environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Climate Action Now!
Save the future

The National Climate Change Response Monitoring and Evaluation System Framework

REPUBLIC OF SOUTH AFRICA

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Table of Contents

Table of Figures

List of Tables

List of Boxes

Acronyms & Abbreviations:

- BUR Biennial Update Report
- cCR carbon*n* Climate Registry
- CDM Clean Development Mechanism
- CDP Carbon Disclosure Project
- CNG Compressed Natural Gas
- CO_2-eq Carbon dioxide equivalent
- DEA Department of Environmental Affairs
- DEROs Desired Emission Reduction Outcomes
- DoE Department of Energy
- DPE Department of Public Enterprises
- DPME Department of Performance Monitoring and Evaluation
- DSM Demand-side Management
- DTI Department of Trade and Industry
- DWA Department of Water Affairs
- EDD Economic Development Department
- EE Energy Efficiency
- EPWP Extended Public Works Programme
- GDP Gross domestic product
- GHG Greenhouse gas
- ICLEI International Council for Local Environmental Initiatives
- IDC Industrial Development Corporation
- IDM Integrated Demand Management
- IPCC Intergovernmental Panel on Climate Change
- MCEP Manufacturing Competitiveness Enhancement Programme
- MDB Multilateral Development Bank
- M&E Monitoring and Evaluation
- MJ Mega-joules
- MoU Memorandum of Understanding
- MRV Measuring, Reporting and Verifying
- MWh Megawatt-hours
- NBI National Business Initiative
- NCCRD National Climate change response database
- NCCRP The National Climate Change Response Policy, 2011
- NCPC National Cleaner Production Centre
- NDP National Development Plan
- PRASA Passenger Rail Agency of South Africa
- REIPPP Renewable Energy Independent Power Purchase Programme
- SAA South African Airways

- SAFCOL South African Forestry Company Ltd.
- SANBI South African National Biodiversity Institute
- SANEDI South African National Energy Development Institute
- SAWIS South African Waste Information System
- StatsSA Statistics South Africa
- SD Sustainable Development
- SWH Solar water heaters
- TPES Total Primary Energy Supply
- UNFCCC The United Nations Framework Convention on Climate Change
- W2E Waste-to-Energy

EXECUTIVE SUMMARY

The National Climate Change Response Policy (NCCRP) (DEA 2011) and the National Development Plan (NDP) (NPC 2012) highlight the importance of understanding South Africa's progress in moving towards the envisaged climate resilient and lower carbon economy and society. To this end, both policies call for setting up a mandatory national monitoring, evaluation and reporting system for climate change information (Table 1.1)

Table 1.1 NCCRP and NDP extracts on climate change monitoring and evaluation

Policy	Extracts
National Climate Change Response Policy	■ **General:** • To formulate effective responses to climate change, South Africa needs a country-wide monitoring system to measure climate variables at scales appropriate to the institutions that must implement climate change responses. • To monitor the success of responses to climate change, and to replicate the ones that have worked well, we need to measure their cost, outcome and impact. ■ **Mitigation and emissions:** • A national system of data collection to provide detailed, complete, accurate and up-to-date emissions data in the form of a Greenhouse gas (GHG) Inventory, and • Analyses of emission trends, including changes in emission intensity of the economy and a comparison of actual GHG emissions against the benchmark national GHG emission trajectory range. • A monitoring and evaluation (M&E) system to support the analysis of the impact of mitigation measures. • Mitigation interventions will be monitored and evaluated against the National Emissions Trajectory range. • The M&E system will assess indicators defined in desired emission reduction objectives (DEROs) and mitigation plans, including impact on emissions, implementation and wider sustainable development (SD) benefits. • Both the GHG inventory system and the mitigation M&E system to be web-based. ■ **Adaptation and impact:** • Establish a system for gathering information and reporting progress on the implementation of adaptation actions. • Measure climate variables at scales appropriate to the institutions that must implement responses. • Monitor climate change impacts, risks and vulnerabilities ■ **Climate Finance:** • Create a transitional tracking facility for climate finance mechanisms and climate responses. • Need to track the use and impact of funds.

National Development Plan	▪ **Building an evidence base:** To inform planning, prioritise data collection mechanisms, including urgently setting up mandatory monitoring, evaluation and reporting processes for all relevant stakeholders. ▪ **Monitoring, reporting and verifying progress:** We need to monitor, report and verify to understand South Africa's progress against the national goals of the envisaged economy and society.

The overall approach to monitoring and evaluation of climate change in South Africa is informed by these policy directives.

Benefits of the National Climate Change M&E System

The overall benefits of the M&E system can be separated by stakeholder, or beneficiary, as follows:

South African stakeholders:

a. **All South Africans:** The system will provide an evidence-base for the impacts of climate change and the vulnerabilities brought about by the resulting climate change. It will also provide learning for what has worked and what hasn't in adapting to or mitigating climate change.
b. **Policy-makers:** The information generated by the M&E system will inform the development and implementation of climate relevant and climate conscious policies, strategies and laws.
c. **National, provincial and local government departments and institutions:** These entities will be able to use the information generated by the system to support planning, to monitor the success of their initiatives, to map and identify gaps in implementation and in climate finance and to learn from the successful responses of others. Government will also use the system to monitor the country's progress in responding to climate change and achieving its national or international climate-relevant goals and targets.
d. **Academic and research institutions:** Addressing climate research needs, including researching and developing new technologies and tools for mitigating and adapting to climate change.
e. **Civil society:** Gaining an understanding of government's climate change response policies, assessing their impact and identifying areas where civil society involvement can have the highest impact in climate change response.
f. **The private sector:** Identifying investment areas and opportunities within the lower-carbon and climate-resilient economy, understanding current and anticipated climate trends to inform private sector planning, benchmarking good practice responses, as well as assessing the impact and effectiveness of private sector responses.
g. **South African negotiators under the United Nations Framework Convention on Climate Change (UNFCCC)**: The M&E system will provide the necessary factual

information to inform South Africa's positions in various negotiating areas under the UNFCCC.

International stakeholders:

a. **The UNFCCC:** This is the primary international stakeholder of the M&E system since the system will support, inform and institutionalise the compilation of the national communications (NCs) and the biennial update reports (BURs) under the UNFCCC.
b. **Other international stakeholders:** These include international climate change research and think-tank organisations as well as international funders and cooperation partners in climate change response.

Based on the requirements of the NCCRP and the NDP set out in table 1.1 above, South Africa's overall climate change monitoring and evaluation system is composed of two primary complementary systems as shown in figure 1.1.

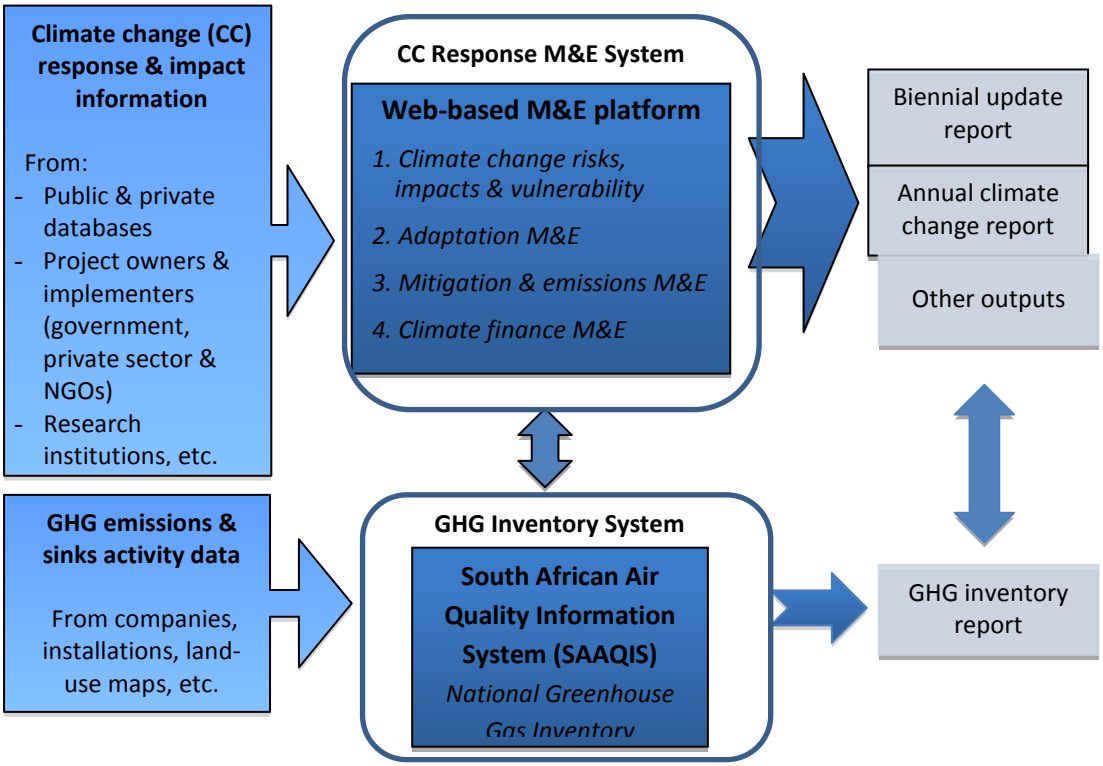

Figure 1.1 Summary of the overall M&E system for climate change in South Africa

- **The Climate Change Response Monitoring and Evaluation System**: This system covers all other aspects of climate change M&E and makes use of the GHG inventory as one of its primary information sources.
- **The Greenhouse Gas Inventory System**: With the GHG inventory report as the primary output, this system has the South African Air Quality Information System (SAAQIS) as its web-based database.

Chapters 2 and 4 of this document present these systems in detail.

2. THE NATIONAL CLIMATE CHANGE RESPONSE M&E SYSTEM

Based on the policy guidance and requirements, the overarching objective of South Africa's climate change response M&E system is to *"track South Africa's transition to a climate-resilient society and a lower-carbon economy"*. This objective can be disaggregated into the following sub-objectives:

- tracking the country's transition to a lower-carbon economy
- tracking the country's transition to a climate-resilient society and economy
- tracking climate finance to support the transition
- communication and learning.

Each of these is outlined and described in the following sections of this chapter.

The overall design of the National Climate Change Response M&E system is shown in **Figure 2.1**.It is broadly composed of the following sections:

I. **MONITORING SECTION:**

This can be disaggregated as follows:

- **Data and information network:** This is an information flow system divided into three sub-networks for measurement, reporting and verification (MRV) of information relevant to tracking South Africa's transition to a climate-resilient, tracking South Africa's transition to a lower carbon economy and tracking climate finance. Details of these sub-networks are outlined in the respective sections below.
- **The web-based platform:** In 2009, ahead of the national climate change summit, the Department of Environmental Affairs developed a National Climate Change Response Database (NCCRD), hosting a collection of adaptation and mitigation projects. The information technology architecture of this NCCRD will be updated and improved so that it serves as the web-based platform and database of the M&E system. It is into this web-based platform that the data and information network will feed all information and data.

II. **EVALUATION SECTION:** This section includes defining and assessing the output and impact indicators that respond to the objectives of the M&E system, informed by the NCCRP requirements and other stakeholder-defined needs. While data and information will flow continuously through the network to the web-based platform, evaluation of impact or progress, will only be carried out annually by the M&E system management team.

III. **GUIDANCE**: To support the M&E system, M&E guidelines for different types of response measures and other system indicators, outlining, inter alia, the specific types of data to be measured and methodologies for data-collection, for information management and for undertaking impact evaluation. Guidelines for the use of the web-based platform will also form part of the guidance.

IV. **OUTPUTS:** As required by the NCCRP, all the results of the evaluation process will be published annually to inform decision-making on climate change response. In addition, the information from the M&E system will support the various international reporting obligations of the country, including the biennial update reports BURs and the national communications (NCs) under the UNFCCC.

V. **FEEDBACK, LEARNING AND REVIEW:** Refinement of procedures that support the effective and efficient functioning of the climate change M&E system will take place on a continuous basis. These refinements will be informed by the periodic system review process, feedback from the stakeholders of the M&E system and by the DEA climate change M&E team.

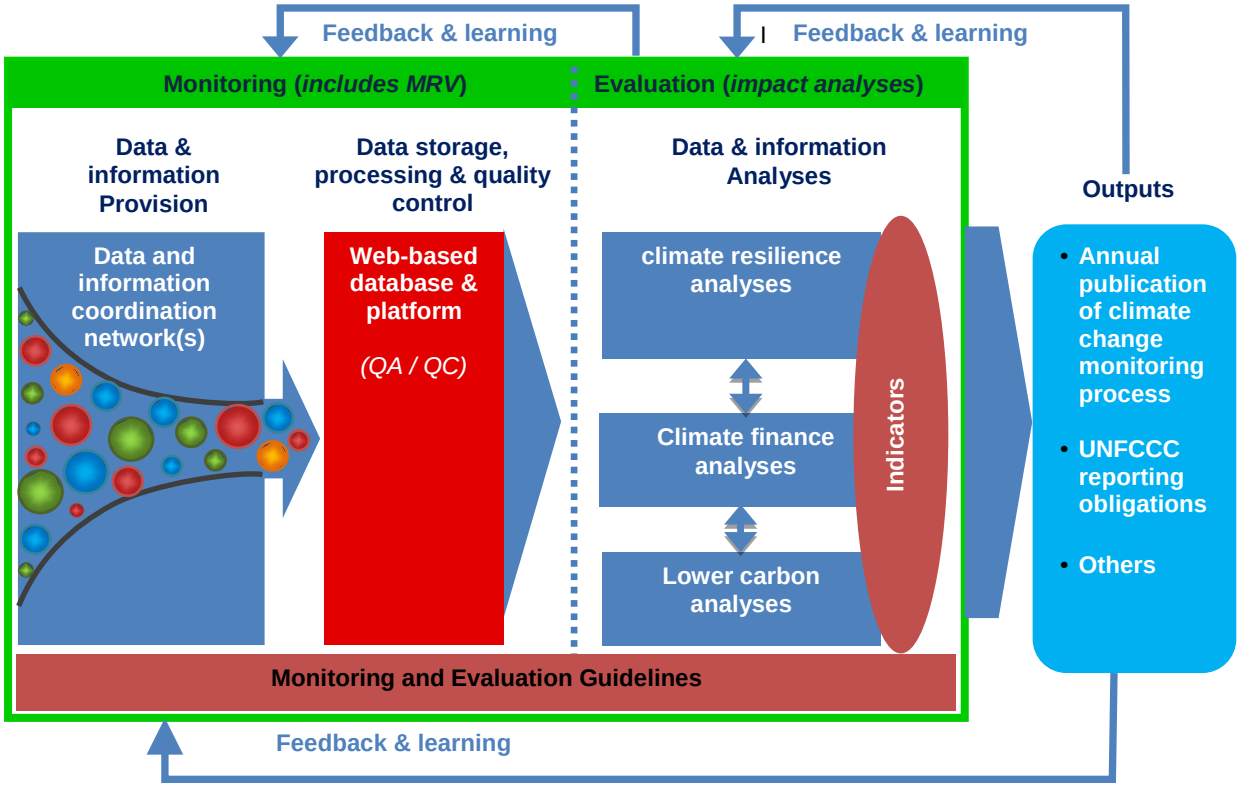

Figure 2.1 Summary of South Africa's Climate Change Response M&E system

The sections below outline how monitoring and evaluation of each of the sub-objectives of the M&E system will be undertaken.

Tracking the Transition to a Lower Carbon Economy

What is a "lower carbon economy"?

The NDP (2012) presents South Africa's vision of a lower carbon economy where:

- there is reduced dependency on carbon, natural resources and energy,

- carbon emissions are reduced to sustainable levels, and
- economic activity is expanding, but decoupled from carbon-intensive, fossil-based, energy.

These identifying characteristics of a lower carbon economy form the basis for the output indicators in the sections below.

The tiered approach

Based on the NCCRP's requirement that the collective outcome of all the country's climate change mitigation interventions be monitored and measured against the National GHG emissions trajectory range, the system uses a tiered approach as presented in Figure 2.2 to track transition to a lower carbon economy. Indicators and data-requirements for each tier are described in the subsections which follow.

Tier 1 (country level) and Tier 2 (sectoral, subsectoral and company level) information

Tier 1 information is the country level information required to monitor and evaluate the extent to which the country, as a whole, is making the transition to a lower-carbon economy from a top-down perspective, informed by the NDP's vision of this transition.

Tier 1: Country level indicators: Indicators that track the extent to which the country is becoming lower-carbon

Tier 2: Sectoral, subsectoral & company level indicators: This tier tracks the desired emission reduction outcomes and implementation of company level mitigation plans.

Tier 3: Response measure level indicators: Indicators of the impact of individual response measures.

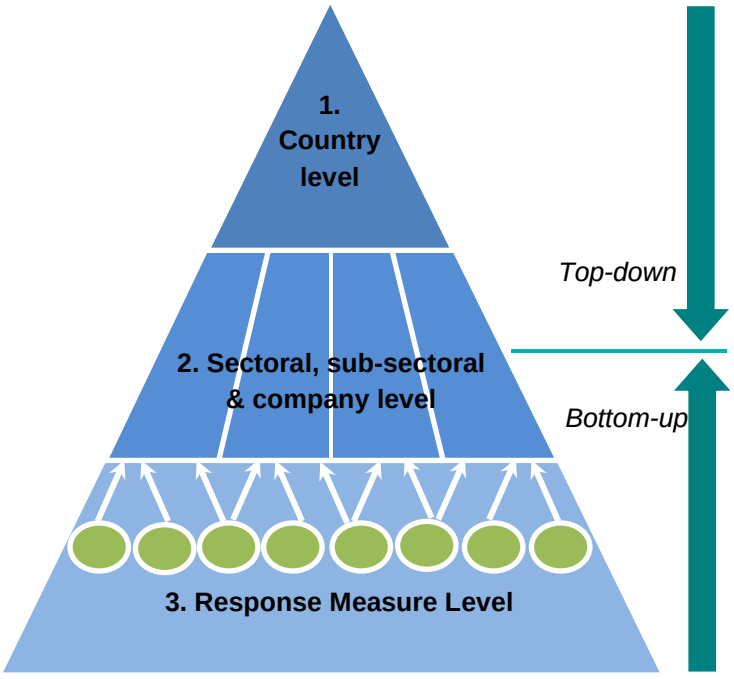

Figure 2.2 The tiered approach to tracking transition to a lower carbon economy

For Tier 2 the NCCRP requires that the desired emission reduction outcomes (DEROs) be defined for significantly emitting companies, economic sectors or subsectors, which will then be required to formulate mitigation plans of how they intend to achieve their DEROs, including specifying a suite of mitigation programmes

and measures appropriate to that sector or subsector. This tier describes the indicators and data requirements relating to tracking progress in the implementation of those mitigation plans and the progress towards achieving the DEROs.

Table 2.1 presents the core indicators that will be tracked in both of these tiers, informed by the definition of a lower carbon economy as outlined above.

Table 2.1 Core Tier 1 and Tier 2 indicators to be tracked annually

INDICATOR GROUP	Tier 1: country level	Tier 2: sectors, subsectors and companies
	Indicator title	Indicator title
Sustainable carbon levels	National GHG emissions profile	Sector, subsector or company annual GHG profile
	Net change in the national GHG profile	Net change in the GHG profile of the sector, subsector or company
	Collective mitigation impact of all response measures	Collective mitigation impact of response measures
Lower carbon productivity	Carbon intensity of the economy	Carbon intensity of the sector or subsector
	Energy intensity of the economy	Carbon intensity of service or product delivered by the sector, subsector or company
Lower carbon consumption	Per-capita GHG emissions	—
Lower carbon resourcing	Proportion of renewables and carbon-free energy to total primary energy	Proportion of renewables or zero-carbon energy to total energy use
	Carbon intensity of energy supply	Energy use
		Energy intensity of production or service-delivered
Lower carbon sector growth	Growth in green jobs nationally	Growth in green sector or subsector jobs

In addition to these core indicators, other indicators may be identified, analysed and reported from time to time as deemed necessary.

Tier 3: Information at the level of response measures

A response measure may be a policy, a law, a strategy, a programme or an individual project that contributes directly to climate change mitigation.

On an annual basis the core indicators shown in **Table 2.2** will then be analysed and monitored by the M&E system.

Table 2.2 Core Tier 3 indicators (level of response measures)

INDICATOR GROUP	Indicator
Implementation Indicators	Achieved progress in implementation
Impact indicators	Net GHGs reduced
	Jobs created
	Other social, environmental and economic co-benefits
Effectiveness indicators	Cost-effectiveness
	Job-creation effectiveness

Tracking the Transition to a Climate Resilient South Africa

Consistent with the requirements of the NCCRP, one of the objectives of the M&E system is to track South Africa's transition to a climate resilient society. This includes:

- Compilation and communication of existing relevant quantitative and qualitative data / information that could usefully indicate whether the country's social, economic and environmental systems are becoming more resilient to climate change over time.
- Generation of lessons that will enhance stakeholders' understanding of the country's climate change impacts, risks and vulnerabilities that in turn can help to identify approaches that are effective in reducing those impacts, risks and vulnerabilities.

There are a number of definitions of climate resilience available in the literature, which can be summarised as follows:

> *Climate resilience is the capacity of social or ecological systems to recover or bounce back from disturbances, shocks and extreme loads or to absorb these disturbances while retaining the same basic structure and ways of functioning (UNDP, 2005, UK CIP, 2004, UN/ISDR, 2004, IPCCC 2007, Rockfeller Foundation, 2009, Arctic Council, 2013 in IPCC 2014).*

South Africa's approach to building the climate resilience of the country is "through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity" (DEA 2011). This approach makes up a major component of adaptation to climate change. While there are many comprehensive definitions of adaptation to climate change, the definition by the UNFCCC embraces, inter alia, the following pragmatic ideas:

> Adaptation includes actions taken to help communities and ecosystems cope with changing climate conditions, such as the construction of flood walls to protect property from stronger storms and heavier precipitation, or the planting of agricultural crops and trees more suited to warmer temperatures and drier soil conditions (*UNFCCC 2015*).

General challenges of M&E of climate resilience

Compared to tracking the transition to a lower carbon economy, tracking the transition to a climate resilient society is much more challenging. The following are some of the major challenges:

i. The long time-scales associated with climate change and adaptation
ii. Adaptation lacks an agreed metric to determine effectiveness
iii. The difficulty of attributing cause and effect
iv. The diversity of key definitions and terms by different stakeholders

Therefore the above-mentioned challenges should be taken into consideration to enable effective M&E while at the same time recognising the role of M&E of climate resilience in:

1. Supporting the long term learning process for a relatively new field of action.
2. Helping to manage adaptation interventions in the context of uncertainty.
3. Providing an evidence base to inform decision makers on what has been done right and what is working.
4. Demonstrating the effectiveness of policies and programmes.

South Africa's approach to climate resilience M&E

Tracking the transition to a climate resilient South Africa is composed of three building blocks which are further unpacked into key elements that give more detail on the type of M&E that will be carried out under each building block. **Figure 2.3** presents this approach, showing the building blocks and their respective key elements.

