39)
- Legislation; mandates to coordinate, produce, supply inputs etc.
- Inter-institutional commitments for production of integrated statistics – Memoranda of Understanding (MoUs) (IES, p.41)
- Inter-departmental commitments – Service-Level Agreements (SLAs) (IES, p.42)
- Programme governance structure development

6.2 Roles and responsibilities for environmental-economic accounting

If agencies outside the NSOs are involved in the compilation and dissemination of official statistics, then, for the creation of integrated system of statistics, it is necessary to create partnerships. The first step is to engage all relevant agencies in the discussion of the necessity and the mutual gains of improving integration within the NSS. This can only be done at the level of the top management. The next step is agreement on the possible new roles and responsibilities of the agencies in the new systems.

When general agreement on the scope of the integrated systems of statistics has been reached, a detailed design of the whole chain of all processes, inputs, intermediary products, outputs and all interdependencies can be made. The process will be iterative, in that pilot accounts will be built and the design will be revised based on the experience gained. Initial design and testing will require attention to:

- Working groups
- Advocacy
- Workshops – policy, awareness building, etc.
- Demonstrations
- Feasibility
- Proof of concept – experimentation, structural change
- Training sessions
- Customised communications plans

6.3 Environmental-economic accounts production process

The GSBPM Phase 3 (Build) and Phase 4 (Collect) are based on the understanding of the mechanics of delivering on a new system developed in Phase 2 (Design). This includes (but is not limited to):

- Data collection (or generation – through sampling, inventories/surveys, detailed process-modelling, spatial and remote-sensing applications)
- Data harmonization (processing, quality control, imputation)
- Determining accounting inputs
- Accounting outputs estimation
- Accounts validation

The program of work is an opportunity to adapt these elements to the needs of each country for all the phases of GSBPM.

³⁸ The Guidelines on Integrated Economic Statistics <http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf>. See above.

6.4 Research, development and experimentation

An important step is to carry out extensive experimentation to test whether methods and concepts are appropriate, and what data can be used or developed. The SEEA-EEA provides a core measurement framework, but has not yet developed to the point where all methodological issues have been resolved and universal compilation guidelines can be provided. Issues that require further experimentation include:

- Accounting classifications³⁹, with standardised item definitions and measurement methods
- Country-specific classification of ecosystem assets
- Units for ecosystem accounting
- Environmental indicators and aggregates
- Upscaling and downscaling
- Valuation
- Validation data and specific quality criteria to formally track progress

These methodological issues will be addressed in collaboration with an international community of practice on ecosystem accounting. This can be enhanced by considering the pilot accounts as experiments, in which concepts, classifications and methods are tested and improved in successive iterations. Different options, for example, for classifications or data sources could be applied in parallel and evaluated.

Accounting architecture

When designing new accounts, it is very important to ensure the timely availability of micro-data and the time required for processing. A part of the experimentation should be to test the design for feasibility within the business and software architecture. This will reveal any consequences for the Information Technology (IT) environment (Geographic Information Systems (GIS) capacity, running time, storage etc.). If the feasibility tests shows bottlenecks, one must make sure that they can be solved (at reasonable cost) before the next phase can start. Based upon the (adapted) design, the experimentation, the estimated costs and benefits, a decision must be made whether the programme is feasible and acceptable for all involved partners.

Information and decision support tools and architecture

Besides statistical systems managed by NSOs, there are many systems in place for the collection and collation of data for decision-making. These include geographical information systems, biophysical models, agency databases, business and land registers and taxation registers.

Many of these are amenable to producing data that can be used for environmental-economic accounting, but may require further work to integrate with other systems. This area of experimentation is very important because there are significant opportunities to leverage the current system and to save resources.

It is important that experimentation have clear links with policy and decision making in order to demonstrate the benefits of change. Examples may include:

- The specification of ecosystem assets and services that are important for guiding investment in ecological infrastructure
- Land use change programs for carbon sequestration⁴⁰
- Trade-offs between optional uses of land in land use planning
- Setting geographic priorities for conservation

³⁹ Accounting classification enables the translations between existing classifications.

