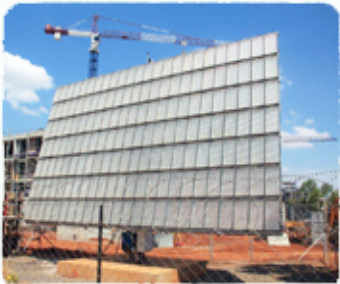


# South Africa's Climate Change Response M&E framework

*Tracking transition to a lower-carbon economy*



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

Thapelo Letete  
National Climate Change Response Dialogue  
13<sup>th</sup> Nov 2014





Chapter 5 of 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:

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:**
5. **Managing the transition**
6. The **state to assume a guiding role** while responsibility for the transition is still borne collectively by all stakeholders
7. **Align existing policy and mainstream** mitigation and adaptation considerations into the activities of all government departments across local, provincial and national government.
8. **Build 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. **Monitor, report and verify** to understand South Africa's progress against national goals of the envisaged economy and society

The **NCCR Policy 2011** :

- a. Effectively **manage the inevitable climate change impacts**
- b. **Make a fair contribution to the global effort to stabilise greenhouse gas (GHG) concentrations** in the atmosphere
- c. 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



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# Policy Mandate



- **Monitor the success of responses – measure cost, outcome & impact**
- **Mitigation:**
  - A national system of data collection to provide detailed, complete, accurate and up-to-date emissions data in the form of a GHG Inventory and
  - an M&E System to support the analysis of the impact of mitigation measures
  - Mitigation interventions will be M&E'd against the National Emissions Trajectory range
  - M&E system will assess indicators defined in DEROs & Mitigation plans, including impact on emissions, implementation & wider SD benefits
- **Adaptation & 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
- **Climate Finance:**
  - Create a transitional tracking facility for climate finance mechanisms and climate responses
  - Need to track the use and impact of funds



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

## M&E in the NCCRP



### Over-arching objective:

To track the transition towards a lower-carbon & climate-resilient South Africa, thereby providing evidence base to inform effective climate change response

### Lower-carbon

What are the GHG emission trends?  
Which mitigation response measures are being undertaken?  
Which mitigation responses are working well in terms of impact & effectiveness?

### Climate-resilience

What are the impacts of climate change?  
Which adaptation responses are being implemented & which ones are working well?  
How is South Africa's vulnerability and adaptive capacity changing?

### Cross-cutting objectives

#### Climate finance:

What are the finance flows and impacts? How effectively is the finance contributing to climate change response?

#### Communication and learning:

How are the outputs of the M&E system communicated and fed back to inform future decisions?