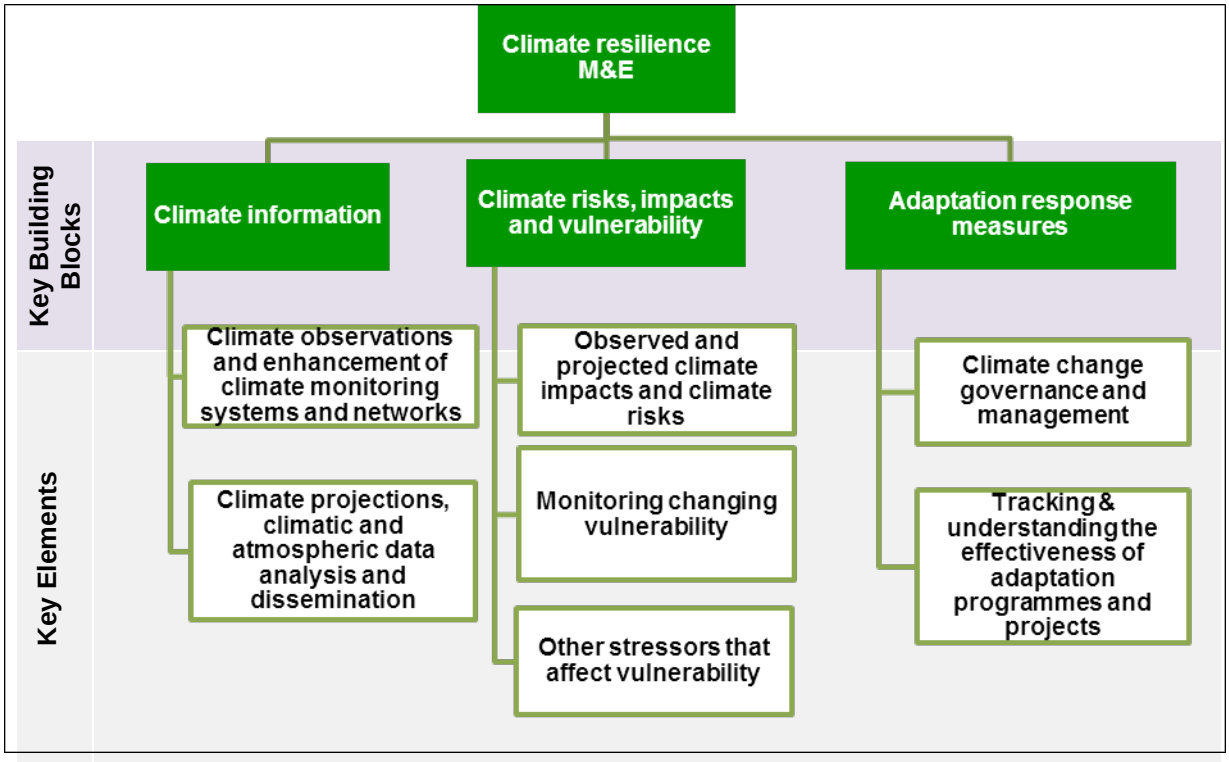

Figure 2.3 Building blocks and key elements of M&E of climate resilience

The information necessary to monitor and evaluate climate resilience is therefore disaggregated into these key elements, and will cover the following:

- Development of indicators for monitoring and evaluating the transition to a climate resilient society.
- Mapping the state of knowledge under each indicator.
- Tracking the progress in implementation under each indicator.
- Evaluating the effectiveness of the activities undertaken.

Tracking Climate Finance

What can be termed "climate finance"?

The NCCRP identifies climate finance as all resources needed to finance the cost of the country's transition to a lower carbon and climate resilient society. Based on this, climate finance in South Africa can be defined as follows:

> Climate finance refers to all resources that finance the cost of South Africa's transition to a lower carbon and climate resilient economy and society. This covers both climate-specific and climate-relevant financial resources, public and private, domestic and international. This includes financial resources that go towards reducing emissions and enhancing sinks of greenhouse gases; reducing vulnerability, maintaining and increasing the resilience of human and ecological systems to negative climate change impacts; climate-resilient and low-emission strategies, plans and policies; climate research and climate monitoring systems, as well as climate change capacity-building and technology.

Overall approach to tracking climate finance

The overall approach to tracking finance will incorporate both top-down monitoring of climate finance at source-level and bottom-up monitoring of finance at the final point of impact as follows:

a) **Top-down:** This refers to the collection and tracking of climate finance information through the funder or the implementing agency.
b) **Bottom-up:** This approach focuses on collecting information at the level of response measures. This includes collecting finance or cost information together with information collected for tracking adaptation and mitigation response measures as described in the sections above.

Correlating the bottom-up and top-down finance / cost information will assist in assessing the extent to which climate finance is meeting the objectives of transparency, effectiveness and proper financial planning.

Figure 2.4 illustrates this overall approach to climate finance M&E.

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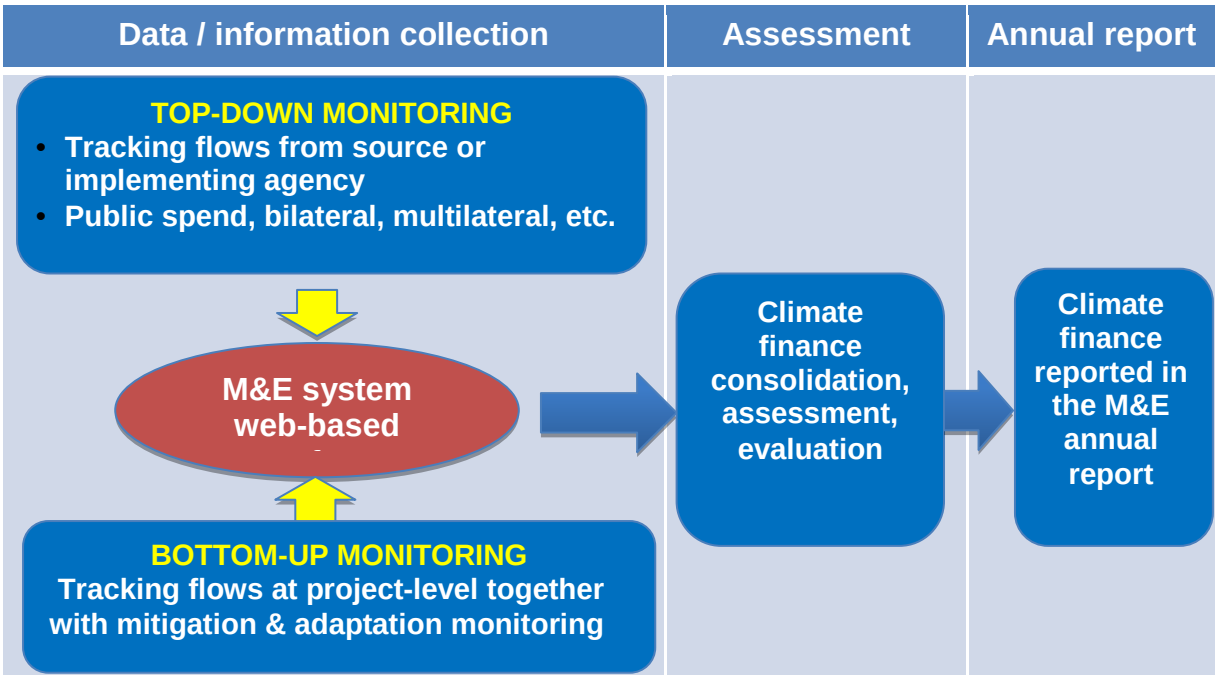

Figure 2.4 The overall approach to M&E of climate finance

Institutional Arrangements

The following institutions will form part of the institutional arrangements for the functioning of the M&E system:

i. **The Climate Change M&E Team**: This is the DEA's climate change monitoring and evaluation team and its key roles will be coordination and daily administration of the M&E system. This team will be the primary body responsible for the following:

- Setting up the system, system improvements, data-requests for monitoring, analysis of indicators for tracking transition to a lower-carbon economy and for tracking climate finance.
- Administration of the web-based platform as well as compilation and publication of the annual M&E reports.
- Facilitating the establishment and functioning of an Adaptation Monitoring and Evaluation Steering Committee (see below) with access to key stakeholders and representatives, and coordinating any consultations where required.
- Providing support in streamlining data from different sources so that it is available for review by the Adaptation Monitoring and Evaluation Steering Committee in an accessible and easy to use format.

ii. **Climate Change Adaptation Monitoring and Evaluation Steering Committee:** Monitoring and evaluation of adaptation response measures is far more complex than that of mitigation response measures, hence the need for a special committee for this work. The role of the Adaptation Monitoring and Evaluation Steering Committee will be to:

- Provide strategic guidance and leadership to ensure operationalisation of the climate change response adaptation M&E system.
- Support compilation and finalisation of the annual report on monitoring climate resilience in South Africa.

The Committee will consist of an inter-disciplinary group of technical experts on adaptation spanning key national sectors, local and provincial governments, State-owned Entities, private sector, civil society and academia.

i. **M&E Advisory Committee:** This is an advisory committee that will be set up annually to consider issues identified in the annual M&E reports (both technical and strategic issues), and will give recommendations to the governance and oversight structures of the M&E system.
ii. **DEA Climate Change Senior Management (SMS):** This is the senior management team of the DEA climate change branch, headed by the Deputy-Director General. This team will consider and act on recommendations from the Advisory Committee. This team will also give a report of recommendations to the Intergovernmental Committee on Climate Change (IGCCC), which in turn will give guidance on the improvements needed in the M&E system.

Figure 2.5 illustrates the institutional arrangements for the M&E system.

Legal and Regulatory Framework

The National Development Plan clearly points to the need for climate change monitoring and evaluation to be mandatory. For this to be implemented a thorough assessment of the legal and regulatory tools will be undertaken to determine the most appropriate tools for supporting the implementation of a mandatory climate change response M&E system. It is envisaged that a set of tools will need to be used, including laws, regulations, memoranda of understanding (MoUs) and even incentives.

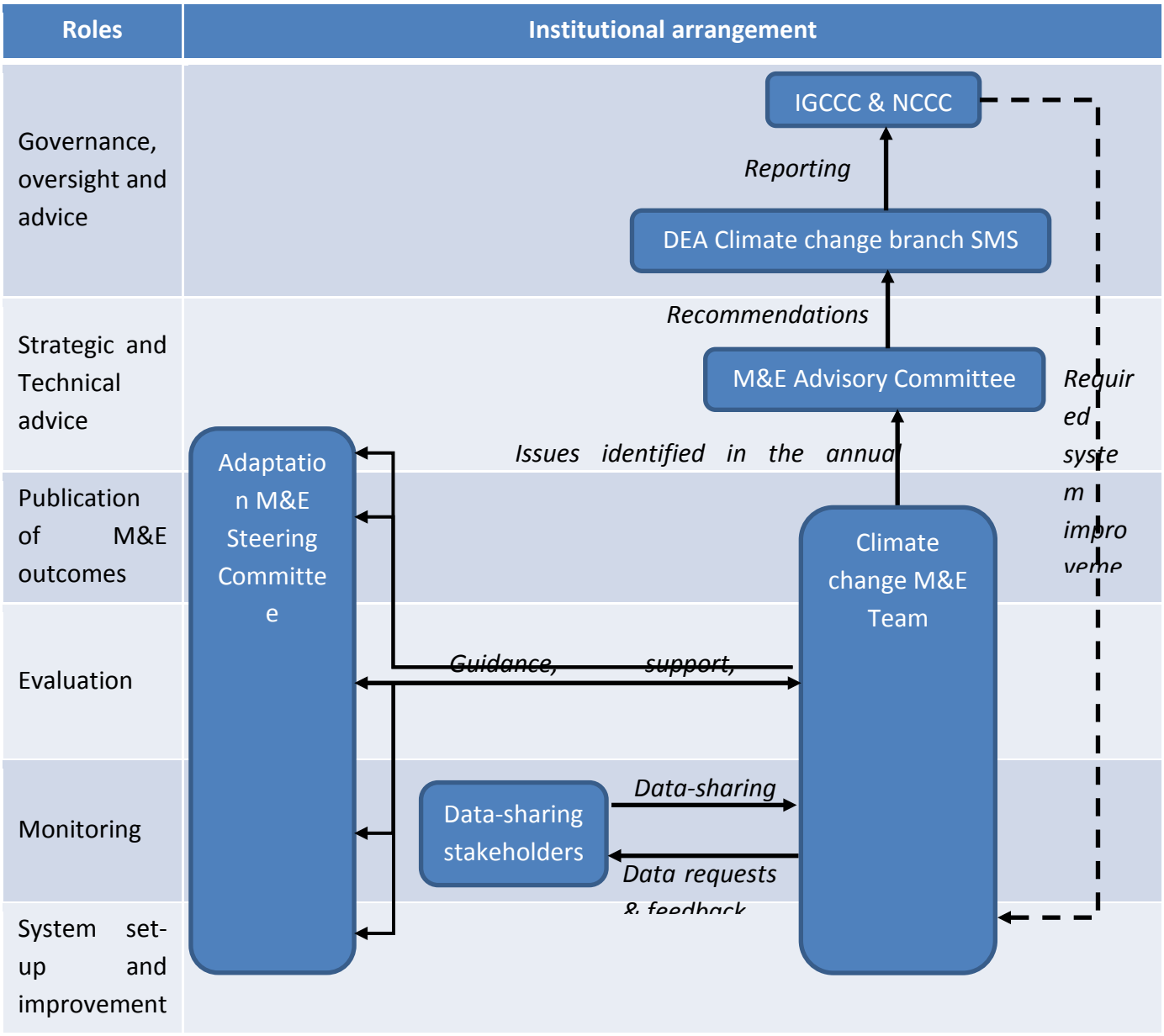

Figure 2.5 Institutional arrangements for the operation of the M&E system

Implementation Plan

The implementation of this M&E system will be phased over time as follows:

- **Phase 1 or SETTING UP Phase (to end of 2016):** This is the setting up phase where the key institutions, frameworks and systems are put in place. A simple, spreadsheet-based data sharing system will be used to test the designed data-sharing network and to supply information for the Third National Communication under the UNFCCC. The collected information will also be used to produce the initial annual report on the monitoring process.
- **Phase 2 or OPERATIONALISATION Phase (2017–19):** This will be the learning phase where data sharing using the web-based platform is implemented and monitored. Adoption of standardised data sharing formats will also take place in this phase.

Documentation of lessons learnt will have to be done in this phase to inform the improvements that might need to be made to the system in the next phase.

- **Phase 3 or REFINEMENT Phase (2020–21):** The system will finally be refined in this phase, based on the lessons learnt and the pursuit of accuracy, completeness and consistency in reporting. The influence of the system should be visible at this point, as the system output information is now being integrated into decision-making. The end of this phase should give rise to a fully-fledged version of the M&E system.

Figure 2.6 summarises the different implementation phases of the M&E system.

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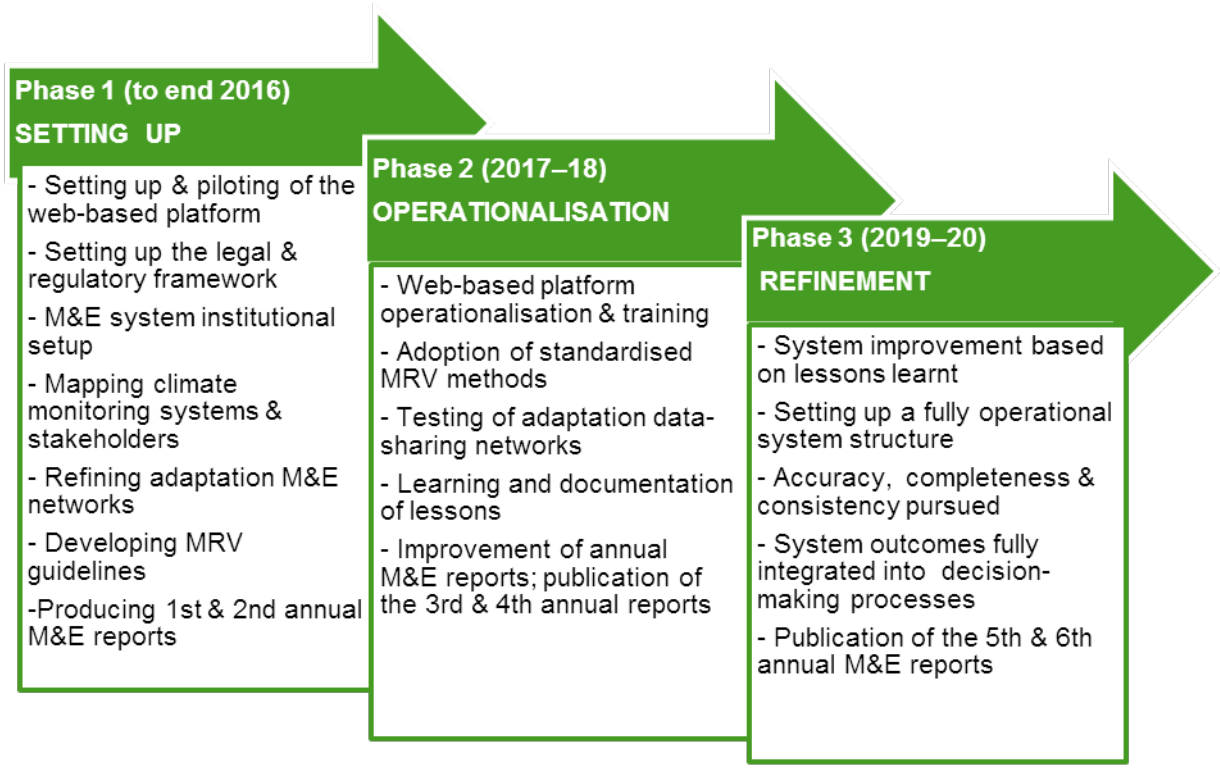


Figure 2.6 Phased implementation of the M&E system

1 INTRODUCTION

1.1 Background

Since the first official acknowledgement of the threat brought about by global climate change at the 2005 National Climate change conference, the South African government has stressed its commitment to responding to climate change both nationally and through international platforms.

In 2011 government published the National Climate Change Response Policy (NCCRP) presenting the country's vision for an effective climate change response and the long-term transition to a climate-resilient, equitable and internationally competitive lower-carbon economy and society – a vision premised on Government's commitment to sustainable development and a better life for all. This Policy outlines in detail the country's approach to contributing its fair share to global climate change mitigation efforts, and protecting the country and its people from the impacts of inevitable climate change.

This need for and commitment to a transition to a lower-carbon and climate-resilient society and economy is also echoed in various national policy documents, including the National Strategy for Sustainable Development and Action Plan 2011-2014, the Integrated Resource Plan 2010, the Industrial Policy Action Plan for 2013-14 and the National Development Plan – Vision for 2030 (NDP).

Both the NDP and the NCCRP clearly highlight the importance of understanding South Africa's progress in moving towards this envisaged climate-resilient and lower-carbon economy and society, as well as the need for accountability through leadership, management, monitoring, verification and reporting of this transition. To this end, both policies call for the setting up of a mandatory national monitoring, evaluation and reporting system for climate change information. A more detailed description of such a system can be found in the NCCRP.

1.2 Climate Change Monitoring and Evaluation in the NCCRP

The NCCRP notes that the measurement and monitoring of climate change responses are critical in ensuring their effective implementation, and that South Africa, through the coordination of the Department of Environmental Affairs (DEA), will design and publish the country's Climate Change Response Monitoring and Evaluation (M&E) System. Details of this M&E system are outlined in specific sections of the NCCRP as follows:

General:

- To formulate effective responses to climate change, South Africa needs a country-wide monitoring system to measure climate variables at scales appropriate to the institutions that must implement climate change responses
- To monitor the success of responses to climate change, and to replicate the ones that have worked well, we need to measure their cost, outcome and impact.
- South Africa's efforts in measurement and monitoring of climate change responses will be coordinated through existing cooperative governance mechanisms. The DEA as the responsible coordinating department will define review mechanisms as well as a process to develop the NCCRP into a suite of regulatory and legislative instruments where required.
- The Climate Change Response Monitoring and Evaluation System will be based on South African scientific measurement standards and will be undertaken through the Presidency's Outcomes-Based System, but it is also expected that the system will evolve with international Measuring, Reporting and Verification (MRV) requirements, and that South Africa will use the National Communication reporting requirements of the UNFCCC to report on these MRV requirements.

Climate Impacts and Adaptation:

- There is a need for focused monitoring and evaluation systems to update our knowledge of how rapidly the change is occurring and to report progress on the implementation and effectiveness of adaptation responses
- South Africa will ensure that nation-wide climate change and atmosphere monitoring systems are maintained and enhanced where necessary, including through monitoring networks at appropriate spatial density and frequency.
- It will also ensure that climate change impacts are monitored at appropriate spatial density and frequency, where feasible, of changes in spatial distribution and incidence of climate-sensitive diseases; ecosystems and the goods and services they supply; key species responses; wildfire hydrology and water resources; and agricultural and forestry production.
- Identify the key role-players involved in monitoring and measuring of climate indicators, and describe how these role-players will share and report information on observed climate change.
- In line with internationally agreed reporting requirements, include a summary of climate change impacts and adaptation actions in the National Communication, which highlights new areas of concern and areas in which observations do not align with modelled projections.
- Rigorously monitor and evaluate the effectiveness of implemented policies and measures with a view to improving efficiency through adjustments or discarding those that are ineffective
- Undertake focused monitoring and research in order to ensure the efficacy of water adaptation approaches over the long-term

- Institute effective monitoring to enhance the understanding and forecasting of critical future threats
- Develop effective information, monitoring and assessment tools to evaluate the resilience of our cities and towns to climate change and assist urban planners in identifying priorities for scaling-up climate change responses
- Respond to the challenge that rural areas are under-represented in the climate monitoring network despite being the most likely to be the soonest and most greatly affected negatively by climate change impacts

Mitigation:

- M&E in mitigation will compose of a national system of data-collection to provide detailed, complete, accurate and up-to-date emissions data in the form of a Greenhouse Gas Inventory and a Monitoring and Evaluation System to support the analysis of the impact of mitigation measures.
- The collective outcome of all South Africa's climate change mitigation interventions will be monitored and measured against the National Emissions Trajectory Range.
- Under the leadership of the relevant national sector government department, each significantly emitting economic sector or sub-sector will be required to formulate mitigation and lower-carbon development strategies, including measurable and verifiable indicators for each programme and measure and monitor their implementation and outcome, and these may include indicators of implementation, local sustainable development benefits and the impact of programmes and measures on emissions.

Climate finance:

- Create a transitional tracking facility for climate finance mechanisms and climate responses that will monitor and coordinate existing climate finance flows
- The climate finance tracking facility will track the use and impact of funds

The NCCRP further calls for the publication of the outcomes of the monitoring process on annual basis.

Box 1: Location of the Climate change M&E system in the NDP

The National Development Plan (NDP) is South Africa's overarching long-term policy for eliminating poverty and reducing inequality. It defines the country's vision for 2030 and identifies the role that different sectors of society need to play in reaching that goal.

In chapter 5, the NDP sets out government's vision of South Africa's transition to a low-carbon, resilient economy and just society which is well underway by 2030. Key elements of this transition include:

1. Detailed analysis and implementation of **mitigation policies and measures**
2. Ensuring **a just transition**
3. **Building resilience** of both the economy and the society
4. **Structural change, trade-offs and lock-ins**: Delinking economic activity from environmental degradation and carbon-intensive energy, while remaining competitive and reducing unemployment, poverty and inequality.
5. **Managing the transition** through rigorous, transparent and stakeholder-involving planning processes and decisions based on detailed analysis of the evidence;
6. The **state to assume a guiding role** while responsibility for the transition is still borne collectively by all stakeholders;
7. **Aligning existing policy and mainstreaming** mitigation and adaptation considerations into the activities of all government departments across local, provincial and national government.
8. **Building an evidence base**: To inform planning, prioritize data-collection mechanisms, including ***urgently setting up mandatory monitoring, evaluation and reporting processes*** for all relevant stakeholders.
9. **Monitoring, reporting and verifying** to understand South Africa's progress against national goals of the envisaged economy and society

1.3 Objective of the document

The objective of this document is to present a description and framework of South Africa's climate change response monitoring and evaluation system, as required by the National Climate Change Response Policy.