⁴⁰ <http://www.un-redd.org/aboutredd/tabid/102614/default.aspx>

Moving from experimentation to (national) production

Case studies, specialized national statistical collections, sub-national collections and experimental accounts all offer opportunities for scaling up to national-level GSBPM-compliant statistical processes. Whether or not these have been conducted according to Phases 1 through 7 of the GSBPM, there will still be effort required to ensure that these collections are brought into compliance in terms of quality, consistency in concepts, resourcing and long-term planning.

The recommended approach to accomplishing this is for the NSO to assess a candidate data collection with respect to quality and coherence with the SEEA. In the case of well-established collections, the project team will need to decide how the collection may be adapted to the national standard without affecting its original purpose. For example, crosswalks may need to be developed for classifications and more stringent quality guidelines and documentation may need to be developed. After assessment and integration, the project team is in a position to produce a work plan that specifies the timelines, resources required to produce the expected outputs.

This scaling up of existing work should be seen as a national strategic investment, since it will (a) make a new data source available to address national policy priorities at a relatively low cost, (b) improve the consistency and coherence of existing data collection activities and (c) provide new uses and users for existing data.

7 NP-AEEA – Investment Logic Framework (ILF)

The ILF provides a structured approach to analysing the suite of optional activities that may be undertaken to achieve the desired outcomes (See **Figure 3** below and in more detail in **Figure 4** in Section 9). The ILF should not be seen as a series of steps to be followed consecutively, but as key elements that are essential to the effective delivery of outcomes.

Figure 3. Investment Logic Framework



Participation and Enabling Factors – it is important to identify stakeholders that need to participate and to start engagement early. Participation is central to the mainstreaming of environmental-economic accounting and achieving buy-in and engagement. Often, an assessment of participation and enabling factors occur together. Enabling factors may require changes in institutional arrangements before statistical development activities commence. Additional resources may need to be allocated to achieve an enabling factor, so it is important for participants to be very clear from the outset what their involvement may mean.

Activities and Outputs – the program of work is made up of series of activities that lead to a number of outputs. Activities are elements of work and outputs are visible products of that work. Achieving one output may require several activities. It is important to ensure that each activity can be linked to an output to ensure its relevance and timing of activities. Finally, outputs can be linked to impacts and outcomes.

Impacts and Outcomes - Impact evaluation measures the difference between what happened with the programme and what would have happened without it. It answers the question, “How much (if any) of the observed change occurred because of the programme or activities?” Outcome evaluation measures the programme results or outcomes. These can be both short and long-term outcomes.

7.1 Participation and enabling factors

7.1.1 Coordination with partners in South Africa

Several government institutions in South Africa are involved in providing and using sustainable development information, including but not limited to:

- The Department of Environmental Affairs (DEA)
- The Department of Water and Sanitation (DWS)
- Statistics South Africa (Stats SA)
- The South African National Biodiversity Institute (SANBI)
- The Council for Scientific and Industrial Research (CSIR)
- The Department of Planning, Monitoring and Evaluation (DPME)
- The Ministry of Finance, National Treasury
- The Department of Energy (DoE)
- The Department of Rural Development and Land Reform (DRDLR)
- The Department of International Relations and Cooperation (DIRCO)
- The Department of Agriculture, Forestry and Fisheries (DAFF)
- The Department of Mineral Resources (DMR)
- The Agricultural Research Council (ARC)
- The Water Research Commission (WRC)
- The National Planning Commission (NPC)
- The South African National Space Agency (SANSA)
- Relevant provincial departments and agencies
- Municipalities

7.2 Enabling Factors

The knowledge base for environmental-economic accounting exists in South Africa. This has grown through several initiatives, such as the development of core SEEA accounts at Stats SA and SEEA-CF training in which several departments participated. This section examines the progress on environmental-economic accounting and the data available to enable the development and on-going production of environmental-economic accounts and the related data sources needed for them.

A range of projects already completed or that are in progress in South Africa are directly relevant to environmental-economic accounting. Projects and activities identified include:

- Statistics South Africa (Stats SA)
 - Environmental-Economic Accounts⁴¹ covering energy, fisheries, minerals and selected socio-economic indicators
 - Water Accounts⁴²
 - Training capacity on the SEEA-CF and SEEA-EEA
 - Participation in interdepartmental Data Forums
 - Implementing SNA 2008
 - South African Statistical Quality Assessment Framework (SASQAF).
- Department of Environmental Affairs (DEA)
 - Lead development of National Strategy for Sustainable Development and Action Plan
 - State of the Environment Reporting: Environment Outlook
 - Environmental Sustainability Indicators

⁴¹ <http://beta2.statssa.gov.za/publications/Report-04-05-20/Report-04-05-202014.pdf>.