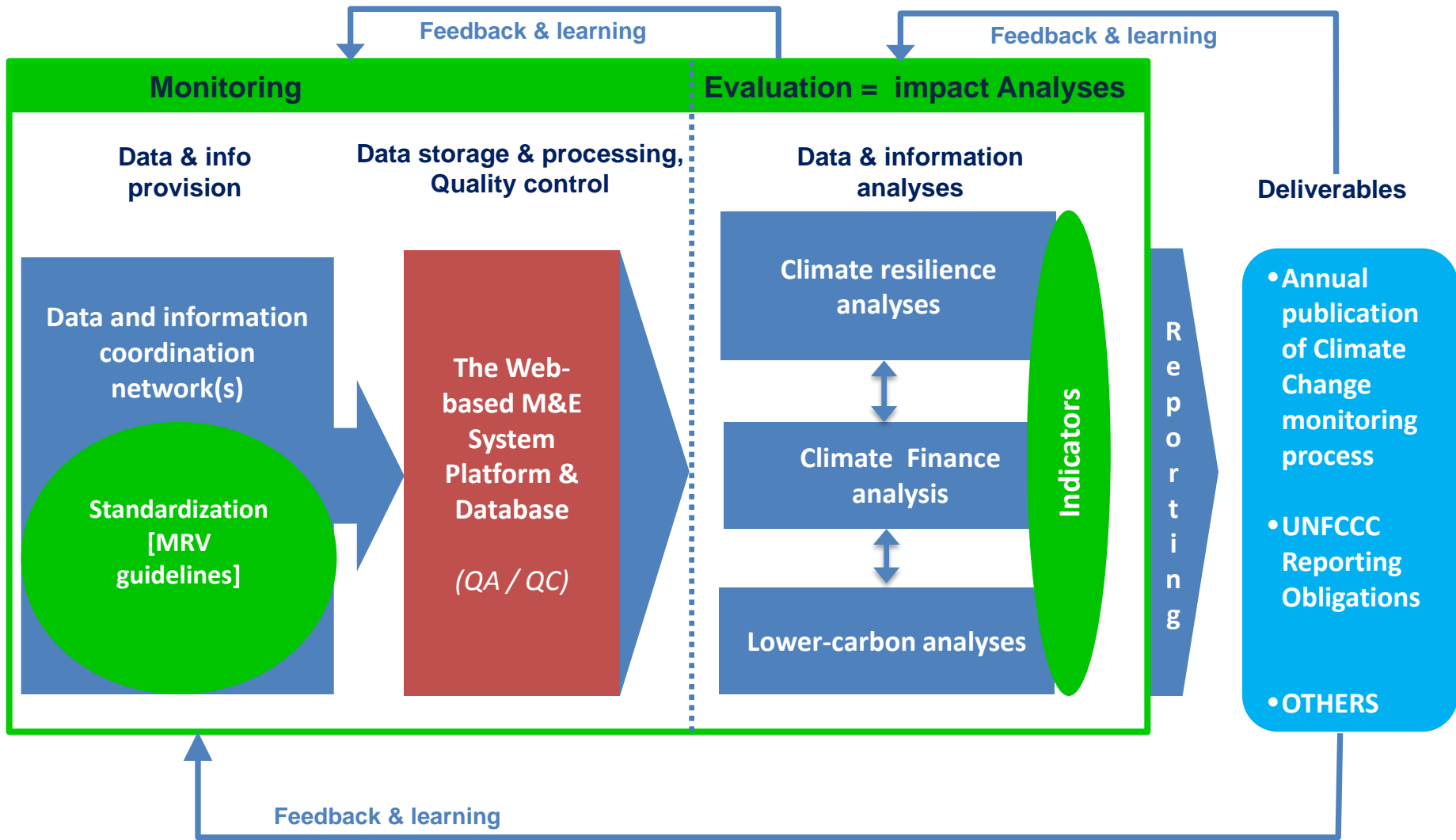


**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# Objectives





**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# The M&E SYSTEM



## Box 1: 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.



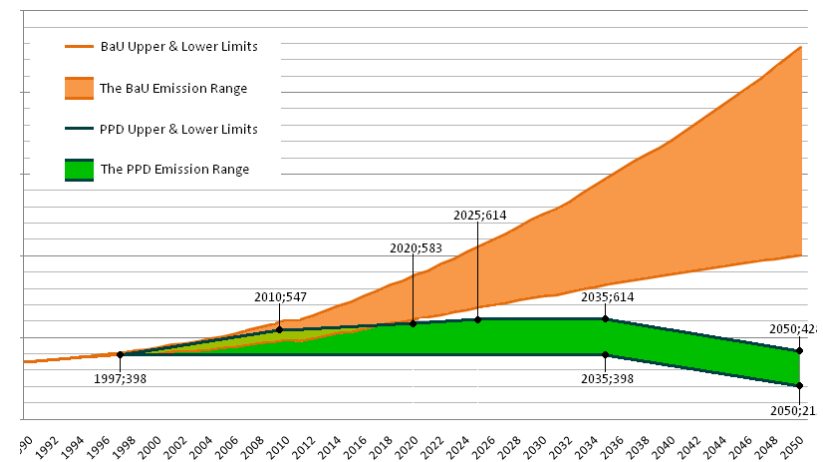
**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# M&E system vs. GHG Inventory



# Tracking Transition to a LOWER-CARBON Economy



The NDP presents South Africa's vision of a lower-carbon economy as follows:

- reduced dependency on carbon, natural resources and energy;
- carbon emissions reduced to a sustainable level through mitigation policies;
- economic activity has been decoupled from environmental degradation and carbon-intensive energy;
- expanding economic activity, but decreasing consumption of non-renewable natural resources, including fossil fuels.