2 DEFINITIONS, OBJECTIVES and PRINCIPLES

2.1 Definitions

The aim of this section is to outline some basic concepts of the climate change M&E system, including definitions of key terms, the objectives of the system, the scope as well as the guiding principles.

2.1.1 Monitoring & Evaluation

"Monitoring is a continuous function that aims to provide decision-makers and stakeholders with regular feedback and early indications of progress, or lack of thereof, in the achievement of intended results and the attainment of goals and objectives. …

Evaluation is a time-bound exercise that systematically and objectively assesses the relevance, performance, challenges and successes of programmes and projects."(DPME)

The key elements of "Monitoring" and "Evaluation" can thus be summarized as shown in Table 1 below:

Table 2: Defining Monitoring and Evaluation

Monitoring	Evaluation
• A continuing function; • systematic collection of data on specified indicators, enabling stakeholders to check whether an initiative is on track to achieving set objectives; • routine assessment of on-going activities and progress	• Determining the worth or significance of an activity, policy or program; • aims to determine relevance, efficiency, effectiveness, impact and sustainability • periodic assessment of overall achievements; • measuring the impact or effectiveness of an intervention in achieving set objectives

The full cycle of monitoring and evaluation, however, also includes "appraisal", which refers to the ex-ante assessment of the expected impact and the identification of indicators for monitoring and evaluation, as well as, "feedback" to promote learning, improvement and knowledge-sharing through results and lessons learnt. The M&E cycle is shown in

Figure 1 below.

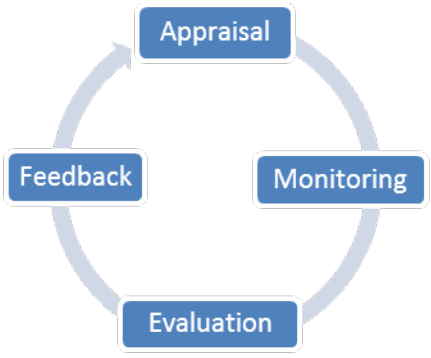


Figure 1: The monitoring and evaluation cycle

2.1.2 MRV in relation to M&E

In climate change, the term "Measuring, Reporting and Verification" (MRV) is more commonly used to refer to transparency and reporting. This concept was first introduced in the Bali Action Plan, which states that certain actions, in the context of climate change mitigation, should be "measurable, reportable and verifiable". However, the term MRV itself is not defined any further in the Bali Action Plan, nor in any other subsequent document under the UNFCCC.

In the context of South Africa's climate change M&E system, MRV is understood to only cover the "monitoring" element of the system, and excludes "evaluation". In the rest of this document, therefore, the terms MRV and M&E are understood to have the following relationship:

- Measuring, Reporting and Verifying (MRV) → Monitoring
- Periodic ex-post assessment → Evaluation

2.1.3 South Africa's climate change response M&E system

Figure 1 above outlines a generic monitoring and evaluation cycle, showing the different stages of carrying out monitoring and evaluation. To be effective, such a cycle requires the setting up of a proper set of organizational structures and information systems. A typical M&E system has the following components:

- **Data-collection system and guidelines**: At minimum, this outlines the data-needs, data-quality, institutional arrangements (including clear roles and responsibilities), stakeholders, as well as data-collection methods and reporting protocols.
- **Data-storage and quality control system**: This is usually a system, manual and/or computer-based, of storing and controlling the quality of the data
- **Indicators to be tracked and an impact assessment framework**: Indicators are measures of progress and impact against the desired target. Thus the indicators should be carefully selected such that they able to be expressed in a manner that they can be compared to the target. The impact assessment framework then links the indicators to the targets and outlines the tools and methods for the analyses, including responsibilities.

Based on this and the requirements of the M&E system in the NCCRP, the following definition of South Africa's climate change response M&E system is adopted:

South Africa's climate change response M&E system

- is a legal, institutional and procedural framework
- for capturing, analysing and publishing information
- about climate change response policies and measures in South Africa
- and availing this information as evidence base to be used to maximise their effectiveness and to inform future climate change response policies and measures.

2.2 Objectives of the M&E system

The overall objective of South Africa's climate change response M&E system is to track the country's transition towards its long-term vision of a climate-resilient and lower-carbon economy and society, thereby providing evidence base to inform effective climate change response planning and implementation in South Africa. This overall objective can be sub-divided into two parallel groups of objectives as follows:

- **Tracking transition to a climate-resilient society**: This includes tracking climate change risks and impacts, changes in vulnerability in the face of current and future climate risks and adaptive capacity. It also includes tracking the mainstreaming of climate change into policy and planning, progress in implementation of climate change adaptation responses and the effectiveness of the responses in reducing vulnerability and increasing adaptive capacity.

- **Tracking transition to a lower-carbon economy**: This includes tracking greenhouse gas emissions (absolute, per-capita or emission intensities at national, sub-national, sectorial and institutional level), tracking response policies and measures (including programmes and projects) that mitigate future greenhouse gas emissions (implementation, landscape, costs, resultant emission reductions and other sustainable development impacts) and also assessing the effectiveness of these climate change response measures.

Box 2: Monitoring and Evaluating Response Measures

What does tracking and assessing effectiveness of policies and measures mean for the government departments and institutions that are custodians and/or owners of these response measures?

It does NOT mean that the Department of Environmental Affairs will be monitoring and evaluating other government departments on how they implement their policies, programmes or projects.

Instead it means monitoring and evaluation of the policies and measures in terms of their impact in responding to climate change. For example, see section 4.4.8 on monitoring and evaluation of the 3rd building block of climate resilience

Other cross-cutting objectives of the system are:

- **Tracking climate finance**: This entails the tracking of investment to support climate change response activities, including finance needs, flows and impacts whether national or international, public or private. It also includes the assessment of the effectiveness of climate finance. The monitoring and evaluation of climate finance is cross-cutting since it covers finance that support all types of climate change response measures – more information can be found in section 4.5.

- **Learning and communication**: Communication and learning are the central objectives to the climate change response M&E system and they underpin the rationale for its establishment. These objectives envisage a system which is effective not only in communicating climate change information at different levels, both nationally and internationally, but also in documenting and communicating the lessons learned. To become influential and relevant, the climate change M&E system must be able to produce credible evidence base that will inform current and future decisions on climate change response.

Figure 2 below summarizes the different objectives of the M&E system.

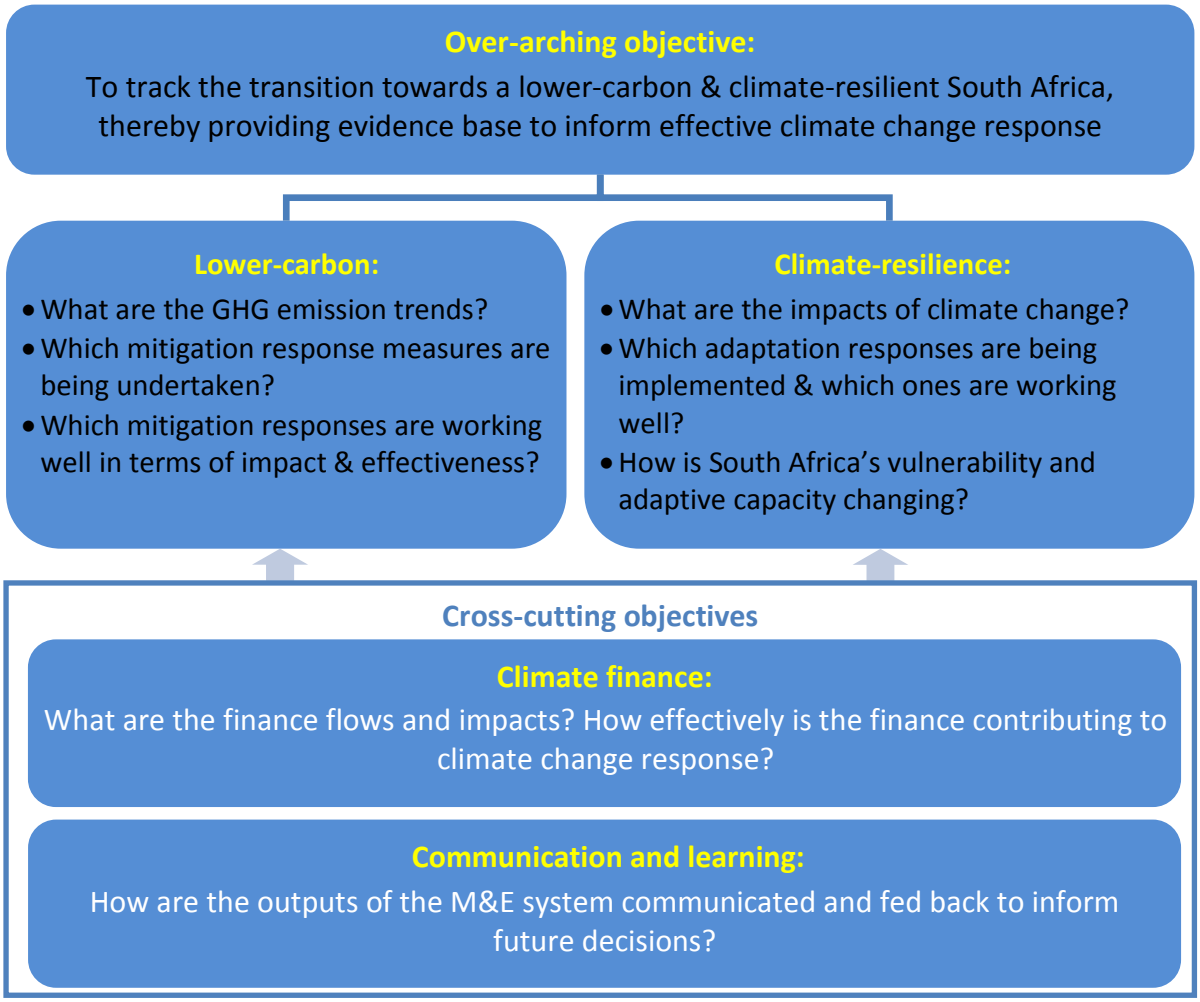


Figure 2: Objectives and key questions of South Africa's climate change response M&E system

Box 3: The M&E System vs. the GHG Inventory System

	M&E system	GHG inventory
Scope	Mitigation, adaptation and climate finance	Mitigation only
Level of Coverage	National, sectorial , company and response measure levels	National and sectorial levels
Information contained	Climate impacts, finance, GHG emissions & sinks, impact (emission reductions & other SD benefits) and effectiveness of responses	GHG Emissions & sinks
Does it show causality of observed trends?	Yes	No
Does it track implementation?	Yes	No
Does it track co-benefits?	Yes	No

While the GHG inventory is a critical part of monitoring and evaluation of climate change mitigation responses, it is not a complete climate change response monitoring and evaluation system on its own.

2.3 Guiding Principles

The design and implementation of the climate change response M&E system are guided by the following key principles:

- **Specific to South Africa and building on existing systems** – Building on the systems, processes and institutions already in place, hence minimising burden on participants and duplication of effort;
- **Timeliness** – The system must be able to meet reporting deadlines and respond in a timely manner;
- **Accuracy and completeness** – delivering complete, good quality information;
- **Transparency** – The system should be transparent and accountable to stakeholders. Confidential information should be treated in line with all the applicable laws and regulations, including the National Environmental Management Act, the Air Quality Act, The Promotion of Access to Information Act and the Competition Act.
- **Stakeholder-guided** – the design and implementation of the system should be guided by stakeholders as far as possible;
- **Influential** – Ensuring that the system produces information that is relevant, supportive and influential to policy, practice, implementation, research and international climate change negotiations;
- **Consistency, comparability and standardisation** – the system should use common or comparable approaches wherever possible and appropriate, to improve comparability of data and of results;
- **Focused** – The system should focus on and prioritize delivering on its primary over-arching objective of tracking the country's transition to a lower-carbon and climate-

resilient economy and society and thereby providing evidence base for informing effective climate change response.

3 APPROACH TO SYSTEM DESIGN

3.1 Indicators

As noted in section 2.1.3 above, indicators are an essential component of any effective M&E system. An indicator consists of information that signals or describes a situation or condition, and it provides a simple and reliable means to reflect changes connected with an intervention. Indicators can either be quantitative – *in the form of a number, an index, a ratio or a percentage*, or qualitative – *describing qualities or characteristics in words*. Depending on how they have been defined or framed, indicators vary in validity and reliability.

The identification and definition of action-focused, important, measurable and simple (AIMS) indicators is central to the success of the climate change M&E system. The sections below outline the approach followed to ensure that the indicators adhere to the four AIMS criteria.

3.2 Overall approach

A front-to-back overall approach was adopted for the design of the M&E system, wherein the output requirements inform the entire design of the system, guided by the key principles in section 2.3 above.

The two primary informants of the output indicators of the M&E system, and therefore of the design of the M&E system, are

1. **The objectives of the M&E system** – These are defined in section 2.2 above.
2. **The output needs assessment** – This is a collection of other climate change information needs defined by stakeholders, through the stakeholder consultation processes undertaken in developing the M&E system.

The indicators, in turn, inform the information and data to be collected and reported to the M&E system. Figure 3 below summarized this overall approach:

	Collected Data/Information (Measuring, reporting & verification)	Output Indicators (Impact assessment)	Objectives & Output needs assessment
System Design approach: **WORK BACKWARDS**	**Data & information:** required for estimating the indicators, informed by the indicators and assessment methodologies WHICH INFORMS THIS STEP	**Indicators**: informed by the objectives and the output needs assessment TO INFORM THIS STEP	M&E system objectives and Output needs assessment START HERE
	Data & information required to estimate indicators of tracking transition to a climate-resilient society	Indicators of tracking the transition to a climate resilient society	To track transition to a **climate-resilient South Africa**
	Data & information required to estimate indicators of tracking transition to a lower-carbon economy	Indicators of tracking the transition to a climate resilient society	To track transition to a **lower-carbon economy**
	Data & information required to estimate indicators of tracking climate finance	Indicators of tracking the transition to a climate resilient society	To track **climate finance**
	Data & information required to estimate other indicators	Other indicators	Other **information needs** informed by the Output Needs Assessment

Figure 3: Approach to designing the climate change response M&E system

4 THE CLIMATE CHANGE RESPONSE M&E SYSTEM

4.1 The overall M&E system design

The M&E system will be broadly composed of five sections as follows:

1. **Data and information coordination network**: This information flow system is divided into three sub-networks for measuring, reporting and verification (MRV) of information relevant to tracking transition to a climate-resilient South Africa, tracking transition to a lower-carbon economy and tracking climate finance. Details of these sub-networks are outlined in the respective sections below (sections 4.3, 4.4 and 4.5). To support the network, M&E guidelines for different types of response measures will be developed, which will outline, among other things, the specific types of data to be measured and methodologies for determining baselines. Section 4.9 below gives more details of the M&E guidelines.

2. **The web-based platform**: In 2009, ahead of the National climate change summit, the Department of Environmental Affairs developed a National Climate change Response Database (NCCRD), hosting a collection of adaptation and mitigation projects. The Information Technology architecture of this NCCRD will be updated and improved so

that it serves as the web-based platform and database of the M&E system. It is into this web-based platform that the data and information network will feed all information and data.

3. **Evaluation phase**: This phase includes defining output/impact indicators that respond to the objectives of the M&E system, informed by the NCCRP requirements and other stakeholder-defined needs. While data and information can flow continually (or at the frequency defined by the different M&E guidelines) through the network to the web-based platform, evaluation of impact, based on the defined output indicators, will only be carried out annually. This evaluation phase will primarily be based on the information and data collected into the web-based system.

4. **Outputs**: As required by the NCCRP, the results of all the evaluation phase will be published annually to inform decision-making in climate change response. Additionally, the information from the M&E system will also support the various international reporting obligations of the country, including the Biennial Update Reports (BURs) and the National Communications under the United Framework Convention on Climate Change (UNFCCC).

5. **Feedback & learning loops**: This phase is based on the recognition that refinement of procedures that support the effective and efficient functioning of the climate change M&E system will take place on a continuous basis. These refinements will be informed by the periodic system review process, feedback from the stakeholders of the M&E system and also by DEA's climate change M&E team.

Figure 4 below shows the overall M&E system design.

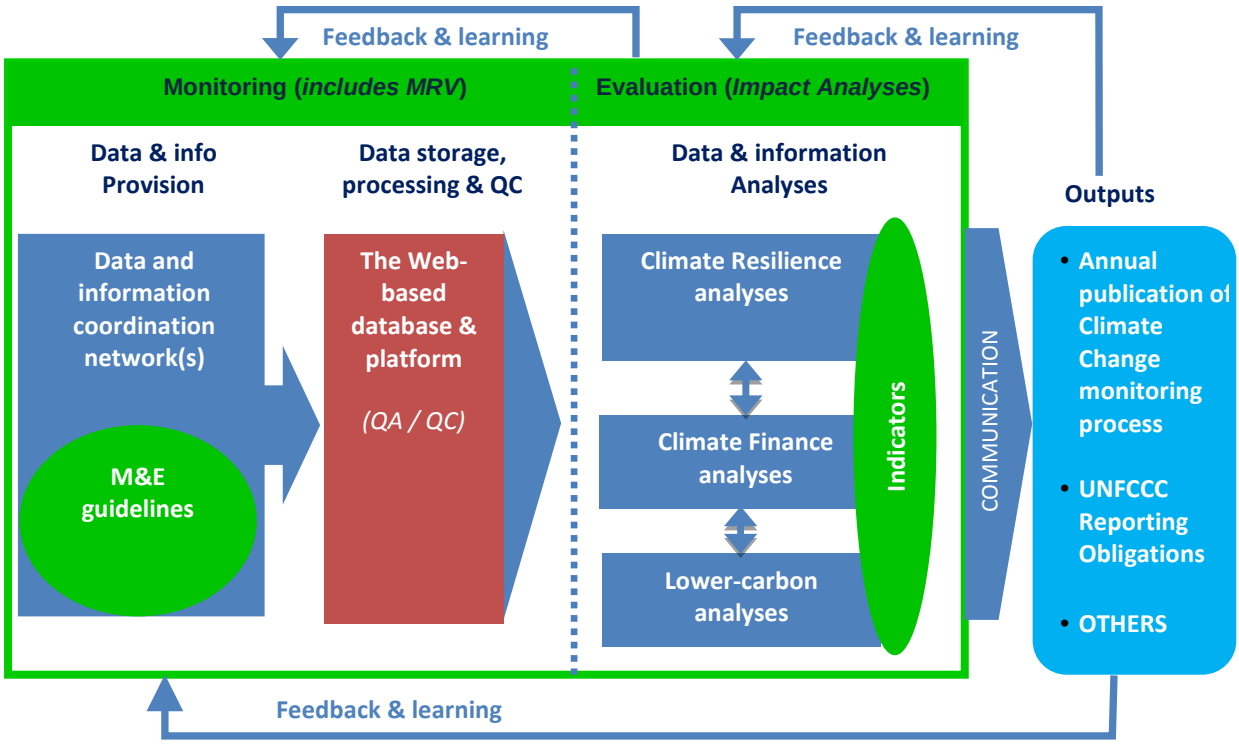


Figure 4: Summary of South Africa's climate change response M&E system

These different elements of the M&E system are described in more detail in the sections below.

4.2 M&E system target stakeholders: Whom will the M&E system benefit and how?

The stakeholder base for this M&E system can be separated into two categories as follows:

South African Stakeholders: Since everyone in South Africa is bound to be affected by climate change at one point or another, all South African residents are a stakeholder group which, at minimum, need to know the basics of climate change, how it affects them and how to respond to it properly, and the M&E system will manage and avail all of this information for public consumption. Other specific national stakeholders of the climate change response M&E system include:

a) ***Policy-makers***: The information compiled and generated by the M&E system will inform the development of evidence-based climate-relevant and climate-conscious policies, strategies and laws;
b) ***National, provincial and local government departments and institutions*** will be able to use the system to support planning, to monitor the success of their initiatives, to identify gaps in implementation and to learn from successful responses of others; Government will also use the system to monitor the country's progress in responding to climate change and achieving its national or international climate-relevant goals and targets.
c) ***Academic and research institutions***: climate research purposes, including researching and developing new technologies and tools for mitigating and adapting to climate change;
d) ***Civil society***: To understand government's climate change response policies and to assess their impact; to identify areas where civil society involvement can have the highest impact in climate change response.
e) ***The private sector***: To identify investment areas and opportunities within the lower-carbon and climate-resilient economy, to understand current and anticipated climate trends to inform private sector planning, to benchmark good practice responses as well as to assess the impact and effectiveness of private sector responses.
f) ***South African negotiators under the United Nations Framework Convention on Climate Change (UNFCCC)***: The M&E system will provide the necessary factual information to inform South Africa's positions in various negotiating areas under the UNFCCC.

International Stakeholders: The UNFCCC is the primary international stakeholder of the M&E system since the system will support and inform the compilation of the National Communications and the Biennial Update Reports under the UNFCCC. Other international stakeholders include international climate change research and think-tank organizations (e.g. World Resources Institute - WRI, Organization for Economic Cooperation and Development - OECD) as well as international funders and cooperation partners in climate change response (e.g. German Development Cooperation - GIZ, DfiD, KfW, partner countries).

Sections 4.3.2, **Error! Reference source not found.**, 4.5.2 and 4.6 give more details about the benefits of the M&E system to the different stakeholders and how the system will communicate with these stakeholders.

4.3 Tracking Transition to a Lower-Carbon Economy

4.3.1 What is a "lower-carbon economy"?

The NDP presents South Africa's vision of a lower-carbon economy where the country has reduced its dependency on carbon, natural resources and energy. It presents a South Africa that has reduced its carbon emissions to a sustainable level through mitigation policies; where economic activity has been decoupled from environmental degradation and carbon-intensive energy; a South Africa with expanding economic activity, but decreasing consumption of non-renewable natural resources, including fossil fuels.

From this vision, the following key elements of a lower-carbon economy can be identified:

- Reduced dependency on carbon, natural resources and energy
- Carbon emissions reduced to sustainable levels
- Economic activity is expanding, but decoupled from carbon-intensive, fossil-based, energy

These identifying marks of a lower-carbon economy form the basis for the output indicators in the sections below.