⁴² <http://www.statssa.gov.za/publications/D0405/D04052000.pdf>.

- Green Economy Modelling Report (with UNEP)
- BIOFIN (with UNDP)
- Lead development of Delivery Agreement for MTSF Outcome 10 (on the environment)
- GHG Inventory for South Africa, 2000 – 2010
- National Biodiversity Strategy and Action Plan (NBSAP).
- South African National Biodiversity Institute (SANBI)
 - National Biodiversity Assessment
 - National Ecosystem Classification System
 - National River Ecosystem Accounts, and pilot land accounts for KZN province
 - Framework for Investing in Ecological Infrastructure
- Council for Scientific and Industrial Research (CSIR)
 - State of Rivers Reports (with DWS)
 - Mainstreaming ecosystem services in planning and decision-making (with ProEcoServ)
- Department of Water and Sanitation (DWS)
 - State of Rivers Reports (with CSIR) as part of the River Health Programme
 - Maintain an ecological status database for rivers
- Water Research Commission (WRC)
 - Development and Assessment of an Integrated Water Use Quantification Methodology for South Africa (WRC Project K5/2205 with University of KZN).
 - Atlas of Freshwater Ecosystem Priority Areas in South Africa (WRC, SANBI, CSIR, DWS, WWF-SA, SANParks, SAIAB)
- Department of Planning, Monitoring and Evaluation (DPME)
 - National Development Plan (NDP)
- The Presidency
 - Medium-Term Strategic Framework (MTSF)
- Ezemvelo KZN Wildlife
 - Case studies on ecosystem services
- Department of Rural Development and Land Reform (DRDLR)
 - National land use classification and spatial cadastral data viewer
- Agricultural Research Council (ARC)
 - AGIS, an online, integrated spatial database of selected agricultural, climate, soil and demographic data
- UNEP South Africa Liaison Office
 - Green Economy Modelling Report
- UNDP South Africa Country Programme
 - BIOFIN

The NP-AEEA provides a common, cost-effective and sustainable statistical infrastructure for producing statistics to support and integrate the statistical production aspects of these programs into the NSS. To accomplish this, the implementation of the NP-AEEA may be able to build on the existing interdepartmental data forums, but will also require senior and technical oversight, and governance and funding mechanisms. These are discussed further below.

7.2.1 Planning and coordination

Planning and coordinating the implementation of the NP-AEEA will require a high-level Steering Committee for Environmental-Economic Accounting to be established. This would provide a forum for senior representatives of core stakeholders, for example: Stats SA, DEA, DPME, DWS, SANBI and National Treasury to set priorities and coordinate the work. The scope of the Steering Committee could be expanded to include other stakeholders to address broader issues of providing supporting information for sustainable development, green economy and climate change. A broader committee could also include, for example: DRLDR, DoE, DMR, DIRCO, DAFF, ARC, WRC, NPC and DMR.

The Steering Committee for Environmental-Economic Accounting would be most effective by coordinating closely with other national data integration initiatives such as responding to the SDGs and aligning the production of indicators for the NDP and MTSF.

Terms of Reference for the Steering Committee would need to be developed and discussed at its first meeting. Key tasks of the Steering Committee would be to:

- Develop, endorse and advocate the NP-AEEA within the government and with relevant international agencies,
- Coordinate with relevant data collection and capacity building activities,
- Ensure the establishment and effective function of Technical Working Groups (described below),
- Facilitate the mobilisation of resources necessary for the production of the accounts,
- Monitor the progress towards the production of priority environmental-economic accounts and related outputs (spatial datasets, collaborative databases, indicators, case studies)

In early 2015, South Africa established a Strategic Advisory Committee for Ecosystem Accounting. The membership of this committee includes senior representatives of Stats SA, SANBI, DEA, DWS, CSIR, National Treasury, WRC and South African National Parks. The intent is to broaden this committee to include DAFF, DRLDR and the Economic Development Department. The Steering Committee proposed above may build on this existing Strategic Advisory Committee.