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

## Lower-carbon Economy





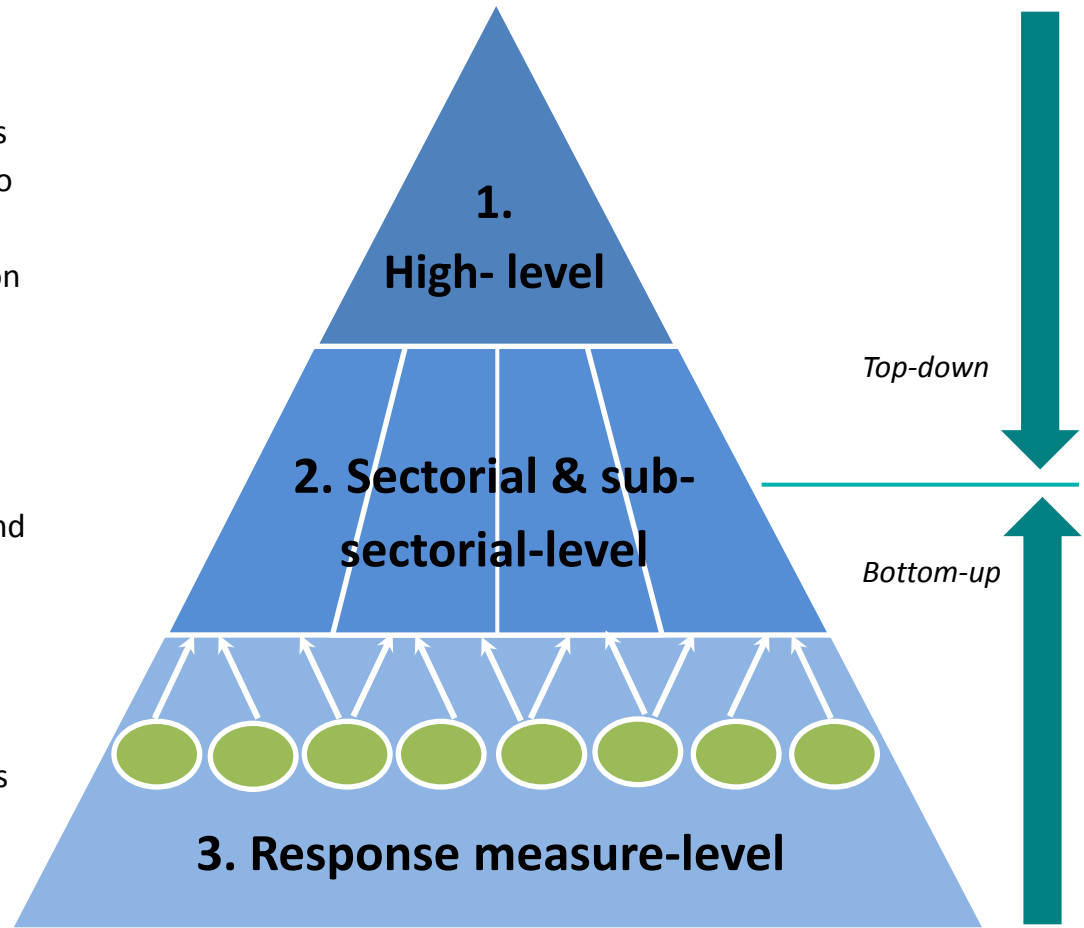
*“The collective outcome all mitigation actions will be measured against the National GHG Emissions Trajectory”*