4.3.2 Tiered-approach

The requirement by the National Climate Change Response Policy that the collective outcome all the country's climate change mitigation interventions be monitored and measured against the National GHG Emissions Trajectory Range not only demands that both top-down (from national level) and bottom-up (from individual response measures) approaches to monitoring and evaluation be used, but also that analyses to link the two approaches be undertaken. This inherently requires that a 'cause and effect' relationship between individual response measures and national-level lower-carbon indicators be clearly

defined and monitored. To achieve this, the following tiered-approach to monitoring and evaluation of the transition to a lower-carbon economy will be used:

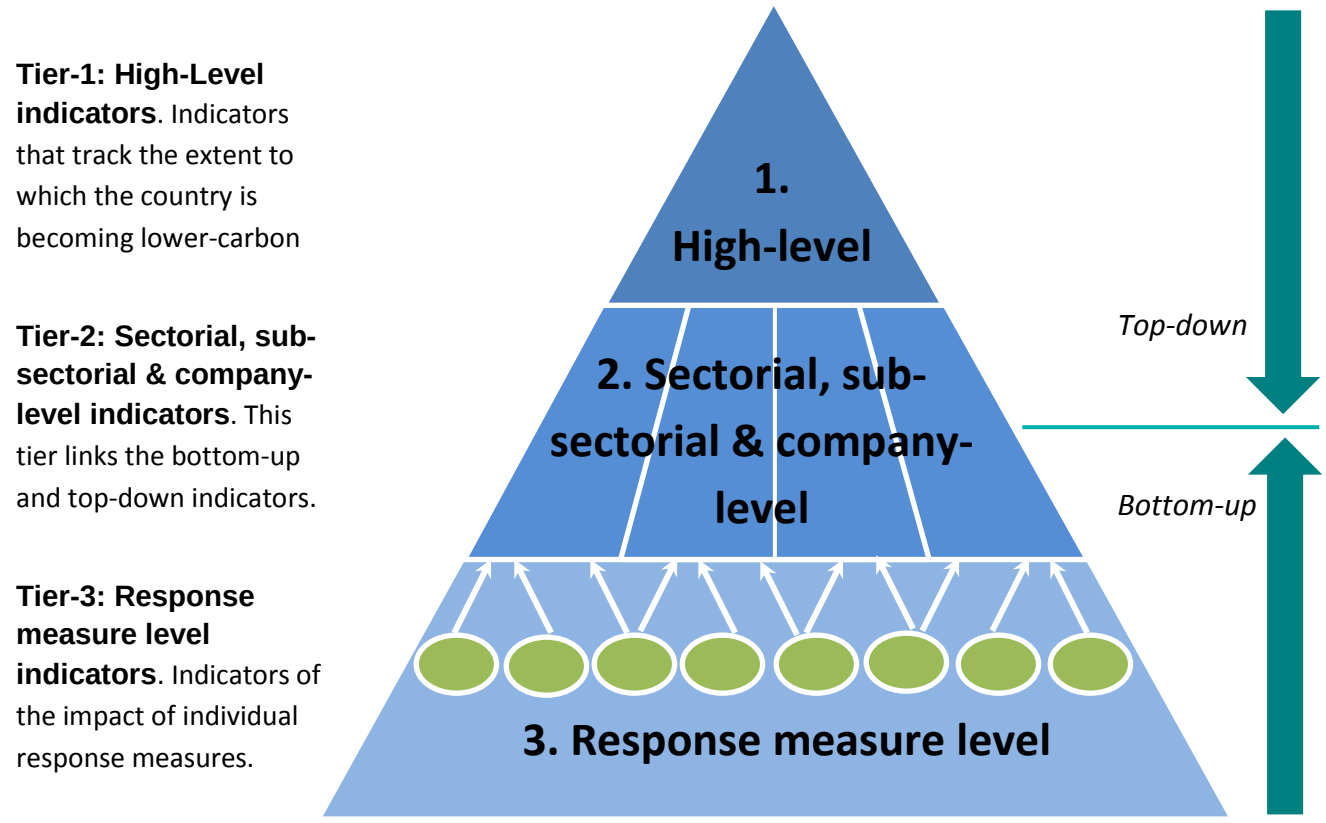


Figure 5: Tiered approach to tracking transition to a lower-carbon economy

The system will have three levels of information, termed Tiers, as follows:

- Tier-1 information is the High-level information that links directly to the country's transition to a lower-carbon economy (Top-down)
- Tier-2 information is sectorial, sub-sectorial or company-level information that shows the sector, sub-sector or company's contribution to the High-level picture. Tier-2 information is the underlying information that seeks to highlight the causes of the trends observed in Tier-1, including attribution of the impact to specific response measures in Tier-3. Tier-2 therefore links the trends in the country's transition to a lower-carbon economy directly with the response measures.
- Tier-3 information is the information that is specific to individual response measures (e.g. a policy, a programme or a project).

The output indicators and the analyses in each of these Tiers are informed primarily by the requirements of the NCCRP, the definition of "a lower-carbon economy" as outlined above and an assessment of information needs by stakeholders. The latter information was collected from stakeholders in Technical Working Group meetings as well as through bilateral meetings. Table 2 summarizes the output information needed for this M&E system, in the context of tracking transition to a lower-carbon economy.

Table 3: Summary of output information required for tracking transition to a lower-carbon economy

Source	Output information required	Relevant Tier(s)
NCCR policy	Information on how South Africa's emissions compare to the national emissions baseline trajectory	1
	Information to support the country's reporting commitments under the UNFCCC, including the National communications and the Biennial Update Report (BUR)[1]	1, 2, 3
	Information about the impact, effectiveness and success of response measures	2, 3
	Information on implementation, outcome, local sustainable development benefits and impact on emissions for each sectorial, sub-sectorial or company mitigation plan	2, 3
Definition adopted from NDP	Information about the country's dependency on carbon, natural dependency and energy	1, 2
	The country's GHG emissions	1
	Information about the extent to which economic activity is decoupling from carbon-intensive, fossil-based, energy	1, 2
Output needs assessment from Stakeholder engagements	Information on green jobs	1, 2, 3
	Information about how responses to climate change affect local manufacturing	1, 2, 3
	Information about individual response measures disaggregated by local municipality and by province	3
	Information about individual response measures disaggregated by sector or sub-sector	2, 3

The sub-sections below give details on the analyses, indicators and information requirements for each of the three tiers. In each Tier a set of core indicators, based on the basic information requirements above, is presented. Core indicators are the indicators that will always be analysed by the climate change M&E system as part of tracking the transition

[1] Biennial Update Reporting (BUR) was agreed upon at the Durban Conference of Parties in December 2011, after the NCCRP was published

to a lower-carbon economy. It is envisaged that other indicators, additional to these, may also be analysed from time-to-time as the need arises.

4.3.3 Tier-1: High-level information

This is the High-level information that is required to monitor and to evaluate the extent to which the country is making the transition to a lower-carbon economy from a top-down perspective, based on the NDPs vision of this transition. Table 3 below outlines the core indicators that will be tracked in this tier, informed by the definition of a "lower-carbon economy" outlined above.

Table 4: Core Tier-1 (High-level) Indicators

INDICATOR GROUP	Comments	Indicator Title	Description
Sustainable carbon levels	The primary indicator to track the country's performance against the national emissions trajectory range and the Copenhagen pledge	National GHG emissions profile	GHG emissions + GHG removals, expressed as CO_2-eq
Lower-carbon productivity	• Key indicators to assess decoupling of economic activity with carbon emissions • Reflecting overall efficiency of carbon resource utilization in an economy as well as lower-carbon technology level of a nation in a certain period	Carbon intensity of the economy	CO_2-eq / GDP
		Energy intensity of the economy	TPES / GDP
Lower-carbon consumption	A proxy indicator of the nation's consumption pattern	Per-capita GHG emissions	CO_2-eq / population
Lower-carbon resourcing	The development of "clean" energy (including renewable energy) is correlated to both resource utilization and technology development in a country	Proportion of renewables and carbon-free energy to total primary energy	(Quantity of Renewable and zero-carbon energy) / TPES
		Carbon intensity of energy supply	CO_2-eq / TPES
Lower-carbon sector growth	Demonstrates growth of key green economy sectors	Growth in green jobs[2]	Number and type of green jobs

[2] The Industrial Development Cooperation (IDC) defines Green jobs as the net direct job-creation in the formal economy across a wide range of technologies/activities that may be classified as green or contributing to the greening of the economy

These core indicators will be reviewed periodically as part of the overall review of the M&E system design. Details of the latter review plan are given in section 4.7.3 below. In addition to these core indicators, other indicators may be identified, analysed and reported from time to time as deemed necessary by the M&E system team.

The following is a list of the information requirements to enable the assessment of the High-level indicators in Table 3 to be undertaken:

- The National GHG inventory (i.e. GHG emissions and sinks levels)
- The country's GDP statistics
- South Africa's Total Primary Energy Supply (TPES)
- Population statistics
- Green Jobs: The number and type of direct jobs created (or lost) due to green industries.

4.3.4 Tier-3: Response-level information

Tier-3 information is the information that relates to the individual response measures. For every response measure the following basic information will be required once-off when the response measure is captured in the M&E system for the first time, and may only be updated by the owner/coordinator of the response measure as necessary:

i. **Name of response measure:** e.g. name of project, programme, policy, etc.
ii. **Project description:** An outline of the details of the response measure
iii. **Geographical information**: Physical location or coverage information about the response measure
iv. **Owner/Coordinator information**: Names and contact details of the owners, coordinators and/or host institutions of the response measure
v. **Primary intended outcomes**: Quantity or qualitative description of the targeted outcome(s) and target year(s); what is considered as the baseline for the response measure; etc.
vi. **Climate change impact**: If known, the anticipated or projected climate change mitigation impact of the response measure (i.e. GHG emissions reduced or GHGs absorbed by sinks)
vii. **Other sustainable development co-benefits (or co-costs)**: Information about other envisaged sustainable development benefits/costs from the response measure, and how impact on these is to be monitored.
viii. **Implementation plan**: This includes the description of the sub-components, sub-programmes or sub-projects of the response measure as well as the description and planned timing/roll-out of the different phases or stages.
ix. **Funding information**: Information about the funders and budgeted funding, including the planned annual cost

On annual basis the following core indicators will then be analysed and monitored by the M&E system:

Table 5: Core Tier-3 (Response-level) indicators

INDICATOR GROUP	Comments	Indicator Title	Description
Implementation Indicators	Indicators of the phases or stages of implementation of the response measures. These are to be defined together with the owner/implementer of the response measure	Achieved progress in implementation	Implementation stages or phases or units, etc. achieved (*as appropriate*)
Impact indicators	Indicator of the climate change mitigation impact of the response measure	Net GHGs reduced	= reduced GHG emissions + GHGs removed from the atmosphere by sinks; expressed in CO_2-eq (*relative to baseline*)
	Indicators of impact(s) on other relevant sustainable development priorities, including job-creation – also known as co-benefit or co-cost indicators. To be defined together with the owner/implementer.	Jobs created	Number & type of jobs created directly by the response actions
		Other social, environmental and economic co-benefits	*(As appropriately defined)*
Effectiveness indicators	Key indicators of the effectiveness of the response measures in responding to climate change	Cost-effectiveness	CO_2-eq / Rand
		Job-creation effectiveness	Number of jobs / CO_2-eq Or per Rand

As is the case for Tier-1, other indicators may be identified, analysed and monitored in addition to these core indicators from time-to-time.

For the above core indicators to be assessed and evaluated annually, the following information will be required on annual basis for every response measure:

1. **Information on implementation progress**: (phases, stages, units, etc. achieved)

2. **Information for estimating climate change mitigation impact**: This is generally monitored in the response measure as the outcome and it is specific to the type of response measure (e.g. MWh of electricity generated from a wind farm, or tonnage of waste composted). M&E guidelines will give details of the type and quality of information required for estimating climate change mitigation impacts for different types of response measures. Section 4.9 gives more details on M&E guidelines.
   In some cases, the institution owning or coordinating the response measure might prefer to calculate the mitigation impact of its response measure and report this to the M&E system instead of reporting the outcome information. M&E guidelines will also give suggested methodologies for this; otherwise the owner/coordinator will need to disclose information on the methodologies and emission factors used for the calculations.
3. **Cost information**: Amount of funding that went into the project in that year
4. **Number and type of direct jobs** created by the response measure
5. **Information on other Sustainable Development (SD) benefits/costs** resulting from the response measure. These are specific to the type of response measure and will be specified the first time that the response measure is captured in the system. M&E guidelines will outline possible SD benefits for the different types of response measures and how they can be monitored.

The five types of information will be measured and provided to the M&E system by the managers, coordinators and/or owners of the various response measures. The task of calculating, analysing or assessing the different core indicators in Table 4 will be that of the M&E system team.

4.3.5 Tier 2: Company-level, Sectorial and sub-sectorial information

The NCCR Policy states that desired emission reduction outcomes (DEROs) will be defined for significantly emitting companies, economic sectors or sub-sectors, which in turn will be required to formulate mitigation plans of how they intend to achieve their DEROs, including specifying a suite of mitigation programmes and measures appropriate to that sector or sub-sector. The implementation of the objectives and measures specified in those mitigation plans will be measured, reported and verified through the climate change response M&E system to assess progress in their implementation. Tier-2 deals with this type of information, as well as other sector and sub-sector information necessary to create the link between Tier-1 (High-level & top-down) and Tier-3 information (Response measure level & bottom up).

The following basic information will be required once-off at the beginning of the assessment cycle:

i. **Baseline emissions for the sector, sub-sector or company:** These are base year emissions as well as projected baseline emissions for the assessment cycle.

ii. **Desired Emission Reduction Outcomes or Carbon Budgets:** Annualized desired emission reductions or carbon budgets for the sector, sub-sector or company

iii. **Once-off information for response measures included in the Mitigation plans**: This is the once-off information listed in section 4.3.4 for each response measure.

iv. **Common unit of service or product per sector, sub-sector or company**: This is the standard or common unit of service or product that each sector, sub-sector or company uses to primarily measure its throughput (*e.g. units produced, MWh generated, number of clients served*)

On annual basis the following Tier-2 core indicators will then be assessed:

Table 6: Core Tier-2 Indicators (Sectorial, sub-sectorial or company-level)

INDICATOR GROUP	Comments	Indicator Title	Description
Sector, sub-sector or company-level carbon profile	Sub-/sector or company annual emissions to be measured against the respective GHG emissions baseline trajectory	Sub-/ sector or Company annual GHG profile	GHG emissions + GHG removals, in CO_2-eq
		Net change in the GHG profile	Difference between projected and actual GHG profiles, in CO_2-eq
Collective impact of response measures per sector, sub-sector or company	Collective climate change mitigation impact of all the responses undertaken within the sector, sub-sector or company and those that are just relevant to the sector and sub-sector.	Collective mitigation impact of responses	Sum of the GHGs mitigated by all response measures, in CO_2-eq
carbon intensity of the sector, sub-sector or company	• Indicators of the linkages between a company, sector or sub-sector's economic activity with its carbon emissions • Sectorial or sub-sectorial GDP and units of service or product delivered can be used as indicators of economic activity	Carbon intensity of the sector or subsector	CO_2-eq / (sub-) sector-GDP
		Carbon intensity of service or product delivered	CO_2-eq / unit of product or service
Sector, sub-sector or company-level energy	Energy utilization and intensity of the company, sector or sub-sector, including	Energy use	Company, sector or sub-sector's in Mega Joules (MJ)

INDICATOR GROUP	Comments	Indicator Title	Description
resourcing	the use of renewable or zero-carbon energy sources	Proportion of renewables or zero-carbon energy to total energy use	% of Renewable or zero energy for each Company, sector or sub-sector
		Energy intensity of production or service-delivered	MJ / unit of product or service
Lower-carbon sector or sub-sector growth	Demonstrates growth of key sectors and sub-sectors	Growth in green jobs	Number and type of green jobs

While the core indicators listed in Table 5 will be analysed annually, other additional indicators may be identified and analysed as deemed necessary by the M&E system team.

The annual information requirements for assessing the core indicators in this Tier are:

- Annual sectorial, sub-sectorial or company-level GHG inventories
- Annual information requirements of Tier-3 indicators (see section 4.3.4) for each response measure included in the sectorial, sub-sectorial or company Mitigation plan
- Each sector or sub-sector's contribution to the national GDP
- Each sector, sub-sector or company's operational performance in terms of units of service or product delivered annually.
- The type and quantity of energy used per sector, sub-sector or company
- The number and type of direct jobs created (or lost) due to climate change mitigation response measures implemented by the sector, sub-sector or company

A more detailed description of the all the indicators to be assessed in Tiers 1, 2 and 3 can be found in Appendix X of this document.

4.3.6 Situational analysis

In order to minimize reporting fatigue and duplication of effort, the M&E system will be based, as far as possible, on currently existing information systems, data sources, processes and institutions. In order to achieve this, a situational analysis of existing information sources and systems was carried out, specifically focusing on where the different types of information required for the assessment of the core indicators in the three Tiers above is currently being collected and/or reported.

Various stakeholder engagement sessions, including bilateral meetings with key stakeholders, were held, wherein each stakeholder outlined the following:

- Information about the mitigation-specific or mitigation-relevant response measures that are currently being coordinated, managed and/or owned by them, and how outcomes of these are being monitored
- Information about the databases or M&E systems managed by them that currently collect and/or hold and/or report the information required by the climate change M&E system, including the adequacy (or inadequacy thereof) of supporting the M&E system with that information
- Information about mitigation responses, databases and M&E systems planned for the future

Table 6, Table 7 and Table 8 below outline currently existing systems, data-sources or databases that can provide the information required for the assessment of the core indicators, as well as their adequacy to do so.

Table 7: Tier-1 (High-level) information situational analysis

Required info	**Source, System or database that can supply the information**		
	Name	Details	Managing Institution
Annual national GHG emissions and sinks	The National GHG inventory system	• Outlines the national emission levels, disaggregated by IPCC sectors and sub-sectors • Currently compiling inventories biennially, but moving towards annual inventory compilation	Department of Environmental Affairs
The country's GDP statistics	Economic Growth statistics: The GDP	Published quarterly and disaggregated by sector and area	Statistics SA
South Africa's Total Primary Energy Supply (TPES) disaggregated by sector and subsector	The National Energy balances	compiled and published by DoE annually and disaggregated by sector	Department of Energy
	International databases	• The US Energy Information Administration (EIA) International energy statistics database • The International Energy Agency (IEA) energy statistics	Unites States EIA IEA
Population statistics	Mid-year population estimates	These are published annually, and complemented by Censuses every 10 years	Statistics SA
The number and type of direct jobs created (or lost) due to green industries	Green jobs monitoring as part of the Green Economy Accord M&E	Information on jobs created in green industries is collected annually	Economic Development Department

Table 8: Tier-2 (Sector, sub-sector and company-level) information situational analysis

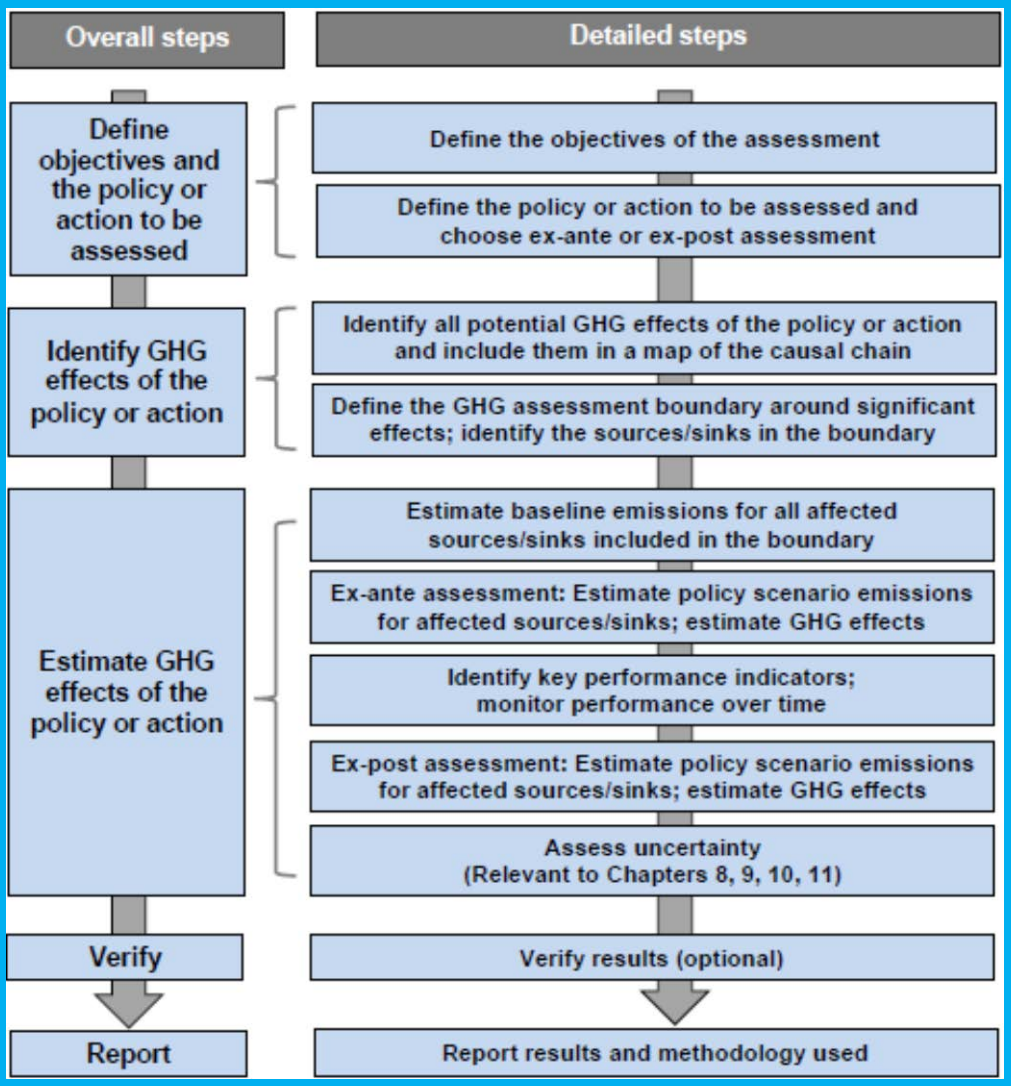
Required info	Source, System or database that can supply the information		
	Name	Details	Managing Institution
Sub-/sector GHG inventories	The National GHG inventory system	• Outlines the national emission levels, disaggregated by IPCC sectors and sub sectors • Currently compiling inventories biennially, but moving towards annual inventory compilation	DEA
Each sub-/sector's contribution to the national Gross Domestic Product	Economic Growth statistics: The GDP	Published quarterly and disaggregated by sector and area	Statistics SA
Each sub-/sector's operational performance in terms of units of service or product delivered.	*No single source of this information currently*	*This information will need to be determined together with the relevant sectors and sub-sectors*	
The type and quantity of energy used per sub-/sector	The National Energy balances	compiled and published by DoE annually and disaggregated by sector	DoE
The number and type of direct jobs created due to green industries	Green jobs monitoring as part of the Green Economy Accord M&E	Information on jobs created in green industries is collected annually	EDD
Company-level information	Company records and/or reports	For most significantly-emitting companies, this information is already being reported in sustainability reports and/or other voluntary disclosure	The companies themselves

		programmes. Most companies are therefore sufficiently equipped to submit such information for M&E of mitigation plans.	

There are numerous national policies and plans that contribute to climate change mitigation in the country. These policies and plans are then implemented through various programmes and projects on the ground. It is at this implementation level that information relevant to the climate change response M&E system can be obtained. Table 8 below presents a map of existing information systems, databases or other data sources, from which the five types of information required for assessing Tier-3 indicators for major mitigation response programmes and projects in the country may be obtained. The red colour indicates areas where information is not available.