There are various organisational models for implementing environmental and ecosystem accounts. The structures suggested below are intended to provide a starting point for discussion about what may be most appropriate in the South African institutional context.

It is likely that a Technical Committee and Technical Working Groups will need to be established to address the priorities set by the Steering Committee to design. The role of the Technical Working Groups could include building the information system, undertaking data collection, processing and analysis, and ensuring that these activities are appropriately co-ordinated between partners. In keeping with the principles of the GSBPM, the work is ideally organized into groups of subject-matter experts and functional experts.

The subjects of the initial accounts to be developed include: national land cover accounts, ecosystem extent and condition accounts, water accounts, and accounts for selected ecosystem services (e.g. those related to food security and water security). Additional SEEA-CF accounts may also be identified as priorities. Technical Working Groups will be established as needed, linked to specific accounts or sets of accounts that form part of the NP-AEEA. A separate Working Group on SEEA-CF accounts may need to be established to support the further development of the SEEA-CF accounts. It would ensure consistency with SEEA-CF, bring existing SEEA-CF accounts into ongoing production, and develop new SEEA-CF accounts.

Rather than duplicating the capacity to integrate spatial data, classify data and to maintain quality standards, a separate Functional Group may be assigned to support all the subject-based Technical Working Groups. Its role would include designing and building the spatial information system, developing and maintaining data quality standards, providing GIS and data processing support to

other Working Groups where required. This initial set of working groups could be expanded as work becomes more specialized or covers more accounts.

The composition of each Technical Working Group will need to reflect the particular account being developed, but in general would need to contain representatives from the physical sciences, ecology, economics, accounting, geography, information technology and statistics. The group of statisticians can be viewed more generally as ensuring on-going production of data by government. The main government agencies responsible for the collection, management and distribution of data relevant to the account would need to be represented in each Technical Working Group.

Each of the Technical Working Groups would need to meet regularly, for example, in the order of quarterly in the first 1-2 years, and less frequently after that. The focus of the work is the production of pilot accounts, with a view to establishing the technical processes for the regular production and use of accounts within government.

This will be accomplished initially by inventorying available data, assessing its quality, identifying gaps, and integrating the data into a common spatial infrastructure. Priority data gaps could then be filled based on the most feasible approach (e.g., new data collection, adaptation of existing data, adaptation of global datasets).

At least once a year, all Technical Working Groups should come together to report progress, share experiences and revise their work plans.

As part of the planning and coordination phase each of the Technical Working Groups would produce a detailed project plan for each of the priority environmental-economic accounts.

7.3 Activities and outputs

Over the medium term, the pilot project will not only produce several pilot accounts and case studies, it will also produce prototype integrated indicators that address the needs of the NDP and MTSF, and a coherent spatial database.

7.3.1 Building priority accounts based on policy needs

The need for a range of environmental and ecosystem accounts was identified after a review of the major policy documents and discussions with a range of stakeholders. The link between policies, accounts and agencies is shown in **Table 1**, below.

Table 1. Overview of policies and accounts relevant to environmental-economic accounting in South Africa

Type of account	Policy or issue	Agencies
National Land Accounts Ecosystem Extent and Condition Accounts,	<ul style="list-style-type: none"> • NDP: Environmental sustainability • MTSF (Agricultural Policy Action Plan (APAP), Agriculture, Forestry and Fisheries Market and Trade Development Strategy, Comprehensive Food Security and Nutrition Strategy, Outcome 10, Sustainable Land Reform, Research in Climate Services) • NSSD • Aichi Target 2 • SDGs 	Stats SA, SANBI, CSIR, DPME, DEA, ARC, Ezemvelo KZN Wildlife, DRLDR
Water Accounts	<ul style="list-style-type: none"> • NDP: Environmental sustainability • MTSF (Water and Sanitation Infrastructure Master Plan; Strategic Water Source Areas; Agriculture, Comprehensive Food Security and Nutrition Strategy, Forestry and Fisheries Market and Trade Development Strategy, Outcome 10) • NSSD • Aichi Target 2 • SDGs 	Stats SA, SANBI, CSIR, DPME, DWS, WRC
Accounts for selected ecosystem services (e.g. those linked to food security and water security)	<ul style="list-style-type: none"> • NDP: Environmental sustainability • MTSF (Water and Sanitation Infrastructure Master Plan; Strategic Water Source Areas; Agriculture, Comprehensive Food Security and Nutrition Strategy, Forestry and Fisheries Market and Trade Development Strategy, Outcome 10) • NSSD • Aichi Target 2 • SDGs 	StatsSA, SANBI, CSIR, DEA, DWS, DAFF, DPME
SEEA-CF Accounts	<ul style="list-style-type: none"> • NDP: Environmental sustainability • Green Economy and BIOFIN • SDGs 	Stats SA, DPME, SANBI, DME, DWS, Finance, DMR, DEA