NCCRP

**Tier 1 – High-Level indicators.** Indicators that track the extent to which the country is becoming lower-carbon

**Tier 2 – Sectorial & sub-sectorial-level indicators.** This tier links the bottom-up and top-down indicators.

**Tier 3 – Response measure-level indicators.** Indicators of the impact of individual response measures.



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

**Tiered-Approach**





INDICATOR GROUP	Comments	Indicator Title	Description
Sustainable carbon levels	The primary indicator group to track the country's performance against the national emissions trajectory range and the Copenhagen pledge	GHG inventory	CO2-eq
Lower-carbon productivity	<ul style="list-style-type: none"> <li>Key indicators to assess decoupling of economic activity with carbon emissions</li> <li>Reflecting overall efficiency of carbon resource utilization in an economy as well as lower-carbon technology level of a nation in a certain period</li> </ul>	Carbon intensity of the economy	CO2-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	CO2-eq / population
Lower-carbon resourcing	The development of "clean" energy (including renewable energy) is correlated to both resource endowment and technology development in a country	Proportion of renewables or zero-carbon energy to total primary energy	( Quantity of Renewable or zero-carbon energy) / TPES
		Carbon intensity of the energy system	CO2-eq / TPES
Lower-carbon sector growth	Demonstrates growth of key sectors	Growth in green jobs	Number and type of green jobs



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

## TIER 1 (High-level) – Core Indicators



Required info	Data Source, System or database that can supply the information		
	Name	Details	Managing Institution
The National GHG inventory	The National GHG inventory system	<ul style="list-style-type: none"> <li>• Outlines the national emission levels, disaggregated by IPCC sub-/sectors</li> <li>• compiling inventories biennially, but moving towards annual inventory compilation</li> </ul>	DEA
The country's GDP statistics	Economic statistics: The GDP	Growth Published quarterly and disaggregated by sector and area	Statistics SA
South Africa's Total Production Energy Supply (TPES) disaggregated by sector an subsector	The National Energy balances	compiled and published by DoE annually and disaggregated by sector	DoE
	International databases	<ul style="list-style-type: none"> <li>• The US Energy Information Administration International energy statistics database</li> <li>• The International Energy Agency energy statistics</li> </ul>	US-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 Green Economy Accord M&E	Information on jobs created in green industries is collected annually	EDD
Manufacturing statistics in green industries	Stats SA Manufacturing: Production & sales statistics	Monthly indices of the physical volumes of manufacturing production and the total value of manufactured products	Statistics SA



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# Situational Analysis

## TIER 1



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 inventory	CO <sub>2</sub> -eq
		Difference between projected and actual GHG emissions or removals	CO <sub>2</sub> -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.	Total GHG emissions mitigated	CO <sub>2</sub> -eq
carbon intensity of the sector, sub-sector or company	<ul style="list-style-type: none"> <li>Indicators of the linkages between a company, sector or sub-sector's economic activity with its carbon emissions</li> <li>Sectorial or sub-sectorial GDP and units of service or product delivered can be used as indicators of economic activity</li> </ul>	Carbon emissions per sectorial or sub-sectorial economic activity	CO <sub>2</sub> -eq / (sub-) sector-GDP
		Carbon intensity of service or product delivered	CO <sub>2</sub> -eq / unit of product or service
Sector, sub-sector or company-level energy resourcing	Energy utilization and intensity of the company, sector or sub-sector, including the use of renewable or zero-carbon energy sources	Company, sector or sub-sector's annual energy use	Mega Joules (MJ)
		Proportion of renewables or zero-carbon energy to total energy use	% of Renewable or zero energy
		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



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

## TIER 2 (sub-/sectorial) – Core Indicators



## ONCE-OFF INFORMATION

- 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 & Carbon Budgets:** Annualized DEROs / 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 4.2.4 for each response measure.
- iv. **Common unit of service or product per sectorial, 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*)