Box 4: Evaluating climate change impact of policies, strategies and programmes

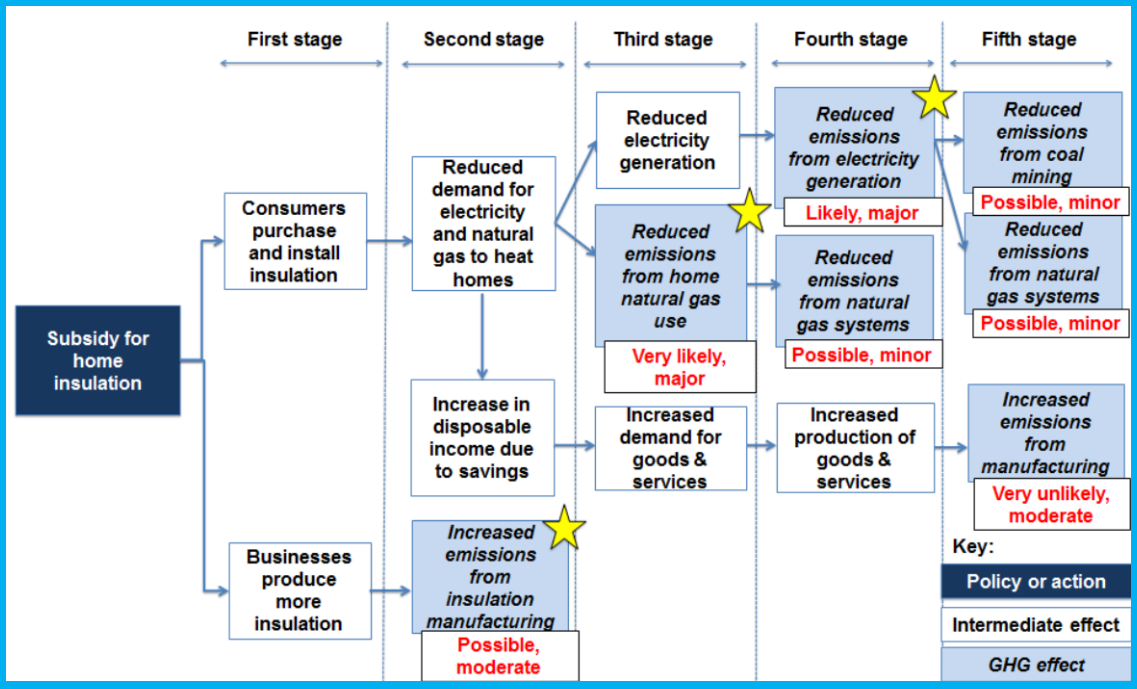
The Greenhouse gas Protocol: Policy and Action Standard (Ref) developed by the World Resources Institute (WRI) identifies the follow key steps for the Monitoring and Evaluation of High-level policies, strategies and plans:



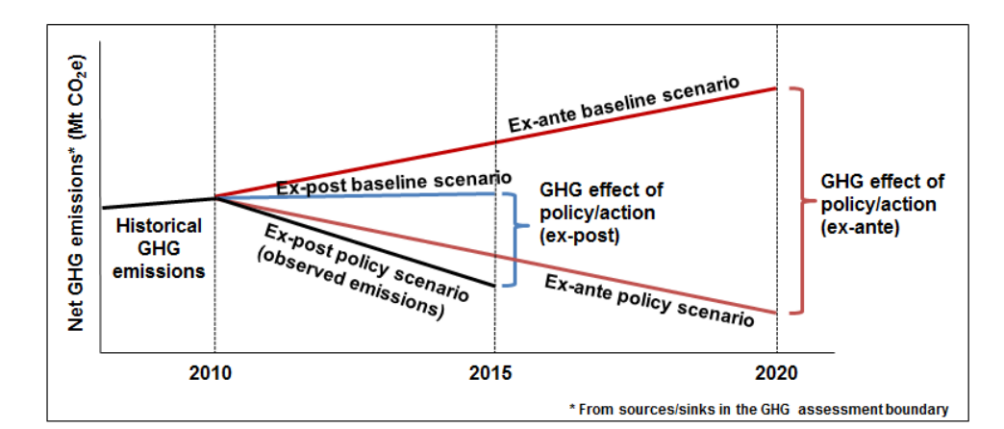
Some of the key elements of this approach are:

a. **Ex-ante and ex-post assessments**: Ex-ante refers to assessment of the anticipated impact before implementation of the policy, while ex-post refers to assessment after implementation.
b. **Mapping the causal chain**: A causal chain is a conceptual diagram tracing the process by which the policy, strategy or plan leads to GHG mitigation through a series of interlinked logical and sequential stages of cause-and-effect relationships.
c. **Defining the GHG assessment boundary**: The GHG assessment boundary defines the scope of the assessment in terms of the range of GHG effects (and non-GHG effects, if relevant) identified in the causal chain that are included in the GHG assessment and estimated. The standard encourages a comprehensive assessment that includes the full range of GHG effects that are considered significant.

Using an illustrative example of a subsidy for home insulation, the Diagram below provides an example of identifying significant GHG impacts in the causal chain. In the Diagram, stars are used to indicate GHG effects included in the boundary.



d. **Defining the baseline and policy scenarios**: The baseline scenario represents the events or conditions most likely to occur in the absence of the policy or action being assessed. It is not a historical reference point, but an assumption about conditions that would exist over the policy implementation period, if the policy or action were not implemented. In contrast, the policy scenario represents the events or conditions most likely to occur in the presence of the policy or action being assessed. The figure below illustrates these scenarios both ex-ante and ex-post.



e. **Estimating the GHG effect of a policy or action**: The GHG effect of the policy or action is the difference in emissions between the policy scenario and the baseline scenario. Thus the net mitigation effect of the policy, strategy or plan is the sum of the sum of the differences between baseline and policy scenarios for each GHG effect included in the boundary.

Table 9: Tier-3 (Response measure) information situational analysis

STAKEHOLDER		SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	DETAILS	AVAILABILITY OF REQUIRED DATA
	NAME			
National Government	**Department of Energy (DoE)**	Renewable Energy Independent Power Producer Programme (REIPPP)	• Progress of the REIPPP programme is Quarterly reported to DoE • project-level information level is confidential; Information aggregated by technology can easily be accessible	1. Implementation info – phases, MW built, etc. 2. MWh generated – *publicly accessible per project* 3. Cost information 4. No of jobs created 5. Other sustainable development benefits
		Energy Efficiency & Demand Side Management M&E system (EE & DSM): • Municipal • Sectorial	• Monitoring of the implementation of the RE white paper & Includes Eskom Integrated Demand Management and Solar Water Heater programme • IDM information aggregated by sector; disaggregated information available from Eskom • DoE currently setting up an EE Monitoring system	1. Implementation indicators (no & type of installations, etc.) 2. MWh saved 3. Cost of projects 4. No of jobs created 5. Other SD benefits also reported
		CDM database	• This is a database of projects undertaken under the CDM mechanism of the Kyoto Protocol. • Projects herein may be duplicated in other programmes – DoE working on addressing this	1. Implementation indicators – not reported 2. CO2 emissions reduced based on CERs 3. Cost of projects 4. Jobs created – not reported 5. Other SD indicators
		Biofuels Monitoring	• Monitoring is done as part of monitoring the implementation of the RE White paper • System not as matured as the others	1. Implementation indicators: (no of plants/ producers, etc.) 2. Quantity & types of biofuels produced; Biofuel use 3. Cost of projects – not reported 4. No of jobs created 5. Other SD benefit indicators
	Department of Water Affairs (DWA)	Green drop wastewater treatment monitoring system	• Captures wastewater treatment interventions, including wastewater-to-biogas projects • Monitoring undertaken biennially	1. Implementation indicators – not reported 2. Quantity of processed wastewater & biogas produced 3. Cost – Capital & refurbishment expenditure 4. No of jobs created – not reported 5. SD benefits – not reported; Generic info available

STAKEHOLDER NAME	SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	DETAILS	AVAILABILITY OF REQUIRED DATA
Department of Environmental Affairs (DEA)	South African Waste Information System (SAWIS)	• Setup as part on implementing the 2008 Environmental Management Waste Act • 3 databases: National, Gauteng & Western cape • Reporting undertaken on quarterly basis • Currently experiencing challenges with reporting	1. Implementation indicators of interventions 2. Waste quantities & type; Energy info not mandatory 3. Financial info – not reported 4. No of jobs created – not reported 5. SD benefits – not reported; Generic info available
	Extended Public Works Programme (EPWP) M&E system	• The progress in implementing the EPWP programmes is monitored annually as part of business performance monitoring of the department • Evaluation carried out periodically	1. Implementation indicators (e.g. no of phases, etc.) 2. Info for estimating cc impact (e.g. hectares of land) 3. Cost of programme 4. No and type of jobs created 5. Other SD benefits also monitored
	DEA Green cars programme	• This is a DEA programme coordinated by the facility management team of the Department • Progress and impact monitored through the DEA performance appraisal system	1. Implementation indicators 2. Km travelled and electricity consumed 3. Cost of programme 4. No of jobs created 5. Other SD benefits
	The Green Fund	• DEA fund aimed at catalysing transition to a lower-carbon & climate-resilient South Africa • Fund administered, monitored and evaluated by DBSA • Comprehensive M&E, including internal and external Quality assurance steps	1. Implementation indicators – not monitored 2. Info for estimating cc impact – not monitored 3. Cost of projects 4. No of jobs created – not monitored 5. Other SD benefits – not monitored

STAKEHOLDER NAME	SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	DETAILS	AVAILABILITY OF REQUIRED DATA
Department of Trade and Industry (DTI) & National Cleaner Production Centre (NCPC)	Manufacturing Competitiveness Enhancement Programme (MCEP)	• An incentive programme designed to enhance competeiveness of the SA manufacturing industry • One of its key focus areas is Green Technology and Resource efficiency improvement • M&E done by NCPC, including a database on GHG abatement information achieved through the programme	1. Implementation indicators 2. Information for estimating climate change impact 3. Cost of projects 4. Jobs created 5. Other SD benefits
Department of Transport (DoT)	PRASA Rail Recapitalization programme	• Monitoring of this recapitalization programme is carried out by PRASA itself	1. Implementation indicators 2. Passenger statistics 3. Cost of programme 4. Jobs created 5. Other SD benefits
	Compressed Natural Gas (CNG) project	• This project is coordinated by various national stakeholders including DoT, SANEDI and IDC • Each of these stakeholders tracks certain elements of the project • Lots of gaps in the monitoring process	1. Implementation indicators – no of vehicles converted, no of fuelling stations, etc. 2. Quantity of natural gas consumed 3. Cost of programme 4. Jobs created 5. Other SD benefits
Department of Public Enterprises (DPE)	Transnet Freight road-to-rail programme	• Transnet M&E system • Halted due to Carbon-tax issues & others • DoT and Treasury having bi-lateral discussions on this	1. Implementation indicators 2. Increase in rail freight volumes, 3. Cost of programme 4. Jobs created 5. Other SD benefits
	South African Airways (SAA) Aviation Biofuels programme	• The project in currently in development stage, with feedstock identification completed • DPE is working with provincial governments on this.	1. Implementation indicators 2. Quantity and type of biofuel 3. Cost of programme 4. Jobs created

STAKEHOLDER NAME	SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	DETAILS	AVAILABILITY OF REQUIRED DATA
			5. Other SD benefits
	Bio-based electricity – Eskom pilot	• Currently at exploratory stages	1. Implementation indicators 2. MWh of electricity produced 3. Cost of programme 4. No and type of jobs created 5. Other SD benefits
	South African Forestry Company (SAFCOL) Independent Power production	• SAFCOL looking into green-energy investments and is in advanced discussions with Eskom about the potential of supplying biomass for co-firing in the power utility's coal-fired power stations • Currently at exploratory stages	1. Implementation indicators 2. Info for estimating cc impact 3. Cost of programme 4. No and type of jobs created 5. Other SD benefits
National Treasury	Service Delivery and Implementation Plan Monitoring (SDBIP monitoring)	• SDBIP gives effect to the Integrated Development Plan and budget of "high capacity" municipalities • It provides the basis for measuring performance in service delivery against end-of-year targets and implementing the budget • Quarterly reporting to the National Treasury	1. Implementation indicators – not always available 2. Info for estimating cc impact 3. Cost of programmes 4. No and type of jobs created – not always disaggregated per programme 5. Other SD benefits
Presidency	Government-wide performance monitoring and evaluation system - Outcome 10	• This monitors the government outcomes-based approach designed to ensure that government is focused on achieving real improvements in SA; monitoring on quarterly basis. • Climate change response is under Outcome 10, which is coordinated by DEA • M&E of climate change response focuses on high-level outcomes; not individual response measures	1. Implementation indicators – only for high-level programmes (e.g. REIPPP) 2. Info for estimating cc impact 3. Cost of programmes 4. No and type of jobs created 5. Other SD benefits

STAKEHOLDER		SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	DETAILS	AVAILABILITY OF REQUIRED DATA
	NAME			
Local Government	**ICLEI**	carbon*n* Climate Registry (cCR)	• A global reporting platform of local climate action • Has been adopted as the official registry for the Durban Adaption Charter and the Earth-hour challenge for cities • 6 Cities in SA actively reporting in 2013, and the number envisaged to go up to 20 in 2014 • Reporting aligned with current NCCRD template • Has also been identified as a future reporting platform for sub-national/provincial reporting	1. Implementation indicators 2. Info for estimating cc impact & calculated cc impact 3. Cost of programmes 4. Jobs created 5. Other SD benefits
	City of Tshwane	Tshwane GHG web-based M&E system	• City has just completed development of a Green economy transition Framework • Developed a web-based GHG monitoring system to support the framework • Includes both inventory and response information	1. Implementation indicators 2. Info for estimating cc impact & calculated cc impact 3. Cost of programmes 4. Jobs created 5. Other SD benefits
	City of Cape Town	City Energy and Climate change reporting system	• City has an Energy & Climate change strategy and an Action Plan that contains business plans for priority projects • Projects monitored individually, but also monitored through internal reporting system • GHG information reported to the ICLEI cCR	1. Implementation indicators 2. Info for estimating cc impact & calculated cc impact 3. Cost of programmes 4. Jobs created 5. Other SD benefits
	City of eThekwini	City energy and GHG reporting system	• An Excel-based reporting system, based on ICLEI/IPCC protocols; spreadsheet is sent to relevant city departments for data-collection • GHG information is then reported to ICLEI cCR and the CDP • Have just commissioned work on development of a more complex climate change M&E system	1. Implementation indicators 2. Info for estimating cc impact & calculated cc impact 3. Cost of programmes 4. Jobs created 5. Other SD benefits

STAKEHOLDER		SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	DETAILS	AVAILABILITY OF REQUIRED DATA
	NAME			
	City of Johannesburg	City energy and climate change reporting system	• Internal reporting on progress of implementing the City's energy & climate change strategy • Uses the Global Protocol for Community-Scale Greenhouse Gas Emissions (GPC) standard • Data reporting to ICLEI cCR and to CDP through the C40 network of Cities.	1. Implementation indicators 2. Climate change impact reported 3. Cost of programmes 4. Jobs created 5. Other SD benefits
Provincial Government	**Gauteng province**	Gauteng GHG monitoring system	• Internal reporting as part of tracking progress in implementing the Province's climate change strategy	1. Implementation indicators 2. Info for estimating climate change impact 3. Cost of programmes 4. Jobs created 5. Other SD benefits
	Mpumalanga Province	Provincial Climate change database	The province has drafted a climate change response strategy, and is in the process of establishing a provincial climate change task team and projects database to support monitoring and evaluation.	1. Implementation indicators 2. Info for estimating climate change impact 3. Cost of programmes 4. Jobs created 5. Other SD benefits
	Western Cape Province	Provincial climate change database	Western Cape Government has developed 3 databases for gathering climate information: • An Energy consumption and GHG Emissions database; • Sustainable Energy Projects Database, which provides an indication of projects of the Western Cape government and private sector; • A climate change adaptation projects database, including private and public sector projects. The province has also initiated work on developing a	1. Implementation indicators 2. Info for estimating climate change impact 3. Cost of programmes 4. Jobs created 5. Other SD benefits

STAKEHOLDER		SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	DETAILS	AVAILABILITY OF REQUIRED DATA
	NAME			
			provincial climate change M&E system	
	Free state Province	Provincial Climate change reporting	The Free State Province has developed three tools to enable it to respond to Climate Change: • The baseline GHG Inventory for the province; • The Climate Change Response Strategy and Action Plans; • The Green Economy Strategy; The province intends to develop an M&E System prior to implementation of the Flagship Programmes outlined in the Climate Change Response Policy and the Green Economy Strategy.	1. Implementation indicators 2. Info for estimating climate change impact 3. Cost of programmes 4. Jobs created 5. Other SD benefits
Business	**National Business Initiative (NBI)**	Carbon Disclosure Project	• Voluntary reporting regime for top 100 JSE companies; information can be very unreliable • Objective is to give investors indication of climate response & management by top JSE firms • Reporting requirements dictated by global investors only; needs to stay that way to achieve its objective	1. Implementation indicators – not reported 2. Climate change impacts – partly reported 3. Cost of programmes – not reported 4. Jobs created – not reported 5. Other SD benefits – not reported
Research	**South African Centre for Carbon Capture and Storage (SACCCS)**	The Carbon Capture and Storage programme	• SACCCS is a division of SANEDI that is leading Carbon Capture and Storage (CCS) activities in SA. • SACCCS research and development The roadmap includes piloting storage by 2017, demonstration by 2020 and commercialization by 2025	1. Implementation indicators 2. Info for estimating climate change impact 3. Cost of programme 4. Jobs created 5. Other SD benefits

4.3.7 Mitigation data-sharing network

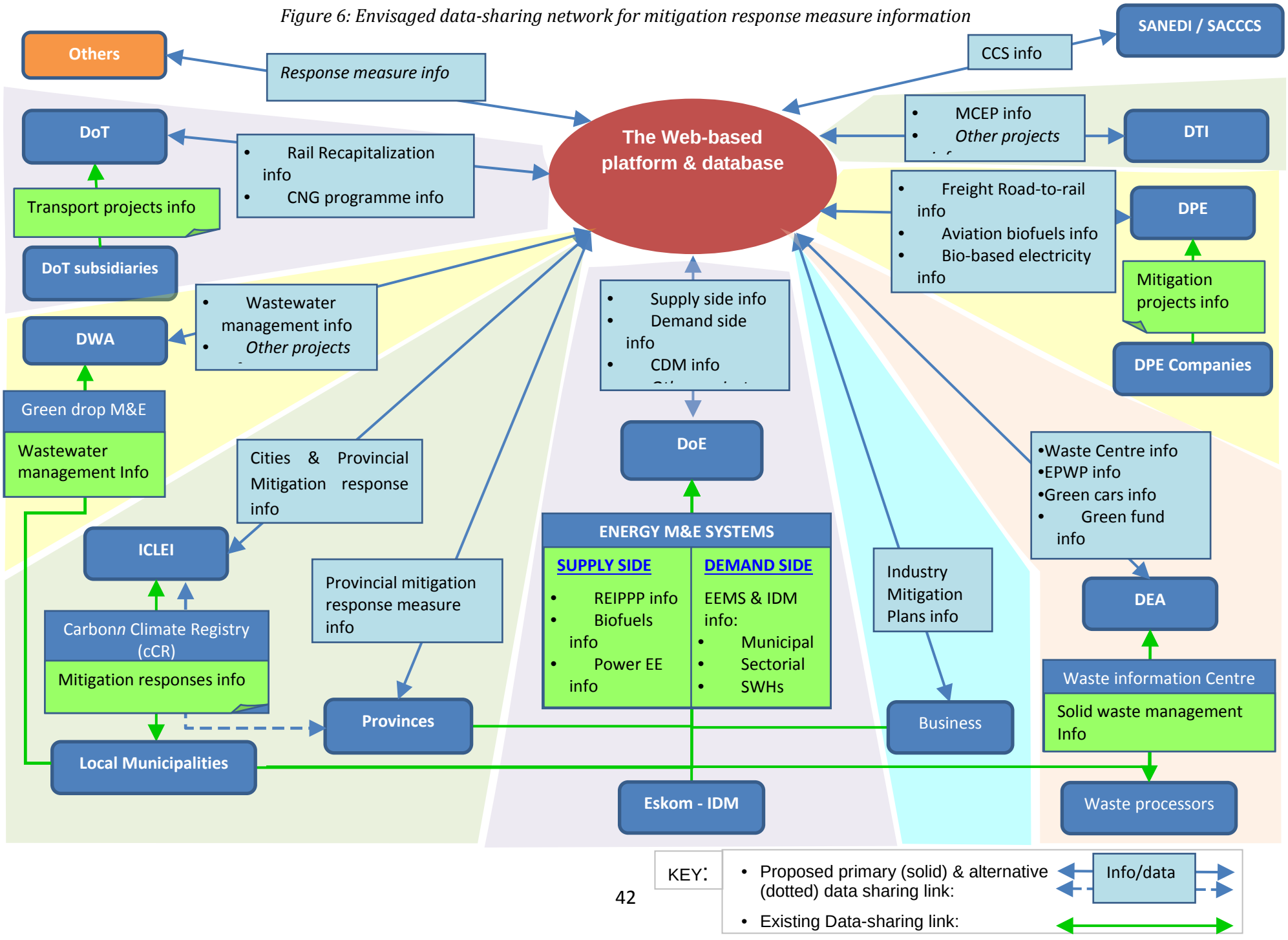
For Tiers 1 (High-level) and 2 (Sub-/Sectorial and company-level) the information flows are quite straight forward because the list of information required is short and the information sources identified in the situational analysis above can adequately provide the data required for the M&E system going forward without any need for improvement of the data. Furthermore, most of the data-providers for Tier-1 and Tier-2 information publish this information as part of their core primary mandate, making them reliable data providers both in the short and long term.

Tier-3 information flows on the other hand can be substantially more challenging. The elements that make these information flows more challenging can be summarised as follows:

- The assessment of available relevant data made for each system/data-source in the situational analysis is based on the theoretical description or legal framework of that system/data-source, however, in many cases the reality is quite different, with some systems actually being dis-functional, having incomplete, inconsistent and even useless data;
- Some of the data systems are currently in a transitional state and the nature of the final version is still unknown;
- There is a lot of duplication of information in the various systems;
- For the entire climate change M&E system to function properly there is need for consistency in the reported information and in the methods of assessing outcomes and baselines, all of which will require some modification in the operation of the currently existing systems. While owners/managers of most of these systems have welcomed this idea, there are still a few cases where the owners/managers have clearly indicated that it would be impossible for that to happen;
- The fact that the national climate change response M&E system will ultimately be mandatory may disqualify some systems from supporting it.

Figure 6 below presents an envisaged information-sharing network for Tier-3 (response measures). The green arrows and boxes show existing information-sharing links as determined from the situational analysis, while the blue arrows and boxes show the proposed network to support the functioning of the climate change response M&E system.