The priorities identified for the development of environmental-economic accounting in South Africa include:

- National Land Accounts (especially national land cover, land use and ownership)
- Ecosystem Extent and Condition Accounts (ideally across realms i.e. terrestrial, freshwater, coastal and marine)
- Water Accounts (including detailed supply, use and quality)
- Ecosystem Service Accounts (especially those relating to food security and water security)
- Priority SEEA-CF accounts

Scoping the feasibility for carbon accounts, species accounts, protected area accounts and other accounts identified by the Steering Committee for Environmental-Economic Accounting would also be possible.

Ecosystem accounting requires data with more spatial detail than most existing statistical processes. This has significant implications for the primary data sources and information management systems and administrative arrangements needed to generate and access the data to populate the accounts.

Pilot accounts would be progressively produced and refined from mid-2016. Following the pilot production of each of the priority accounts, the aim should be to produce each of them again in two more consecutive years (i.e. in 2018 and 2019 or 2019 and 2020) and well as to produce a publication integrating all of the pilot environmental-economic accounts.

Ensuring the use of the accounts in government and other decision-making process will be addressed in a number of ways. Until the production of the first pilot accounts, the primary approach will be engagement with policy-makers at different levels via the Steering Committee and Technical Working Groups. It is important that these first pilot accounts be seen as proofs of concept that addresses the specific needs of one or more stakeholders. After the pilot account accounts are produced, discussions on the possible applications of the accounts, including any additions or refinements, will be held directly with key government agencies. In addition, stakeholder workshops to communicate the results of each account may be useful.

7.3.2 Capacity building

Both human resources and infrastructure will need to be built to develop, implement and regularly produce and use environmental-economic accounts in South Africa. A key part of the capacity building will be learning-by-doing via the production of pilot accounts and prototype integrated indicators.

In this, the building of both human resources and infrastructure would occur especially in the first 1-2 years, with the pilot accounts being produced in 2-3 years.

Human Resource Capacity

Capacity building will be a critical part of the development of environmental-economic accounts in South Africa. There will need to be general training on environmental-economic accounts as well as more specific training and technical support on each of the ecosystem accounts and the primary data sources used in the accounts. The general training would occur as soon as possible, with more specialised training and technical support for each of the four types of accounts For example:

- Workshop and/or technical support on water accounting
- Workshop and/or technical support on land accounting
- Workshop and/or technical support on ecosystem service accounting
- Workshop and/or technical support on carbon accounting

Subsequently, additional detailed training and engagement is likely to be needed as the production of the pilot accounts and aggregates draws nearer.

In addition to in-country training and technical support, a range of other capacity building activities should be considered including:

- Government officials and other stakeholders participating in relevant international meetings (such as the planned regional workshops on environmental-economic accounting)
- Use of distance or on-line learning
- Placement of project staff in countries or international agencies with existing environmental-economic accounting programmes
- Sponsorship of account producers or users for relevant higher degree studies (e.g. on economics, ecology and accounting) in universities. Local capacity could be augmented by developing course material and establishing courses on environmental-economic accounting for South African universities.

Infrastructure

Ensuring that the account developers have the necessary information technology and data to support the development of accounts will also be important. This need is already being addressed in a number of current projects:

- Stats SA, SANBI, CSIR, DEA and DWS already have the technical capacity to process spatial and other data for some of the SEEA-CF and SEEA-EEA accounts. Developing ecosystem accounts will require an enhancement of not only departmental human resources, but may also require additional co-ordination to support the acquisition and integration of large volumes of spatial data. Several organizational models could be explored to facilitate integrating volumes of spatial data in a collaborative way. One option may be creating a centralized facility, thus helping to ensure that the activities are ongoing. It may be possible to build on the experience and capacity of existing efforts to co-ordination and manage data in a range of departments.
- As part of the NP-AEEA, access to remote-sensing data will also be needed. While not infrastructure *per se*, the data would be a requirement for the development of environmental-economic accounts, in particular for the National Land Accounts, Ecosystem Extent and Condition Accounts, Water Accounts and Ecosystem Service Accounts. Rather than developing in-house capacity for this, Stats SA could develop the required data in collaboration with agencies that already have experience in remote sensing (e.g., SANSA, the South African National Space Agency).