## ANNUAL INFORMATION

1. Annual sectorial, sub-sectorial or company-level **GHG inventories**
2. **Annual information** requirements of Tier-3 indicators **for each response measure included** in the sectorial, sub-sectorial or company **Mitigation plan**
3. Each sector or sub-sector's contribution to the national GDP
4. Each sector, sub-sector or company's **operational performance in terms of units of service or product delivered annually.**
5. The type and quantity of energy used per sector, sub-sector or company
6. 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



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# Tier 2 (Sub-/Sectorial/company) – Data requirements

5 YEARS

Required info	Data Source, System or database that can supply the information		
	Name	Details	Managing Institution
Sub-/sector GHG inventories	The National GHG inventory system	<ul style="list-style-type: none"> <li>• Outlines the national emission levels, disaggregated by IPCC sectors and sub sectors</li> <li>• compiling inventories biennially, but moving towards annual inventory compilation</li> </ul>	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.	<i>No single source of these</i>	<i>To be determined together with the relevant sectors, sub-sectors and companies</i>	
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
Manufacturing statistics in green industries	Stats SA Manufacturing: Production & sales statistics	Monthly indices of the physical volumes of manufacturing production and the total value of manufactured products	Statistics SA



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

## Situational Analysis Tier 2



INDICATOR GROUP	Comments	Indicator description	Indicator
Implementation Indicators	Indicator 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	E.g. No of stages or phases or units, etc.  (as appropriate)
Impact indicators	<ul style="list-style-type: none"> <li>climate change mitigation impact of the response measure</li> <li>Indicators of impact(s) on other relevant sustainable development priorities, including job-creation, also known as co-benefit or co-cost indicators</li> </ul>	Reduced GHG emissions/ sequestered carbon  <i>(relative to baseline)</i>	CO2-eq
		Number and type of jobs created directly	No of jobs by type
		Other social, environmental and economic co-benefit indicators	<i>(As appropriately defined)</i>
Effectiveness indicators	Key indicators of the effectiveness of the response measures in responding to climate change	Cost-effectiveness	CO2-eq per Rand
		Job-creation effectiveness	No of jobs per CO2-eq  Or per Rand



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

## TIER 3 (response measure) – Core Indicators



## ONCE-OFF INFORMATION

- i. **Name of response measure:** e.g. name of project, programme, policy, etc.
- ii. **Project description:**
- iii. **Geographical information:**
- iv. **Owner/Coordinator information:**
- 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.
- 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:**
- ix. **Funding information:** Information about the funders and budgeted funding, including the planned annual cost

## ANNUAL INFORMATION

1. **Information on implementation progress:** (phases, stages, units, etc. achieved)
2. **Information for estimating climate change mitigation impact:** generally monitored as the outcome. Institutions may also opt to do calculations themselves
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 benefits/costs** resulting from the response measure. These are specific to the type of response measure and are specified the first time that the response measure is captured in the system.