Figure 6: Envisaged data-sharing network for mitigation response measure information



The above information-sharing network for Tier-3 can be summarized as follows:

Table 10: Description of the information-sharing network for mitigation response measures

No	Summary details	Stakeholders involved	Considerations for filling gaps or improvement
1.	Response measure information collected as part of the REIPPP be shared directly with the M&E system	DoE, Eskom	Confidentiality issues will need to be resolved via MoUs and/or confidentiality agreements to allow for sharing of information disaggregated geographically
2	Response measure information collected under the EE & DSM programmes of the DoE and Eskom to be shared directly with the M&E system	DoE, Eskom	• Confidentiality issues may need to be resolved via MoUs and/or confidentiality agreements to allow for sharing of information disaggregated geographically • DoE is in the process of developing an improved sectorial Energy Efficiency Monitoring System; here lies an opportunity to align it to the climate change M&E system • DoE resources for monitoring EE & DSM are currently limited; An assessment of the needs and a plan for improvement will be required in the long term
3	CDM project info to be shared with the M&E system	DoE	--
4	Information on Biofuels response measures to be shared directly with the M&E system	DoE	The resources for Biofuels monitoring at DoE is quite limited, hence there is need for a needs assessment for this and a plan for improvement
5	Response measure information monitored under the Green drop programme to be shared with the M&E system	DWA	• DWA has extended an invitation to DEA to participate in the next update of the reporting system to incorporate the M&E system requirements – this is an opportunity to fill in gaps identified in the situational analysis for wastewater response measures • The biennial nature of this reporting system may not present a challenge since most of wastewater response measures should also be reported by cities on annual basis anyway
6	The Response measure information captured by the Waste Information System (WIS) to be shared with the M&E system	DEA	• The WIS has a section for waste-to-energy that only demands reporting on waste quantities processed but NOT the energy produced; the latter is absolutely critical for assessing the climate impacts of landfill gas – to- energy projects. This information requirement will need to be incorporated into the

No	Summary details	Stakeholders involved	Considerations for filling gaps or improvement
			WIS reporting regulations. • Gauteng Department of Agriculture and Rural Development (GDARD) is busy with update of the Gauteng Waste Information Regulations (GWIR) that will include energy produced from waste. The GWIR draft is planned to be gazetted later in 2014 • It is understood that the WIS currently has provision for voluntary reporting of information on cost and other SD benefit information; reporting of this information will need to be promoted going forward • Currently the WIS is experiencing challenges of registration and reporting by the majority of waste processors nationally; A strategic action plan needs to be drawn up on how to improve this situation in the long term
7	The EPWP response measure information to be shared with the M&E system	DEA	There is an opportunity for the monitoring and evaluation information and timelines of the EPWP to be fully aligned with the M&E system
8	The relevant information on Green electric cars to be shared with the M&E system	DEA	The electric cars programme
9	The information about response measures supported by the Green fund to be shared with the M&E system	DEA, DBSA	The monitoring system of the Green fund is currently being reviewed for phase 2 of the fund; This presents an opportunity for alignment with the M&E system
10	Information about the mitigation response measures supported through the MCEP programme to be shared with the M&E system	DTI, NCPC	The reporting of this programme will need to be aligned with the M&E system
11	Climate information of the PRASA Rail Recapitalization programme to be shared with the M&E system	DoT, PRASA	The reporting of this programme will need to be aligned with the M&E system
12	The relevant information on the Compressed Natural Gas (CNG) project to be shared with the M&E system	DoT, IDC, SANEDI	The monitoring of this programme is currently minimal and fragmented, with DoT, IDC and SANEDI all monitoring certain parts. It is necessary to assess the monitoring of this project, including the institutional setup and the resource requirement, and develop a plan to strengthen it.
13	The DPE to share information on the mitigation	DPE	• The DPE monitoring system for response measures undertaken by its

No	Summary details	Stakeholders involved	Considerations for filling gaps or improvement
	response measures undertaken by its companies		companies need to be aligned with the M&E system requirements • The DPE team dealing with climate change currently has capacity constraints, with only 2 staff members dealing with all environmental issues. DEA and DPE need to discuss how this can be improved to ensure that the DPE properly supports the functioning of the M&E system
14	Local governments to participate in the carbon*n* Climate Registry (cCR) and the registry information to be shared with the M&E system. This means that the cities will need to setup their own internal reporting systems to feed into the cCR and ultimately the M&E system	ICLEI, cities	• Being a voluntary system hosted by an NGO, the possibility of this system as part of a mandatory government reporting system should be investigated. An alternative to using this system is to simply align the information of this system with the M&E system such that a single offline data-gathering sheet can be used to support both. • ICLEI runs support programmes for local government, together with SALGA, SA-Cities Network and other NGOs to promote climate action and monitoring by local governments. The M&E system team need to consider how they can support this work in the interest of the M&E system
15	Provinces to either share information on mitigation response measures undertaken by the provincial government directly with the M&E system or make use of ICLEI's cCR. Either way, there is need for provinces to setup internal monitoring systems for collecting the information.	Provinces, ICLEI	The M&E system team need work with provincial governments to identify support areas and collaborative programmes which can be implemented to promote and support provincial climate monitoring systems
16	Information for monitoring and evaluating progress of the implementation of sector, sub-sector or company Mitigation Plans to be submitted to the M&E system in the format prescribed in the Mitigation Plans Guideline.	Companies, Sectors and sub-sectors with DEROs and Carbon budgets	The guideline for mitigation plans needs to be aligned with the M&E system data requirements
17	The South African Centre for Carbon Capture and Storage (SACCCS) to share information on	SACCCS / SANEDI	• The climate change M&E system needs to influence and inform the SACCCS monitoring system regarding the information needed for climate change M&E

No	Summary details	Stakeholders involved	Considerations for filling gaps or improvement
	implementation of CCS		
18	Climate information for all **other response measures** (individual measures or a collection of measures) that cannot be reported via the reporting systems above is to be shared with the M&E system directly. A proposed Information-sharing network for Agriculture, Forestry and other Land use (AFOLU) programmes is shown in Appendix Y.	All others	• The M&E system should influence future response measures to collect and monitor the information aligned with the requirements of the M&E system. (i.e. the 5 types of data in Tier-3) • M&E guidelines outlining the specific information requirements for different types of response measures must be developed and published to inform the development of monitoring systems of current and future response measures

While the above information network is designed to cover the whole spectrum of programmes and projects with direct climate change mitigation impact, specific attention has been given to large response measures with high mitigation impact, especially the near-term priority flagship programmes identified in chapter 8 of the Climate change Policy. These flagships are covered in the information-sharing network as follows:

1. **EPWP flagship programme**: Covered under EPWP monitoring
2. **Renewable Energy Flagship programme**: covered under
    a. REIPPP monitoring and evaluation,
    b. EE & DSM monitoring (SWHs),
    c. DoE biofuels monitoring,
    d. the DPE monitoring system (Public companies' initiatives),
    e. the DTI MCEP programme monitoring and
    f. the ICLEI carbon*n* Cities Climate Registry (Local government initiatives)
3. **EE & DSM flagship programme**: Covered under
    a. EE & DSM monitoring,
    b. the DTI MCEP programme monitoring and

4. **Transport flagship programme**: covered under:
    a. The ICLEI carbon*n* Cities Climate Registry (Local government initiatives)
    b. Provincial reporting (e.g. Gautrain)
    c. DoT programmes monitoring
    d. the DPE monitoring system
    e. The Green vehicles monitoring system

5. **Waste Management flagship programme**: covered under
    a. The DEA South African Waste Information System
    b. The DWA Green drop monitoring system, and
    c. The ICLEI carbon*n* Climate Registry
6. **Carbon Capture and Sequestration flagship programme**: Covered under the SACCCS monitoring process

4.4 Tracking Transition to a Climate-Resilient Society

4.4.1 Introduction

The National Climate Change Response White Paper states that:

"*South Africa will build the climate resilience of the country, its economy and its people and manage the transition to a climate-resilient, equitable and internationally competitive lower-carbon economy and society in a manner that simultaneously addresses South Africa's over-riding national priorities for sustainable development, job-creation, improved public and environmental health, poverty eradication, and social equality".*

Consistent with this framing one of the objectives of the M&E system is to track South Africa's transition to a climate resilient society. This includes:

- Compilation and communication of existing relevant, quantitative and qualitative data/information that could usefully indicate whether the country's social, economic and environmental systems are becoming more resilient to climate change over time.
- Generation of lessons that will enhance stakeholders' understanding of the country's climate change impacts, risks and vulnerabilities that in turn can help to identify approaches that are effective in reducing those impacts, risks and vulnerabilities.

Table 10 below presents the different definitions of climate resilience by some key international institutions. These can be summarised as follows:

> *Climate resilience is the capacity of social or ecological systems to recover or bounce back from disturbances, shocks and extreme loads or to absorb these disturbances while retaining the same basic structure and ways of functioning.*

Table 11: Definitions of climate resilience by different institutions

1. Capacity of a natural system to recover from disturbance (OECD 2001)
2. Tendency to maintain integrity when subject to disturbance (UNDP, 2005)
3. The ability of a system to recover from the effect of an extreme load that may have caused harm (UK CIP, 2003)
4. The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures (UN/ISDR, 2004)
5. The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change (IPCC 2007)

6. Capacity of an individual, community, or institution to dynamically and effectively respond to shifting climate impact circumstances while continuing to function at an acceptable level. Simply put, it is the ability to survive and recover from the effects of climate change (Rockfeller Foundation, 2009).

7. The capacity of a social-ecological system to cope with a hazardous event or disturbance, responding or reorganizing in ways that maintain its essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation (Arctic Council, 2013 in IPCC 2014)

South Africa's approach to building climate resilience of the country is "*through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity*". This approach is also known as adaptation to climate change. Figure 7 below outlines other internationally recognised definitions of climate change adaptation. It is important to highlight that climate change adaptation is not a discreet subject area, but rather joins into a number of other existing areas, such as disaster risk reduction, integrative planning, environmental management, and also shares the same interests with other branches of climate change, like mitigation, technology transfer, climate finance and capacity building.

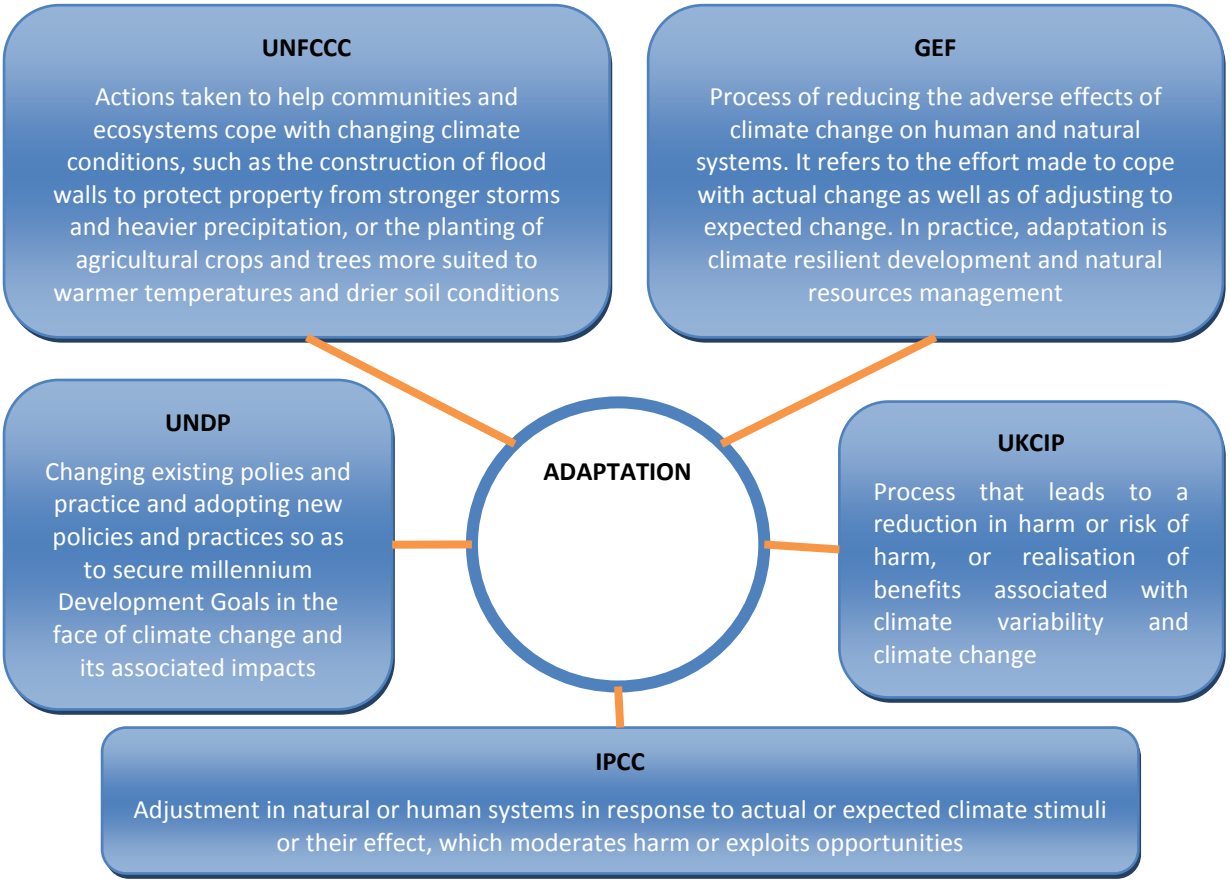


Figure 7: Definitions of climate change adaptation by different institutions

Box 5: Glossary of other terminology associated with climate-resilience

Adaptive capacity: The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences (IPCC 2014)

Climate data: Historical and real-time climate observations along with direct model outputs covering historical and future periods (WMO GFCS Implementation Plan).

Climate information: Climate data, climate products and/or climate knowledge (WMO GFCS Implementation Plan).

Climate product: A derived synthesis of climate data. A product combines climate data with climate knowledge to add value (WMO GFCS Implementation Plan) .

Climate projection: A climate projection is the simulated response of the climate system to a scenario of future emission or concentration of greenhouse gases and aerosols, generally derived using climate models. Climate projections are distinguished from climate predictions by their dependence on the emission/concentration/radiative-forcing scenario used, which is in turn based on assumptions concerning, for example, future socioeconomic and technological developments that may or may not be realized(IPCC 2014).

Disaster: Severe alterations in the normal functioning of a community or a society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic, or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery (IPCC 2014).

Impacts: Effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refer to effects on lives, livelihoods, health status, ecosystems, economic, social, and cultural assets, services (including environmental), and infrastructure due to the interaction of climate changes or hazardous climate events occurring within a specific time period and the vulnerability of an exposed society or system. Impacts are also referred to as consequences and outcomes. The impacts of climate change on geophysical systems, including floods, droughts, and sea level rise, are a subset of impacts called physical impacts (IPCC 2014)

Risk: The potential for consequences where something of value is at stake and where the outcome is uncertain, recognizing the diversity of values. Risk is often represented as probability of occurrence of hazardous events or trends multiplied by the impacts if these events or trends occur. Risk results from the interaction of vulnerability, exposure, and hazard. In this context, the term *risk* is used primarily to refer to the risks of climate-change impacts (IPCC 2014)

Stressors: Events and trends, often not climate-related, which have an important effect on

the system exposed and can increase vulnerability to climate-related risk (IPCC 2014).

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity or susceptibility to harm and lack of capacity to cope and adapt (IPCC 2014).

4.4.2 Importance of tracking transition to a climate-resilient South Africa

Taken together, the purpose of the M&E framework for tracking South Africa's transition to a climate-resilient society is to ensure that adaptation investments lead to climate resilient development, and the goal is that development trajectories are maintained despite climate change effects. Specifically, this framework seeks:

- To track and communicate the impacts of climate change, climate risks and climate vulnerability
- To document the extent to which climate change adaptation is taking place in South Africa
- To assess outcomes, impact and effectiveness of response measures that enhance climate resilience of *social, economic and environmental* systems and across the country, provinces and municipalities with the view to replicate those that have worked well – consistent with Section 12 of National Climate Change Response White Paper.
- To communicate climate change adaptation information:
    - Domestically: to policy makers, decision makers and other stakeholders with the view to inform public sector, private sector and other stakeholders on the current status, the gains, the gaps and future priorities in adaptation response measures, thus Providing an evidence base on what has been done right and working
    - Internationally: to meet South Africa's reporting obligations under the UNFCCC.
- To inform South Africa's participation in the climate change negotiations under the UNFCCC.
- To inform the investment of resources in areas with the greatest need / to justify continued support – e.g. to warn of certain thresholds, some of which may lead to 'tipping points'. Tipping points can be understood as the point at which rarely experienced events become more frequent
- To track mainstreaming of adaptation strategies into development planning
- To enhance the long term learning process for this relatively new field of action
- Contribute in managing interventions that enhance climate-resilience in the context of uncertainty
- To understand the extent of the occurrence of climate change in South Africa

4.4.3 General challenges of M&E of climate-resilience

Compared to tracking transition to a lower-carbon economy, tracking the transition to a climate-resilient society is much more challenging. The following are some of the major challenges:

i. The nature of adaptation to climate change impacts

-The long timescales associated with climate change and its impacts makes it hard to gain a sense of urgency or illustrate how adaptation response measures will improve resilience.

-The effectiveness of adaptation response measures may not be evident for many decades, and is dependent on uncertain and unknown future climatic and socio-economic conditions

-The multi-sectorial and multi-stakeholder nature of adaptation

-Adaptation is concerned with adjustments in systems (biotic and abiotic) at different scales and by different actors all of which may be only partially developed in response to climatic stimuli

ii. Adaptation lacks an agreed metric to determine effectiveness

-While there are clear cut indicators for climate change itself (e.g. average global temperature or atmospheric CO_2 levels) adaptation must be grounded in the context, scale, sector and the nature of the endeavour, all of which may vary widely.

-The outcomes of evaluation of adaptation projects, policies and programmes may not always be directly comparable.

-Vulnerability assessments require value judgment, and any attempt to define the measure vulnerability must be the result of a consultative, stakeholder-driven process, rather than the results of technical analysis resulting in a simple metric.

iii. The difficulty of attributing cause and effect

-M&E approaches usually seek to demonstrate that changes can be attributed to a particular endeavour. As adaptation entails a range of projects, policies and programmes across sectors and levels, their effect may be difficult to distinguish from the effects of other sectoral activities.

-Disentangling the attribution of “impact of climate change” from other impacts of due to locked-in / nascent vulnerability of the impacted system.

-The difficulty to sometime distinguish between development and adaptation activities e.g social (i.e. migration, health) and other environmental measures (i.e. air quality).

iv. The ability to track adaptation, is further constrained by the challenge of:

-Defining what adaptation looks like in practice

-Linking intervention to vulnerability reduction outcomes

-Locating suitable data sources to facilitate systematic cross-country monitoring and evaluation over time

-Diversity of key definitions and terms

Therefore the above mentioned challenges should be taken into consideration to allow for effective M&E while at the same time recognising the role of M&E climate resilience in:

5. Supporting the long term learning process for a relatively new field of action
6. Helping manage adaptation interventions in the context of uncertainty
7. Providing an evidence base to inform decision makers on what has been done right and working
8. Demonstrating the effectiveness of policies and programmes

4.4.4 SA's approach to Climate-resilience M&E – The key building blocks

The three building blocks, shown in Figure 8 below represent a structured approach to undertaking a coherent assessment of the overall transition of South Africa towards a climate resilient society in line with the requirements in Section 12.1.1 to 12.1.4 of the NCCRWP.

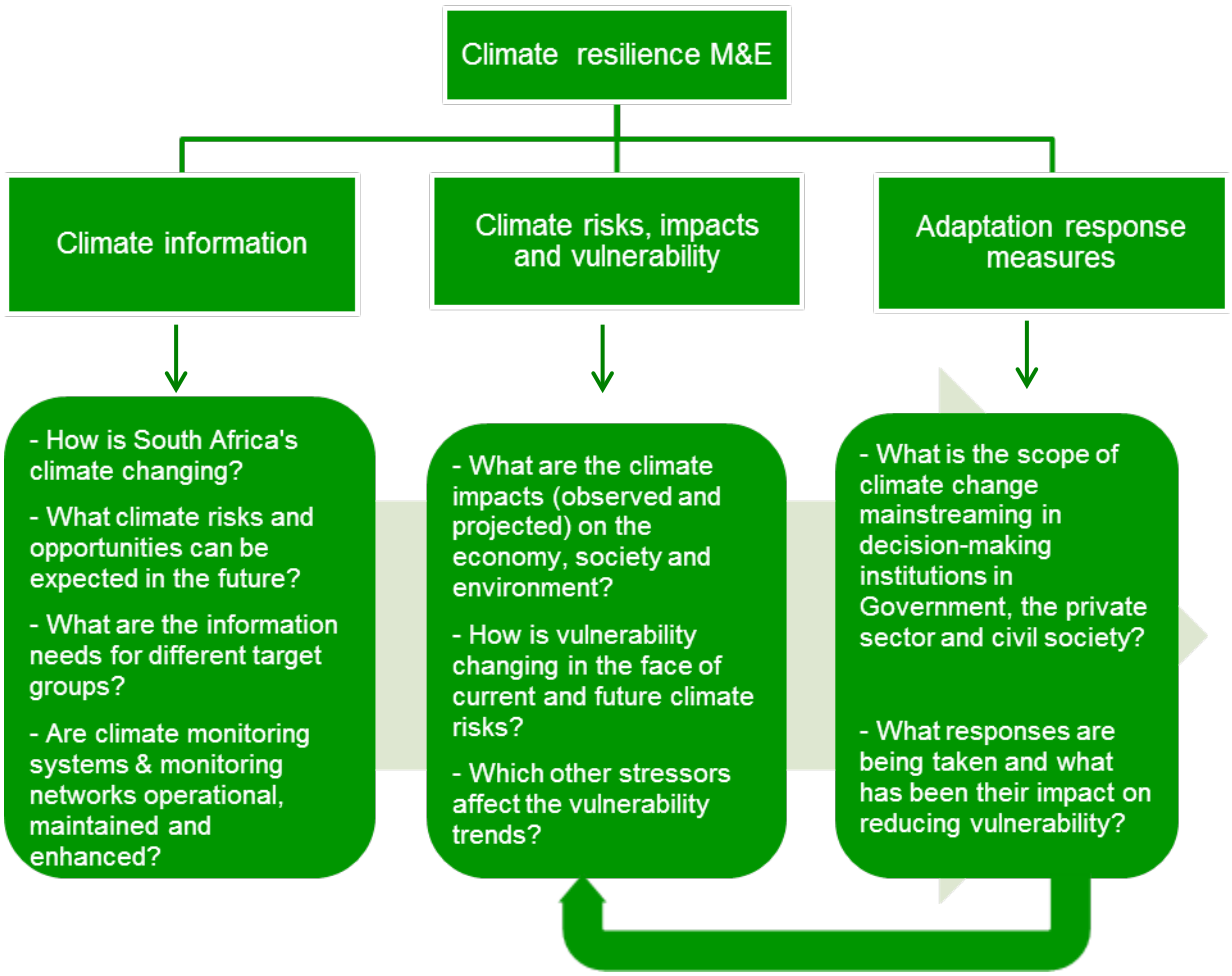


Figure 8: Key Building blocks of climate resilience M&E

Each of the building blocks is explained in detail below:

1. **Climate information** The first building block provides an overview of South Africa's current climate change pressures and also describes the existing monitoring systems and networks of climate-relevant variables. This information provides the basis for understanding South Africa's sensitivity to climate change and is also useful for developing response measures that manage and mitigate climate risk.

2. **Climate risks, impacts and vulnerability:** The second building block provides an overview of climate change impacts, risks and vulnerabilities and also acknowledges that climate change is an additional stressor to human and natural systems. This building block helps in understanding what the consequences of climate change will be for South Africa. Such information shall form an evidence-base for targeting adaptation responses at the most threatened communities, systems and assets; and it also serves as a baseline for determining the effectiveness of responses in enhancing climate resilience.

3. **Adaptation response measures**: The third building block monitors and evaluates South Africa's actions towards mainstreaming climate change adaptation into decision-making (in government policy and planning as well as in the private sector and civil society). Such actions include development of policies, plans, frameworks, programmes, projects and climate information monitoring systems and networks. It also tracks progress in the implementation of climate resilient responses and assesses the effectiveness of such responses in enhancing adaptive capacity and address climate change vulnerability.

4.4.5 Key elements of the M&E of climate resilience

The key building blocks of climate-resilience M&E have further been unpacked into key elements as illustrated in Figure 9 below. The key elements give more details of the type of monitoring and evaluation that will be carried out under each key building block, and consequently provide guidance on the information that will be required by the M&E system.

The information that will be necessary to M&E climate resilience will therefore be along these elements of M&E of climate resilience. It will cover the following:

- Development of indicators for monitoring and evaluating the transition to a climate resilience society
- Mapping of state of knowledge under each indicator
- Tracking the progress in implementation under each indicator

- Evaluation of the effectiveness of the activities undertaken

The sections below give specific details on what each element of M&E of climate-resilience entails as well as how monitoring and evaluation will be undertaken under each element.