7.4 Impacts and final outcomes

Whereas activities and outputs are tangible and generally observable, the impacts and outcomes are more difficult to observe. However, the impacts are important because they are the changes expected as a result of the activities.

Table 2 provides a high-level assessment of the impacts linked to the activities.

The outputs are expected to contribute to the needs for a more integrated NSS and a more engaged and better-coordinated body of stakeholders. The contribution of the project to the sustainability of South Africa's development initiatives depends on many factors, including unforeseen circumstances and events beyond the control of the NP-AEEA. It has been the experience of the international statistical community that a robust and flexible NSS is an important tool in adapting to future uncertainties and future data needs.

Table 2 Linking activities to impacts

Activities	Impacts
Building priority accounts based on policy needs	<p>Providing Ministers and their agencies with empirical evidence of changes resulting from sustainable development policies</p> <p>Improved knowledge on natural resources including ecosystems and well-being</p> <p>Better policies, decisions on trade-offs between development and conservation</p> <p>Foundations to build integrated indicators on sustainable development</p>
<p>Capacity building</p> <p style="text-align: center;">Human resources</p> <p style="text-align: center;">Infrastructure</p>	<p>The ongoing capability to integrate environmental-economic information into government decision making</p> <p>Training for agency and academic staff to support the ongoing implementation of environmental-economic accounts</p> <p>A civil service and civil society that is informed about environment and development</p> <p>The ongoing cost effective production of environmental-economic accounts that meet the needs of policy in a timely manner</p> <p>Improved statistical collaboration between sectors and agencies</p>
Development of integrated indicators	<p>Provide Ministers and their agencies with a set of indicators linking government policies to sustainable development goals</p>

8 Conclusions and next steps

8.1 Conclusions

The focus of the NP-AEEA is on medium-term (3-5 year) activities that will produce substantial new information to address South Africa's sustainable development policy priorities. This is the first stage of creating a common, cost-effective and sustainable statistical infrastructure for environmental-economic accounting. Maintaining the momentum generated by these medium-term activities by new data collection and continual improvement will require more than specific funding opportunities. It will also require embedding the activities into the functions of government and national planning processes.

The NP-AEEA provides the foundations to write proposals that provide full details for each activity and the funding required. It contains many of the elements needed to write a proposal including: the

policy priorities, the needs assessment and a set of activities that will advance environmental economic accounting.

Opportunities for funding come from many different sources: national initiatives, international agencies, national development agencies and the refocusing of current work. Such opportunities may be identified by anyone familiar with the NP-AEEA including senior and technical staff, planning and environmental agencies and the NSO. It is therefore important that all stakeholders are familiar with the NP-AEEA and bring such opportunities to the attention of the lead agency. To increase these opportunities, it is important that the NP-AEEA is summarized and presented at relevant meetings and made available to all agencies and published on the Internet.

8.2 Next steps

To progress from a plan to specific proposals requires:

- (a) Adaptation of the NP-AEEA to needs of potential sponsors and funding available; and
- (b) Additional detail on participants, implementation, timelines, deliverables and budget.

8.2.1 Adaptation of the NP-AEEA to the needs of potential sponsors

Most sponsors will indicate their interests in funding projects by distributing Terms of References (TORs) or Requests for Proposals (RFPs). This will be based on the sponsor's vision of what is required.

The interests of sponsors may be less comprehensive and integrated than those covered in the NP-AEEA. Generally, sponsors are looking for proposals that focus on specific aspects of environmental-economic accounting, such as biodiversity, ecosystem services, mapping, poverty alleviation, food security, etc. They may also be interested in specific ecosystem types: oceans, forests, rivers or ecological topics such as desertification, pollution or species loss. They may be looking to support feasibility studies, capacity building or valuation.