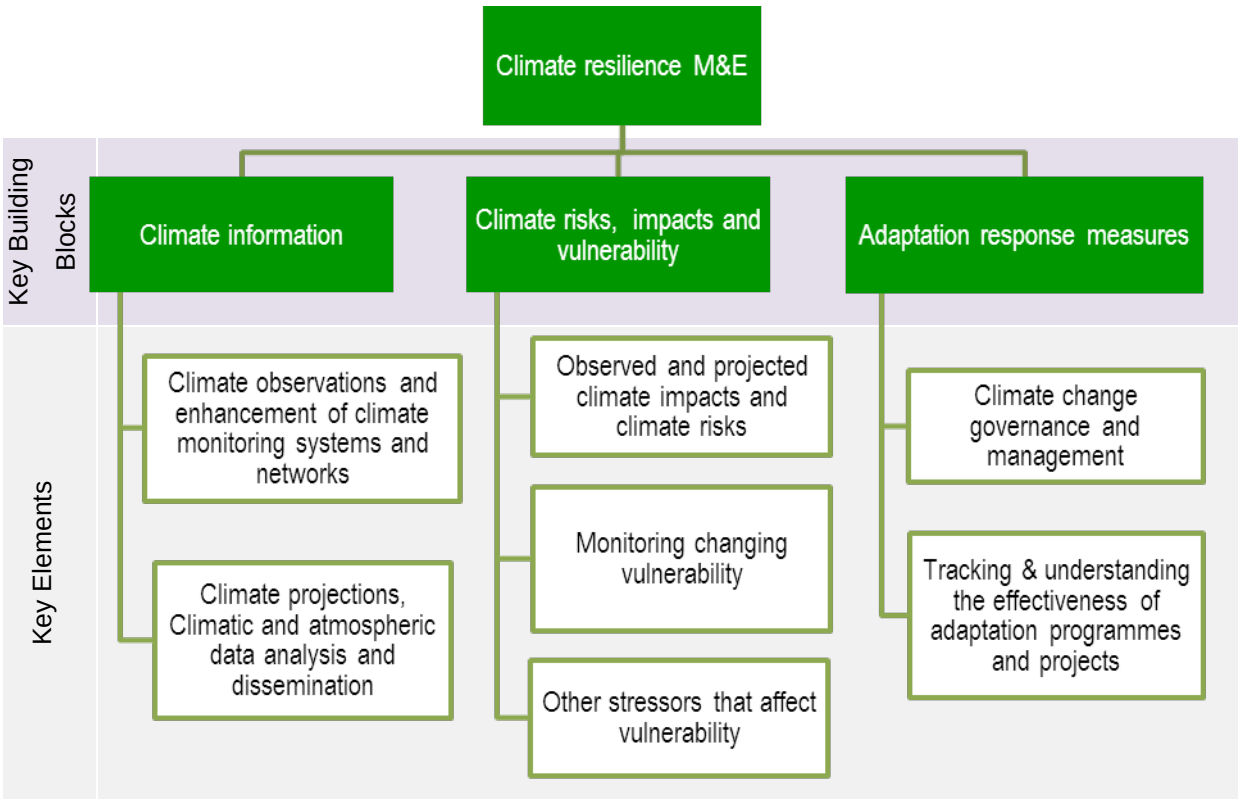


Figure 9: The key elements of M&E of climate resilience

4.4.6 Climate information

This building block is made up of the following two elements:

- Climate observations and enhancement of climate monitoring systems & networks
- Climate projections, climatic and atmospheric data analysis and dissemination

Climate observations and enhancement of climate monitoring systems & networks: Observations of the climate and monitoring of how it is changing provide an important basis for relevant climate change adaptation decision-making. Section 12 of the NCCRWP calls for effective *'nation-wide climate change and atmosphere monitoring systems'* and it also indicates key climatic parameters that need to be monitored. In addition, section 5.7 of the NCCRWP states that "rural areas are under-represented in the climate monitoring network despite the fact that they are likely to be the soonest and most greatly negatively affected by climate change". Therefore, there is an urgent and critical need for the enhancement of

monitoring networks and systems as these are central to an effective national response to changing conditions.

Climate projections, climatic and atmospheric data analysis and dissemination: To take timely and appropriate steps to prepare for climate change, projections and data analysis of climatic and atmospheric parameters are invaluable and help put current observations into a climate change context. This exercise will also provide useful clues as to the risks and impacts both in terms of extreme events, short and long-term climate change. In addition, there is a need to M&E the existing models of climate projections to track the extent of variations of their outputs.

How is the monitoring going to be done for this building block?

This building block will focus on monitoring the following:

- Observed and projected changes in extreme climate and weather
- Underlying causes of observed and projected changes in extreme climate and weather
- Research to improve understanding, modelling and prediction of the climate system
- Maintenance and enhancement of climate observations systems to support state of climate estimation, forecasting, research and information needs
- Access to climate observation, data records and information required to address climate related concerns

How is the evaluation going to be done for this building block?

The following will be evaluated for this building block:

- Adequacy of observations in supporting state of climate estimation, forecasting, research and information needs.
- Extent to which climate monitoring systems and networks are integrated to form comprehensive climate observing system that can support state of climate estimation, forecasting, research and information needs.
- Use of key findings/outcomes on state of climate estimation, forecasting and research to inform policy, decision making and end user requirements.

4.4.7 Climate risks, impacts and vulnerability

This building block is made up of three elements:

- Observed and projected climate risks and impacts
- Monitoring changing vulnerability and
- Other stressors that affect vulnerability.

Observed and projected climate impacts and climate risks: Information on climate change impacts typically draws from sectorial impacts. Section 12.1.2 of the NCCRWP gives examples of some of the climate change impacts to be monitored. These examples include incidence of climate-sensitive diseases; ecosystems and the goods and services they supply; key species responses (including invasive alien species); wildfire hydrology and water resources; and agricultural and forestry production. This element goes beyond addressing the question: what are the observed and projected *impacts of climate change;* it also includes monitoring of cross-sectorial impacts. Understanding and monitoring both sectorial and cross-sectorial impacts will help track existing and new vulnerabilities.

Monitoring changing vulnerability: This element assesses the extent to which vulnerability is changing in the face of both current and future climate risks and also the impact of response measures. Monitoring this element will benefit from clarity and specificity of information regarding existing and projected climate risks.

Other stressors that affect vulnerability: This element recognises that climate change is an additional stressor to other already existing social and economic stressors. It addresses the question: *what are the underlying trends of vulnerability more broadly speaking?* To better understand this element, data on broad social, economic and bio-physical trends will be needed; recognizing that the other stressors will be context-specific.

Owing to the fact that progress toward achieving development goals will strengthen economic, environmental and societal resilience to climate change, progress in meeting existing development goals is an important aspect of adaptation. The National Development Plan (NDP) identifies the following development issues as being particularly important to adaptation and can be useful as part of understanding broad trends in vulnerability: decreasing poverty and inequality; creating employment; increasing levels of education and promoting skills development; improving health care; maintaining the integrity of ecosystems and the many services that they provide.

How is the monitoring going to be done for this building block? :

Section 12.1.2 of the NCCRWP requires the monitoring of climate impacts at appropriate spatial density and frequency. The monitoring of this building block will include the following:

- Observed and projected climate change impacts and vulnerability at different scales and sectors
- Existing and emerging approaches to climate change impacts and vulnerability assessments and associated dissemination tools and methods
- Provision of data and information on climate change impacts and vulnerability

- Understanding the extent to which the underlying causes of vulnerability have been identified and addressed
- Monitoring changing vulnerability of environmental, social and economic systems
- Underlying drivers of changes in vulnerability of environmental, social and economic systems

How is the evaluation going to be done for this building block?

- Use of key findings/outcomes on climate change impacts and vulnerability to inform policy and decision making

4.4.8 Adaptation response measures

This building block is divided into two elements: climate change governance and management – which looks at the strength and existence of governance structures and processes - and adaptation response measures – which looks at adaptation programmes and projects.

1. Climate change governance and management
2. Understanding the effectiveness of climate resilience programmes and projects

Taken together, M&E of these two elements will serve to demonstrate the effectiveness of policies and programmes in enhancing adaptive capacity, to generate new learning and also to facilitate replicability. There is a feedback loop between *'adaptive capacity and response measures'* and *'changing vulnerability'* as outlined in the second building block above. The degree and extent of improvement in adaptive capacity drives reductions in vulnerability.

Climate change governance and management

This element tracks the existence and strength of governance structures and processes that determine the readiness of Sector Departments, Provinces, Metros, Municipalities, State Owned Entities, Non-Governmental Organisations and business operations to build support for action and effectively develop, implement, monitor and improve (through continuous learning) climate resilient interventions. Being climate ready means that information systems are available to inform decision-making, relevant staff has training and capacity, proportionate budgets are available and management processes have been established to support timely decisions about climate change.

Tracking and understanding the effectiveness of adaptation programmes and projects

Adaptation programmes and projects include actions which have been designed to:

- Improve adaptation decision-making,
- Build capacity of institutions and communities to respond to climate change,
- Reduce climate vulnerability,
- Track climate risks and impacts,

- Ensure climate compatible/proofed development processes

This element will focus on tracking the progress in implementation of the adaptation response measures, the observed/expected adaptation impact, and the effectiveness thereof in terms of enhancing climate-resilience; with the view to document lessons learnt and to determine the replicability of the response measure.

Tracking the implementation of adaptation response measures and their impact in reducing climate risk, impact and vulnerability is a key element of the climate change response M&E system, which ultimately aims to evaluate how well these actions are making South Africa climate-resilient. There are three categories of adaptation response measures that shall be covered by the M&E system:

1. "**Opportunistic" adaptation:** Activities undertaken to achieve development objectives that incidentally achieve climate-resilience objectives. The adaptation components of such an activity may even be noticed or emphasized only after the fact.

2. **Climate-proofing of on-going development efforts:** Activities added to an on-going development initiative to ensure their success under a changing climate. Adaptation thus serves as means to achieve development ends.

3. **Discrete adaptation:** Activities undertaken specifically to achieve climate-resilience objectives. Development activities may be used as means to achieve climate resilience ends.

How is the monitoring going to be done for this building block? **:**

This building block will focus on tracking the following:

- Governance and management structures related to climate-resilience
- Policies, plans, strategies, programmes and projects that enhance climate-resilience
- Progress in implementation of adaptation response measures
- Financing of adaptation response measures
- Integration of climate risk into existing policies, plans, strategies, programmes and projects
- Capacity/ability of systems, institutions and communities to respond to climate change

How is the evaluation going to be done for this building block?

Criteria, methodologies and indicators for evaluating adaptation response measures will be developed in future, guided by the relevant sector stakeholders and experts. The evaluation criteria will seek to provide insights on success, failures and impact and effectiveness of the response measures on:

- Reducing the vulnerability and impacts of environmental, economic and social systems to hazards associated with climate variability and change
- Integration of climate risk into existing policies, plans, strategies, programmes and projects
- Increasing the resilience of sectors, provinces, municipalities and communities
- Increasing the ability of individuals, communities and institutions to develop and pursue their own adaptation strategies and measures
- Ensuring climate proofed development processes

4.5 Tracking Climate Finance

4.5.1 What can be termed "climate finance"

The National Climate Change Response Policy notes that responding to climate change is expensive and requires a comprehensive package that mobilizes resources, including financial, human, technical cooperation and technology transfer at domestic, sub-regional, regional and international levels for both mitigation and adaptation responses. The Policy further states that because South Africa is a developing country, international resources need to complement domestic resources to finance the cost of transition to a lower-carbon and climate-resilient society and economy.

The NCCR Policy thus refers to climate finance as all resources needed to finance the cost of the country's transition to a lower-carbon and climate resilient society. This covers both climate-specific and climate-relevant financial resources regardless of whether they are public or private funds of domestic or international origin. The Policy identifies some of the funding mechanisms to be pursued as follows:

- Domestic public finance
- Financing instruments of domestic financial institutions (Including development finance and micro-finance)
- Private investments (including asset management, venture capital and private equity)
- UNFCCC financing measures
- Official Development assistance (ODA)
- Bilateral development funding
- Other international and corporate grants

4.5.2 Why monitor climate finance?

The NCCRP is very explicit on the need for a tracking facility for climate finance mechanisms and climate responses that will monitor existing climate finance flows, including tracking the use and impact of funds. To get a more comprehensive picture of the need and usefulness of a national climate finance tracking system, a consultation session of key stakeholders and experts in climate finance was held and the following list was agreed on:

1. To provide an overview of the landscape of climate finance supporting the country's transition to a lower-carbon and climate-resilient society
2. To understand the resource needs to fund South Africa's climate response actions
3. Tracking and monitoring the impact or contribution of funds deployed towards climate actions – successes and failures
4. To help improve transparency in climate finance inflows by
    a. Helping to minimise "double-counting" of outcomes and

b. Helping to identify “double-dipping” on same pool of resources

5. To support the fulfilment of South Africa’s international reporting requirements (including the National Communications and the Biennial Update Reports under the UNFCCC)
6. To provide an estimate of the extent to which public finance has catalysed climate action and leveraged or triggered other funds (e.g. programmes going to scale, more investment by private sector)
7. To help promote a country approach when mobilising and applying for international finance cooperation

4.5.3 Overall approach to tracking climate finance

The overall approach to tracking finance will incorporate both a top-down monitoring of climate finance at the source-level and bottom-up monitoring the finance at the final point of impact as follows:

c) **Top down**: this refers to the collection and tracking climate finance information through the funder or the implementing agency:
d) **Bottom up**: this approach focuses on collecting information at the level of response measures. This includes collecting finance or cost information together with information collected for tracking adaptation and mitigation response measures as described in sections 4.3.4 and 4.4.8.

A correlation of the bottom-up finance/cost information with that from the top-down approach will assist in assessing the objectives of monitoring climate finance related to transparency, effectiveness and proper financial planning highlighted in section 4.5.2 above

Figure 10 below illustrates this overall approach to climate finance M&E.

Data/information collection	Assessment	Annual Report

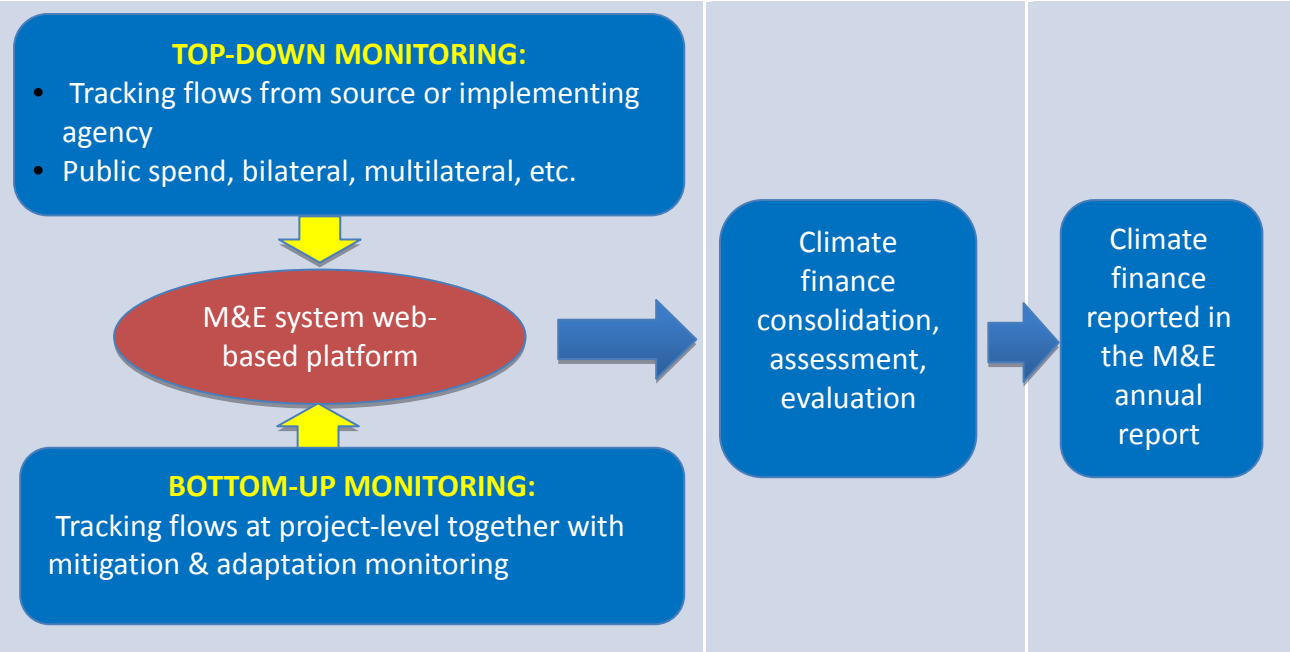


Figure 10: Overall approach in Monitoring & Evaluation of Climate finance

4.5.4 Situational analysis: What is currently being monitored on climate finance?

In order to determine existing climate finance M&E systems that the national Climate change response M&E system can make use of or draw from, a situational analysis was undertaken, with focus on top-town monitoring system. Table 11 below gives a summary of the relevant existing climate finance tracking systems.

Table 12: Situational analysis of existing relevant climate finance tracking systems

Public finance	Summary	Database	Limitations
The National Treasury	• The National Treasury (NT) administers and tracks all domestic public finance. • NT is also able to track some bilateral and multilateral sources of funding provided to local and national government through the Medium Term Expenditure Framework (MTEF)	This data resides with various sections within National Treasury	• limited to funds to public sector institutions that are channelled via the NT • Funds channelled directly or via implementing agencies are excluded • Funds to non-government institutions are also excluded
OECD Creditor Reporting System (CRS)	• The OECD collects data relating to bilateral aid. • This is considered the most comprehensive system for	Online data system publicly accessible.	• No precise quantification of amounts allocated to address climate change. • Does not account for

Public finance	Summary	Database	Limitations
	monitoring aid flows related to climate change. Since 1998, climate finance has been monitored using the 'Rio Markers' for climate change mitigation.		multilateral climate finance flows. • Difficult to distinguish between adaptation and mitigation projects for early years.
UNFCCC reporting system	• The climate finance portal monitors fast-start finance, national communications, Biennial Reports, Biennial Update Reports and the Global Environmental Facility. • Data is collected on each country's contribution and the type of climate change projects supported (mitigation and adaptation).	Public access of online data system. Options are provided to filter data.	• Lacks consistency in reporting from one country to another. • No precise definition of mitigation and adaptation finance. • Limited on-going information. • Currently, no evaluation of projects to assess if funding has been effective. The International Consultation & Analysis process of BURs will seek to undertake such assessments
UNDP Multi-Partner Trust Fund Office (MPTF Office)	• MPTF provides dedicated fund administration services to the UN system and national governments • Provides real-time information on UN Funds and Joint Programme funds that support humanitarian, recovery, reconstruction and development processes	Real-time online database.	It only covers a limited number of climate change initiatives
The World Bank climate finance tracker	• The World Bank recently launched a climate finance tracking system. This aims to monitor projects financed by the World Bank (IBRD and IDA) and external resources. • This builds on OECD Rio Markers	Public access of online data system.	Recently launched with limited new or retrospective data.

Public finance	Summary	Database	Limitations
	approach and records at the lowest level of financing information available.		
Asian Development Bank (ADB)	• A monitoring framework (DMF) is prepared for each ADB project. This tracks inputs, outputs, outcomes and impacts. • Key aspects evaluated include relevance, efficiency, effectiveness, and sustainability.	IT platform, eOperations, records national and project level data, which is publically available.	• Inconsistent approaches to estimate pre and post impacts. • Lack of real-time monitoring and evaluation. • Definitional and methodological issues particularly around classifying what is specific for adaptation purposes.
Climate Investment Funds (CIFs)	• The overarching results framework provides mechanisms to analyse the impact, outcomes, and outputs of CIF-funded activity. • Mandatory indicators are accompanied with baselines and targets, details on measurement and means of verification.	Data is collected and disclosed through MDBs.	The frameworks are 'living documents' and will be reviewed following a two to three year trial.
The Global Environmental Facility (GEF) System for Transparent allocation of Resources (STAR)	• GEF works through a partnership of ten agencies that assist eligible governments and NGOs to develop, implement and manage projects • Data disaggregated into funds specific for biodiversity, climate change and land-degradation	Publicly accessible information online, including a project filtering tool	• Latest available information is for the year 2010
Private finance	**Summary**	**Database**	**Limitations**
Information on Foreign Direct Investment (FDI)	• The 'International Direct Investment Statistics' database managed by OECD tracks North-South climate finance flows. • There are narrow and broad	Public access of online data system. Options are provided filter data by	• Lack of an internationally agreed definition on 'green' or 'climate specific' FDI • The OECD database is currently not able to monitor South-South and South-North finance

Public finance	Summary	Database	Limitations
	definitions of 'green' FDI.	country and sector.	flows • OECD database is limited to 35 countries.
Information from offset markets	Financial flows associated with the carbon offset market do not currently exist in any central database, but various sources with partial data including the World Bank, IDEA-carbon, and UNEP-RISØ.	No central database, but various sources with partial data.	• No standard methodologies to quantify annual investment flows into CDM projects. • Publically available data is limited.

What is evident from the table above is that tracking of public climate finance is much more mature than that of private finance.

4.5.5 Monitoring framework

Based on data-availability and the country's basic climate finance reporting obligations under the UNFCCC, it is proposed that a phased approach be adopted for monitoring and evaluation of climate finance as follows:

In the Short-term (*phases 1 & 2 of implementation in section 7*) – Track the following:

1. South Africa public finance spend (CPEIR) – *Top down*
2. Finance flowing through the UNFCCC (this includes GEF funding, Adaptation Fund and the Green Climate Fund) – *Top down*
3. Flows from Multi (CIF) / bilateral / regional flows to SA – *Top down*
4. Monitoring climate finance expenditure at climate response level – *Bottom up*

In the Medium to Long term (*implementation phase 3 & beyond*) - Also include:

5. South Africa private sector spend towards a lower-carbon and a climate-resilient economy – *Top down*
6. Tracking expenditure at a thematic level – *Top down*
7. Emphasis on influencing climate finance flows – *assessment & reporting*
8. Assessments of leveraging impacts, catalytic impacts, etc. – *assessment*

Table 12 below presents major information sources, key considerations and a proposed framework for the short-term tracking of climate finance from a top-down perspective. The Government Technical Advisory Committee, the National Treasury and the Department of

Environmental Affairs will take the lead in tracking climate finance and will, in consultation with key stakeholders, develop an approach for undertaking the medium-to-long term elements of climate finance tracking as outlined above.

Table 13: Top-down tracking of climate finance in the short-term

	DOMESTIC PUBLIC FINANCE	INTERNATIONAL FINANCE		
		UNFCCC & Other UN Financial Mechanisms	***Other Multilateral Finance***	***Bilateral Finance***
Major funding types / sources	• national programmes funded on budget • dedicated environmental financing instruments (E.g. Green fund, Drylands fund)	These include • Adaptation Fund • GEF Trust Fund • Green climate fund • MDG achievement fund	These include • World Bank Strategic climate & climate investment funds • Forest carbon partnership facility • Global climate EE and RE fund.	Primarily developed countries (e.g. Australia, Denmark, Germany)
Implementing Agencies	Various, including Government departments, SARS, DBSA, IDC and Eskom	Various, including Government and GEF	Various, including Government and IDC	Various, including Government, private banking institutions, Research institutions & public corporations.
Key issues for M&E	• National Treasury (NT) administers and tracks all public budget • Environmental financing instruments may also mobilize other funds in addition to public funds, which may not flow through NT • The Government Technical Advisory Committee (GTAC) of the National Treasury has drafted a climate finance spending review document focusing on programmes funded from national budget	The UNFCCC climate finance portal captures these	• National Treasury may have information on some of these funds • Some of the funds flow directly to the implementing agencies and are therefore not captured by the NT	• NT may have information on some of these funds • Some of the funds flow directly to the implementing agencies and are therefore not captured by the NT
Proposed M&E approach	DEA to work with GTAC on tracking and coordinating M&E of these climate finance types, with information support from the National Treasury and provincial treasuries.			

4.5.6 Data Parameters

To ensure that climate finance data is robust enough to enable evidence-based decision-making, it is critical that the data be standardised, accurate, transparent and regular**.** The following standardised metrics will therefore be used for the top-down tracking of climate finance:

- *Value* – Total financial amount, split by year for multi-year projects, in a standard currency
- *Source* – Country of origin or private company
- *Intermediary* – Bilateral, multilateral, public-private partnership, etc.
- *Recipient* – National level, specific organisation, etc.
- *Sector* – e.g. energy, agriculture, industry, waste, etc.
- *Types of funds/instruments* – e.g. loans, grants, carbon markets, etc.
- *Purpose of funding* – e.g. mitigation, adaptation, REDD+, etc.

4.6 Verification

The UNFCCC requires that Nationally Appropriate Mitigation Actions (NAMAs) be verifiable, and that national Monitoring and Evaluation systems for climate change be able to ensure this. While it may not be a mandatory requirement for the information reported under the M&E system to undergo 3rd party verification, it is a very important element of the system that will ensure the credibility of the system.

The long-term objective is for data providers to undertake independent verification. It is important to note that some of the data systems that will support the M&E system already have built-in verification processes.

To get to this long-term vision the following approach will be adopted in the initial implementation phases of the M&E system:

- M&E guidelines will include sections on ensuring approaches for quality control and assurance, including undertaking third-party verification
- Following the example of energy efficiency, the M&E system team, together with stakeholders, will identify areas where SABS standards can be developed to ensure credibility
- Also build-in verification requirements or recommendations in the Memoranda of Understanding (MoUs) with data-providing stakeholders and also in the in the guidelines of Mitigation Plans
- all voluntary data-providers not covered by MoUs or Mitigation Plan requirements will be strongly encouraged and, where possible, supported to undertake independent verification

In addition, the three primary output documents of the M&E system (see section 4.7) will undergo 3rd party verification as follows:

a. The Annual M&E report: Domestic 3rd party auditing and verification
b. The National Communication to the UNFCCC: Domestic 3rd party auditing as well as international expert reviewing by the UNFCCC
c. The Biennial Update Review: domestic 3rd party auditing and the International Consultation and Analysis (ICA) process under the UNFCCC

4.7 System Outputs, Communication and Learning

4.7.1 System Outputs

The primary output of the M&E system will be an annual report on monitoring and evaluation of climate change information in South Africa. This report will respond to and contain all the information required by the National Climate Change Response Policy (see section 1.2), including:

- Trends in climate indicators (sea-level rise, humidity, temperature, etc.)
- Information on likely and observed climate change impacts, climate risks as well as vulnerabilities
- Landscape of response measures to climate change, including adaptation and mitigation responses
- Information on the impact and effectiveness of the response measures, both on climate change and on other Sustainable development areas
- Information on financial resources to support responses, including landscape, impact, effectiveness, gaps and available funding opportunities
- Lessons learnt in climate change response, including what has worked well and what has not worked well; knowledge gaps and areas of improvement
- Recommendations on future responses

On the web-based platform it will also be possible to generate user-defined reports in terms of content and presentation.

The other outcomes of this system will be the National Communications and the Biennial Update Reports (BURs) under the UNFCCC. The former contains all information about climate change in South Africa and is submitted once every four years, while the latter focuses only on mitigation-related information and is submitted once every two years. In the years where the two reports coincide, the BUR is submitted as a component of the national communication. More details about these documents can be found on the UNFCCC website.

The next section, on communication, gives the complete list of channels and tools through which the outcomes of the M&E system will be communicated to the relevant stakeholders

4.7.2 Communication

Effective communication is critical for the Climate change response Monitoring and Evaluation System to achieve its intended objectives, particularly to inform evidence-based policies and decision-making as well as to facilitate learning and knowledge-sharing. The M&E system will communicate to the different stakeholders at different levels, while also allowing stakeholders to communicate with it. Table 13 and Table 14 below outline the primary communication channels and approaches for this M&E system for different stakeholder groups:

Table 14: The M&E system's communication channels and methods

	Communication Channels & Methods	Primary objectives	Primary Target audience
1	Annual Report on Monitoring & Evaluation	• This is one of the main outputs of the M&E system as required by the NCCRP. (see above) • Primarily to inform national climate change response	General public, Government (National, Provincial & Local), climate change practitioners & researchers
2	National Communications under the UNFCCC	• Part of South Africa's obligations under the UNFCCC • Also summarized for policy-makers	UNFCCC secretariat and parties; policy-makers
3	Biennial Update Reports under the UNFCCC	• Part of South Africa's obligations under the UNFCCC • Also summarized for policy-makers	UNFCCC secretariat and parties; policy-makers
4	Interactive Web-based platform	• The "live" communication channel of the M&E system • More details in section 4.8	General public, Government, climate change practitioners, researchers
5	NCCC and IGCCC reporting	Reporting in line with national climate change response governance and stakeholder engagement	Government and key sector stakeholders
6	Parliamentary Portfolio Committee	Reporting in line with national climate change response governance	Parliament
7	Reporting in other government clusters & committees (e.g. IMCCC, Director's General clusters, MINMEC, MINTEC)	Reporting in line with national climate change response governance	Decision-makers and Executive level of government
8	Other established climate-relevant forums (including	• As part of stakeholder engagement process • To share new developments and	Targeted climate change stakeholder groups, including academia, Civil

	Communication Channels & Methods	Primary objectives	Primary Target audience
	conferences & research seminars)	research findings	society, government and private sector
9	Media	Part of stakeholder engagement process	General public
10	Tools that support the implementation of the system (E.g. Training sessions & materials, M&E guidelines)	To support proper functioning of the M&E system	Key users and data-sharing stakeholders of the M&E system
11	Outcome 10 reporting	Part of the monitoring process of the Presidency Outcomes-based system	Presidency

Table 15: How the M&E system will communicate with different stakeholder groups

Group	Target audience	Communication channels
Domestic	General public	Annual M&E reports, Web-based platform, Media, established climate-relevant forums
	Government (National, Provincial & Local)	IGCCC, Annual M&E reports, summarized BURs & National communications, Web-based platform, M&E system tools, Government clusters
	Presidency	Outcome 10 reporting, Annual M&E reports, summarized BURs & National communications, Web-based platform, IGCCC, Government clusters
	Parliament	Parliamentary Portfolio Committee, Annual M&E reports, Web-based platform, summarized BURs & National communications
	Industry	NCCC, Annual M&E reports, Web-based platform, M&E system tools, Media, Established climate change forums
	Civil society	NCCC, Annual M&E reports, Web-based platform, Media, Established climate change forums
	Research institutions	NCCC, Annual M&E reports, Web-based platform, BURs, National communications, Media, Established climate change forums
International	Multilateral agreements	Biennial Update Reports; National communications

4.7.3 Learning

Comprehensive monitoring and evaluation of climate change information, apart from the established GHG inventory systems in developed countries, is a practise that is still at its infancy globally. Very few countries in the world have attempted and successfully developed climate change response M&E system as comprehensive as the system at hand, encompassing adaptation, mitigation and climate finance all in one. This, therefore, implies that there is still a lot of learning that is currently happening in this space of climate change M&E and the process of developing and implementing South Africa's climate change response M&E system alone will have many lessons from which the international stakeholders in the field of climate change monitoring and evaluation can make use of. This requires documentation of every single step in the design, development and implementation processes.

In addition to learning by the global climate change community, there will be continuous internal learning by all the M&E system stakeholders, including the climate change M&E system team at DEA. As can be seen from the High-level diagram of the system in section 4.1, there are feedback loops built various sections of the system itself for the purposes of learning. Practically, this requires undertaking of regular reflections on the functioning of each component of the system, with the results informing improvement of the relevant previous stages of the system. For instance, the improvement of the information and data-sharing network will need to be informed by the results from the reflections of how the extent to which outputs of the system, the analysis of the indicators and the web-based platform are working well and achieving their intended objectives as well as the results of the reflections of how the data-sharing network itself is working.

As an approach to learning the usefulness and effectiveness of every component of the M&E system will be assessed on annual basis, and the lessons and proposed improvements thereof will form part of the Annual Report on Monitoring and Evaluation (See section 4.7.1)

Every 5 years starting from 2020 (the last year in the implementation plan as per section 7), the M&E system will be reviewed to ensure that it still adheres to the guiding principles in section 2.3. In particular, the review will focus on the following:

- Strategic importance of the system
- Operational or system performance review
- Institutional-level review

4.8 Web-based platform

At the heart of the climate change M&E system is the web-based platform, the existing version of which is called the National Climate Change Response Database. The following is a list of the characteristics of the fully-fledged web-based platform:

- **Gateway to South Africa's climate change information**: The M&E system will be the first point of call for accessing information on climate change in South Africa. Thus in addition to the primary information outlined in the sections above, the web-based system should also contain (or link where appropriate) national, provincial and national government reports, communication relevant to climate change, research reports on climate change, up-to-date information on climate-relevant events and tools like climate chat rooms.
- **Different levels of access**: For security and monitoring purposes the web-based platform will have various levels of access, from basic user-levels that might not require registration and/or log-in, to more advanced user-levels suitable for system administrators and data reporters.
- **Smart and flexible**: since the is bound to be continuous learning in the field of climate change M&E, as well as varying maturity levels for different elements, sections, components and sectors in the M&E system, the web-based platform will be designed to be smart and flexible enough to adopt new knowledge without having to be re-designed from scratch.
- **Quick generation of tailored reports**: While there will be standard information sheets and pages, the web-based platform will also be able to quickly generate user-defined reports on specific information
- **Simple and Interactive**: The platform will be as easy to use as possible, with different user-modes from simple interactive modes designed for school learners and other modes for more advanced users. The use of interactive GIS tools should be part of this platform to enhance interaction.
- **Guidance and help**: User guidelines and administrator contact information will easily be accessible within the web interface. There will also be a dedicated walk-in/call-in/email-in help desk at DEA for this system.

4.9 M&E Guidelines

While this framework document gives an overview of the information requirements, assessment methodologies and even indicators of the M&E system, there is still need for more detailed information specific to the respective sectors, sub-sectors and even response measure types.

For tracking transition to a lower-carbon economy, this additional information will be packaged into Measuring, Reporting and Verification guidelines (M&E guidelines) that will guide data-providers on all aspects of MRV, including:

- Information on type of data that must be measured and reported to the M&E system for estimating the climate change impact of specific types of response measures, as well as guidance on how to measure or estimate, report and verify this data

- For cases where the data-provider calculates the climate change impact of the response measure themselves, the guideline will give guidance on the proper methodologies and emission factors to use
- The methods and tools for determining baselines of different types of response measures
- A generic list of Sustainable Development co-benefits that must be considered for each type of response measure and the indicators that can be used to track them

Similarly in for tracking transition to a climate-resilient society, guidelines for measuring and correlating information as well as assessing the indicators will be developed.

5 INSTITUTIONAL ARRANGEMENTS

The following institutions will form part of the institutional arrangement for the functioning of the M&E system:

iii. **The climate change M&E team**: This is the DEA climate change Monitoring and Evaluation team and its key roles will be coordination and daily administration of the M&E system. This team will be the primary body responsible for:

- Setting-up the system, system improvements, data-requests for monitoring, analysis of indicators for tracking transition to a lower-carbon economy and for tracking climate finance;
- Administration of the web-based platform as well as compilation and publication of the Annual M&E reports;
- Facilitating the establishment and functioning of an Adaptation Evaluation Committee (see below) with access to key stakeholders and representatives, and coordinating any consultations where required;
- Updating the Adaptation Evaluation Committee with an understanding of what data already exists in the web-based platform and what may need additional stakeholder input and consultation;
- Providing support in streamlining data from different sources so that it is available for review by the Adaptation Evaluation Committee in an accessible and easy to use format.

iv. **Adaptation Evaluation Committee:** Evaluation of adaptation response measures is much more complex than that of mitigation response measures; hence there is a need for a special committee for this work. The role of the Adaptation Evaluation Committee will be to undertake and/or commission annual evaluations of the adaptation responses to ensure that South Africa's climate change response M&E system can support evidence-based decision-making and facilitate learning and knowledge-sharing to inform wider policy and practice. While it will be the

responsibility of the climate change M&E team to co-ordinate the dissemination of learning, the Adaptation Evaluation Committee will be the source of much of that knowledge and will have a role in prioritising what is disseminated.

The Adaptation Evaluation Committee shall consist of an inter-disciplinary group of adaptation evaluation technical experts spanning key sectors (*e.g.* disaster risk reduction, agriculture and health), public, private, civil society sectors and academia. There shall be a concerted effort to ensure that local and provincial levels, and not only national levels, are included and participate fully with the view to bring national, provincial and local level perspectives. This committee shall also draw in best practice guidance for international adaptation practice to ensure that it is using the latest tools and techniques for undertaking adaptation evaluations. The goal of the Adaptation Evaluation Committee will be to provide a platform for interagency synergies and promoting more interdisciplinary capacities for responding to data-related issues and also for expert analysis of the responses.

This Committee shall complement the monitoring functions of the climate change M&E team by providing supplementary qualitative evidence of:

- What is working and what is not working in terms of responses?
- Are any adaptation response measures resulting in maladaptation?
- What adaptation response measures help to deliver significant co-benefits and therefore should be positively encouraged or incentivised?
- What are the cost and benefits of adaptation response measures? This will allow more economically efficient response measures to be selected for scale up and replication.
- What lessons within South African adaptation practice can be shared for wider learning, dissemination and knowledge sharing nationally and globally?
- How can climate change adaptation M&E be improved and learning be effectively disseminated?
- How can climate change monitoring and evaluation system of adaptation responses make the best use of existing monitoring and evaluation systems?

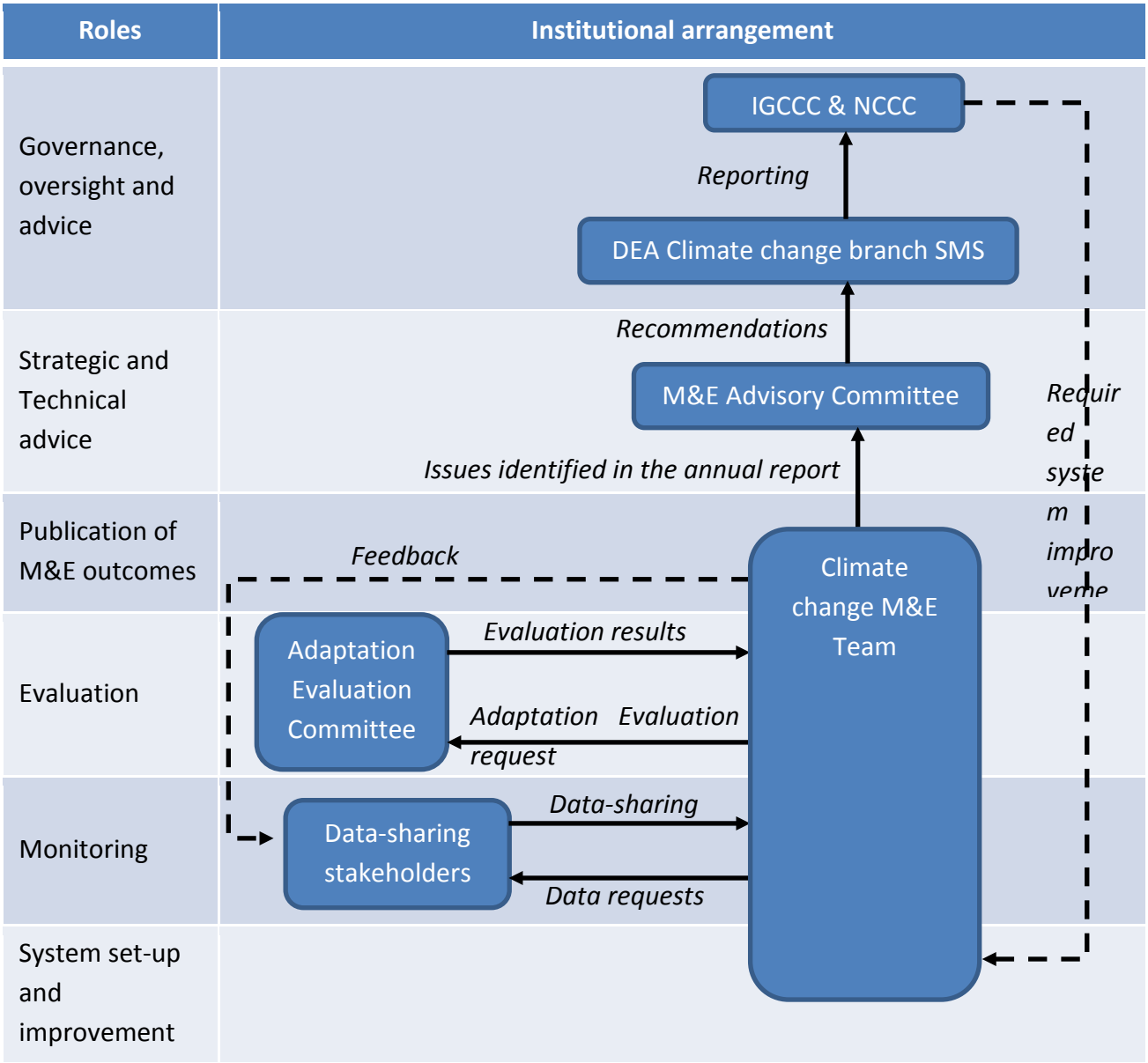
v. **M&E Advisory Committee:** This is an advisory committee that will be set-up annually to consider issues identified in the Annual M&E reports (both technical and strategic issues), and will give recommendations to the governance and oversight structures of the M&E system. The composition of this committee will depend of the type of issues to be considered.

vi. **DEA climate change Senior Management (SMS):** This is the senior management team of the DEA climate change branch, headed by the Deputy-Director General. This team will consider and act on recommendations from the Advisory committee.

This team will also give a report of recommendations to the IGCCC, which in turn will give guidance on the improvements needed in the M&E system.

Figure 11 below illustrates the institutional arrangements for the M&E system.

Figure 11: Institutional arrangements for the operation of the M&E system



6 LEGAL AND REGULATORY FRAMEWORK

The National Development Plan clearly points to the need for climate change monitoring and evaluation to be mandatory. For this to be implemented a thorough assessment of the legal and regulatory tools will be undertaken to determine the most appropriate tools for supporting the implementation of a mandatory climate change response M&E system. It is envisaged that a set tools will need to be used, including regulations, memoranda of understanding (MoUs) and even incentives.

7 IMPLEMENTATION PLAN

The implementation of this M&E system will be phased over-time as follows:

Phase 1 or SETTING UP phase (to end of 2016): This is the setting-up phase where the key institutions, frameworks and systems are put in place. A simple, spread-sheet based data-sharing system will be used to test the designed data-sharing network above and to supply information for the 3rd National Communication under the UNFCCC. The collected information will also be used to produce the initial annual report on the monitoring process.

Phase 2 or OPERATIONALIZATION phase (2017 -18): This will be the learning phase where data-sharing using the web-based platform is implemented and monitored. Adoption of standardized data-sharing formats will also take place in this phase. Documentation of lessons learnt will have to be done in this phase to inform the improvements that might need to be made to the system in the next phase.

Phase 3 or REFINEMENT phase (2019-20): The system will finally be refined in this phase, based on the lessons learnt and the pursuance for accuracy, completeness and consistency in reporting. The influence of the system should be visible at this point, as the system output information is now being integrated into decision-making. The end of this phase should give rise to a fully-fledged version of the M&E system.

Figure 12 below summarizes the different implementation phases of the M&E system:

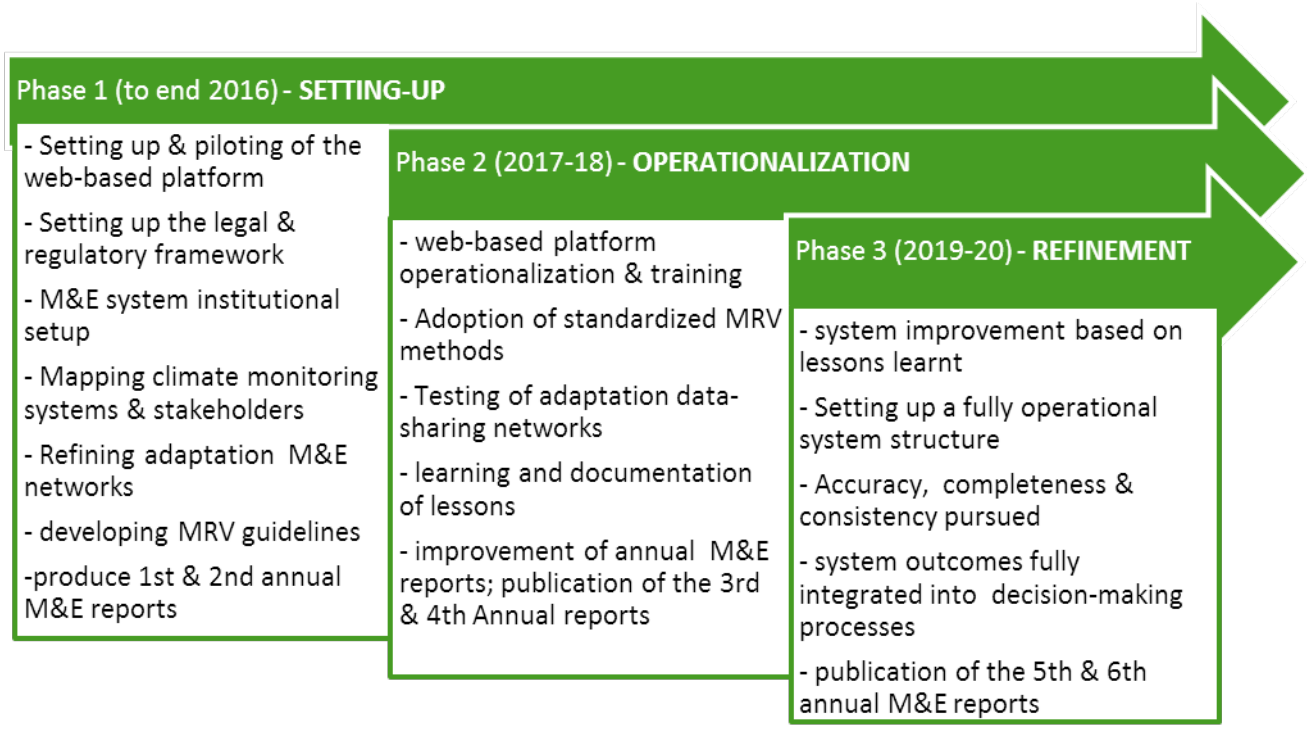


Figure 12: Phased implementation of the M&E system

A more detailed Gantt chart of the various steps in phase 1 is presented in Figure 13 below.

Figure 13: Gantt chart of the Setting-up phase (Phase 1) of implementing the M&E system

Objective	Details/Activities	2014				2015				2016				2017			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Setting up the Web-based platform	Design, construction & piloting of the web-based M&E system platform																
	Development of Reporting manuals, Guidelines & User Instructions																
Setting up the information-sharing support framework	This includes a mapping of existing tools (laws, MoUs, etc.) to support information-sharing, a gap analysis, drawing up and setting up of a comprehensive framework for information-sharing																
Resource-needs assessment and resource mobilization	Assessment of resource needs (including human capacity), Capacity development and resource mobilization																
Development of M&E guidelines	M&E guidelines for major types of response measures in key sectors (e.g. AFOLU M&E guidelines)																
Compile 1st & 2nd Annual Climate Change reports to test and refine the data-sharing networks	Compiling the 1st & 2nd Annual Climate Change Reports																
Mapping role players involved in climate & atmosphere monitoring and climate impacts	Identification of role players; spatial coverage of climate M&E systems; scoping of climate impacts																
Refining response-level adaptation M&E networks	Adaptation response-level M&E networks refined for all key sectors																
THE LAUNCH	Official Launch of the Climate change Response M&E system																

8 REFERENCES

- The NCCRP
- The NDP
- The GHG protocol (pp 30)