The NP-AEEA provides the foundations for most of the above proposal types and presents them as an integrated package. It also emphasizes the importance of a strong statistical infrastructure so that the results of any project will contribute to building technical, institutional and statistical capacity. Although the need to strengthen the NSS may not be mentioned in a sponsor's TOR or RFP, it is in the country's national interest to emphasize this in proposals.

A TOR or RFP will also suggest a maximum amount of funding for projects. Furthermore, sponsors often require co-funding. That is, a country is expected to contribute a proportion of the costs of the entire project. Co-funding may sometimes be stated in terms of "in-kind" contributions of human and other resources. Available funding and the willingness of national stakeholders to co-fund a project will determine which aspects of the NP-AEEA are included in any given proposal.

8.2.2 Additional detail

The amount and nature of the detail contained in a proposal also depends on the expectations of the sponsor. Ideally, the proposal will link the expectations of the sponsor with the needs of the country.

Participants

The first step in developing a proposal is to assemble the team that may include departments, agencies and other stakeholders who will commit to participating in a project if it is funded. As noted above, this may also imply co-funding.

Implementation

The participants will need to come to an agreement on how a project will be implemented and how funds will be disbursed. For example, who will be the lead agency? What will be the governance

structure? Ideally, multiple projects can be coordinated within the overall governance structure of the NP-AEEA.

Timelines

TORs or RPFs will usually specify the length of time for a project. If the funding is for one year, this will determine the nature of the activities and provide due dates for deliverables. It is important, not only for the proposal, but also for the implementation of the project to divide the project into steps (e.g., preparation, assessment, data collection, analysis, report production, review and evaluation) and to allocate sufficient time to each step. The timelines are also important to coordinate the participation of stakeholders.

Deliverables

Generally, TORs and RFPs require a very clear specification of the deliverables that are expected. They could be very specific such as “an assessment of...”, “a report on...”, “a database of...”, “training on...”. Or, they could be less specific such as “improving decision making on...”, “integrating...with...”.

In either case, the success of the project will be judged on these deliverables. It is important to be very clear on what deliverables the sponsor is expecting.

Sponsors may wish to review progress during stages of the project. Sometimes payments are linked to progress at each stage. In this case, it is important to prepare documents that can be easily reviewed and show progress at each stage. For example, sponsors may wish to review a Table of Contents of a report, then an annotated outline and then a draft.

Sponsors may also require structured progress reports as the project progresses. Resources for this planning, evaluation and reporting should be built into the proposal.

Budget

Within the funding limits of the project, it is important to estimate how much work can actually be accomplished. Costs that need to be taken into account are not only the salaries of core participants, but also the “overhead” of administration, capital equipment, data, translation (if necessary), travel, meeting venues, etc.

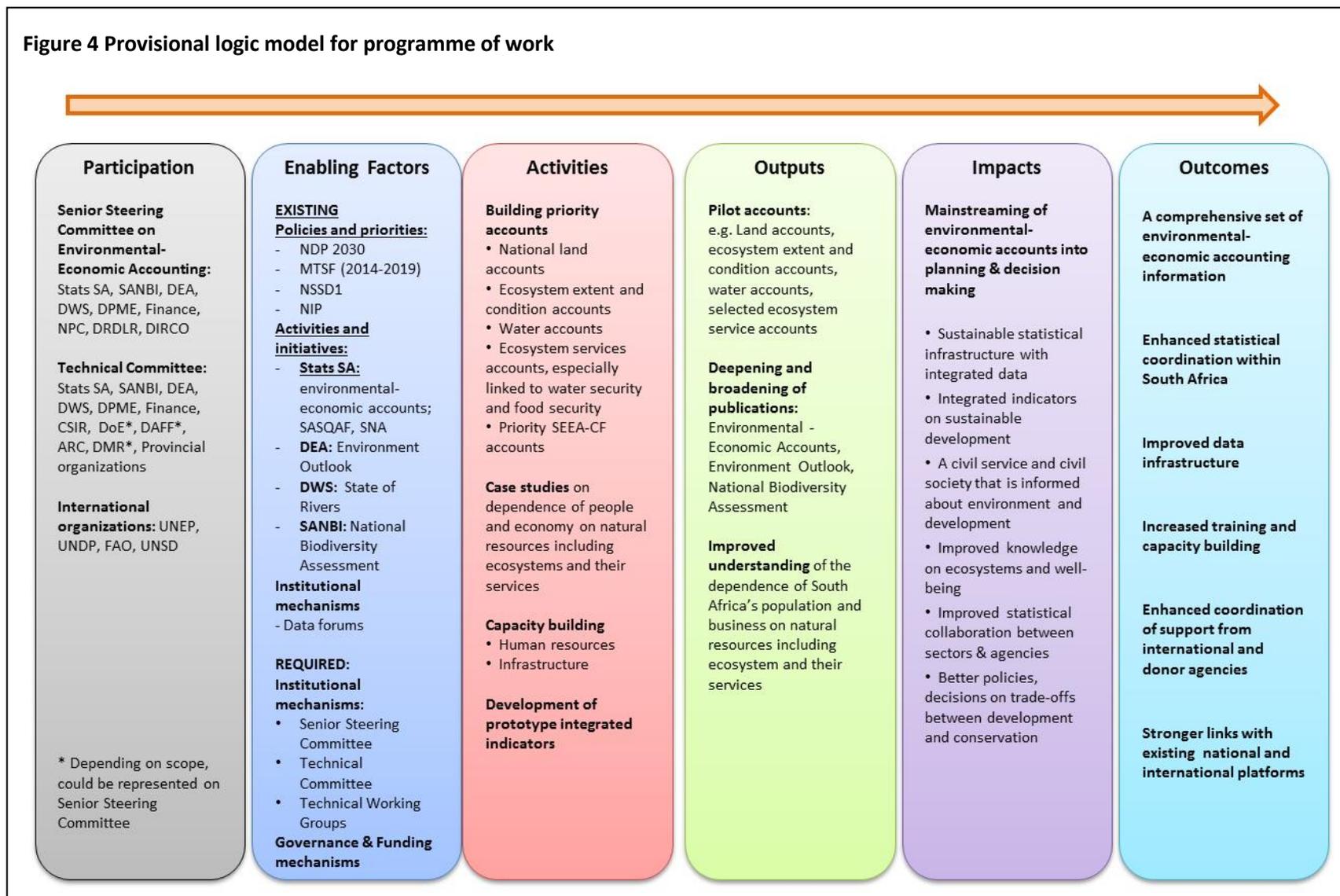
If this is to be a multi-year project, then a simple project plan (shown below) would help determine who is required at which stage and where other costed inputs are required. This is an opportunity to balance the year-to-year requirements. For example, an activity could be moved from one year to another if the project is expected to have the same cost for each year.

National Plan for Advancing Environmental-Economic Accounting 2015
-- South Africa --

	Year																								
	2015				2016				2017				2018				2019				2020				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Stage	Prep	Short-term								Medium-term															
Work Package	head count																								
1																									
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
FTE																									
Salary (\$K)																									
Operations (\$K)																									
Total (\$K)																									
Annual (\$K)																									
Outputs																									

9 South Africa - NP-AEEA – Investment Logic Framework (ILF)

Figure 4 Provisional logic model for programme of work



10 References

CARDINALE, B.J., DUFFY, J.E., GONZALEZ, A., HOOPER, D.U., PERRINGS, C., VENAIL, P., NARWANI, A., MACE, G.M., TILMAN, D. and WARDLE, D.A., 2012. Biodiversity loss and its impact on humanity. *Nature*, **486**(7401), pp. 59-67.

MA, 2005. *Millennium Ecosystem Assessment. Ecosystems and Human Well-being: A Framework for Assessment: Summary*. Washington, DC: Island Press.

ROCKSTRÖM, J., STEFFEN, W., NOONE, K., PERSSON, Å, CHAPIN III, F.S., LAMBIN, E., LENTON, T.M., SCHEFFER, M., FOLKE, C. and SCHELLNHUBER, H.J., 2009. Planetary boundaries: exploring the safe operating space for humanity. *Ecology and society*, **14**(2), pp. 32.

SANBI - SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE, 2013. *National Ecosystem Classification System - Concept Note*. March 2013. Pretoria, South Africa: SANBI.

TEEB, 2010. *TEEB for Local and Regional Policy Makers*. TEEB.