**TIER 3 (response  
measure) – Data  
requirements**



STAKEHOLDER		SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	AVAILABILITY OF REQUIRED DATA
NAME			
National Government	Department of Energy (DoE)	Renewable Energy Independent Power Producer Programme (REIPPP)	<ol style="list-style-type: none"> <li>1. Implementation info – phases, MW built, etc.</li> <li>2. MWh generated</li> <li>3. Cost information</li> <li>4. No of jobs created</li> <li>5. Other sustainable development benefits</li> </ol>
		Energy Efficiency & Demand Side Management M&E system (EE & DSM): <ul style="list-style-type: none"> <li>• Municipal</li> <li>• Sectorial</li> </ul>	<ol style="list-style-type: none"> <li>1. Implementation indicators (no &amp; type of installations, etc.)</li> <li>2. MWh saved</li> <li>3. Cost of projects</li> <li>4. No of jobs created</li> <li>5. Other SD benefits also reported</li> </ol>
		CDM database	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. CO2 emissions reduced based on CERs</li> <li>3. Cost of projects</li> <li>4. Jobs created</li> <li>5. Other SD indicators</li> </ol>
		Biofuels Monitoring	<ol style="list-style-type: none"> <li>1. Implementation indicators: (no of plants/ producers, etc.)</li> <li>2. Quantity &amp; types of biofuels produced; Biofuel use</li> <li>3. Cost of projects</li> <li>4. No of jobs created</li> <li>5. Other SD benefit indicators</li> </ol>
	Department of Water Affairs (DWA)	Green drop wastewater treatment monitoring system	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Quantity of processed wastewater &amp; biogas produced</li> <li>3. Cost – Capital &amp; refurbishment expenditure</li> <li>4. No of jobs created</li> <li>5. SD benefits</li> </ol>
	Department of Environmental Affairs (DEA)	South African Waste Information System (SAWIS)	<ol style="list-style-type: none"> <li>1. Implementation indicators of interventions (no of facilities, etc.)</li> <li>2. Waste quantities &amp; type; Energy info</li> <li>3. Financial info</li> <li>4. No of jobs created</li> <li>5. SD benefits</li> </ol>
		Extended Public Works Programme (EPWP) M&E system	<ol style="list-style-type: none"> <li>1. Implementation indicators (e.g. no of phases, etc.)</li> <li>2. Info for estimating cc impact (e.g. hectares of land)</li> <li>3. Cost of programme</li> <li>4. No and type of jobs created</li> <li>5. Other SD benefit</li> </ol>



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# Situational Analysis TIER3



STAKEHOLDER	SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	AVAILABILITY OF REQUIRED DATA
NAME		
DEA	DEA Green cars programme	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Info for estimating cc impact</li> <li>3. Cost of programme</li> <li>4. No of jobs created</li> <li>5. Other SD benefits</li> </ol>
	The Green Fund	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Info for estimating cc impact</li> <li>3. Cost of programme</li> <li>4. No of jobs created</li> <li>5. Other SD benefits</li> </ol>
Department of Trade and Industry (DTI) & National Cleaner Production Centre (NCPC)	Manufacturing Competitiveness Enhancement Programme (MCEP)	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Information for estimating climate change impact</li> <li>3. Cost</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>
Department of Transport (DoT)	PRASA Rail Recapitalization programme	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Passenger statistics</li> <li>3. Cost of programme</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>
	Compressed Natural Gas (CNG) project	<ol style="list-style-type: none"> <li>1. Implementation indicators – no of vehicles converted, no of fuelling stations, etc.</li> <li>2. Quantity of natural gas consumed</li> <li>3. Cost of programme</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>
Department of Public Enterprises (DPE)	Transnet Freight road-to-rail programme	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Increase in rail freight volumes,</li> <li>3. Cost of programme</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>
	Aviation Biofuels programme	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Quantity and type of biofuel</li> <li>3. Cost of programme</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>
	Bio-based electricity – Eskom pilot	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. MWh of electricity produced</li> <li>3. Cost of programme</li> </ol>



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# Situational Analysis TIER3



STAKEHOLDER		SYSTEM, DATABASE OR INDIVIDUAL RESPONSE MEASURE	AVAILABILITY OF REQUIRED DATA
	NAME		
	Department of Public Enterprises (DPE)	Bio-based electricity – Eskom pilot	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Increase in rail freight volumes,</li> <li>3. Cost of programme</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>
		SAFCOL IP	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Quantity and type of biofuel</li> <li>3. Cost of programme</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>
Local & provincial Government	Cities	City reporting system	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Info for estimating cc impact &amp; calculated cc impact</li> <li>3. Cost of programme</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>
	Provinces	Provincial information system	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Info for estimating climate change impact</li> <li>3. Cost of programme</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>
Business	National Business Initiative (NBI)	Carbon Disclosure Project	<ol style="list-style-type: none"> <li>1. Implementation indicators</li> <li>2. Climate change impact partly reported</li> <li>3. Cost of programme</li> <li>4. Jobs created</li> <li>5. Other SD benefits</li> </ol>



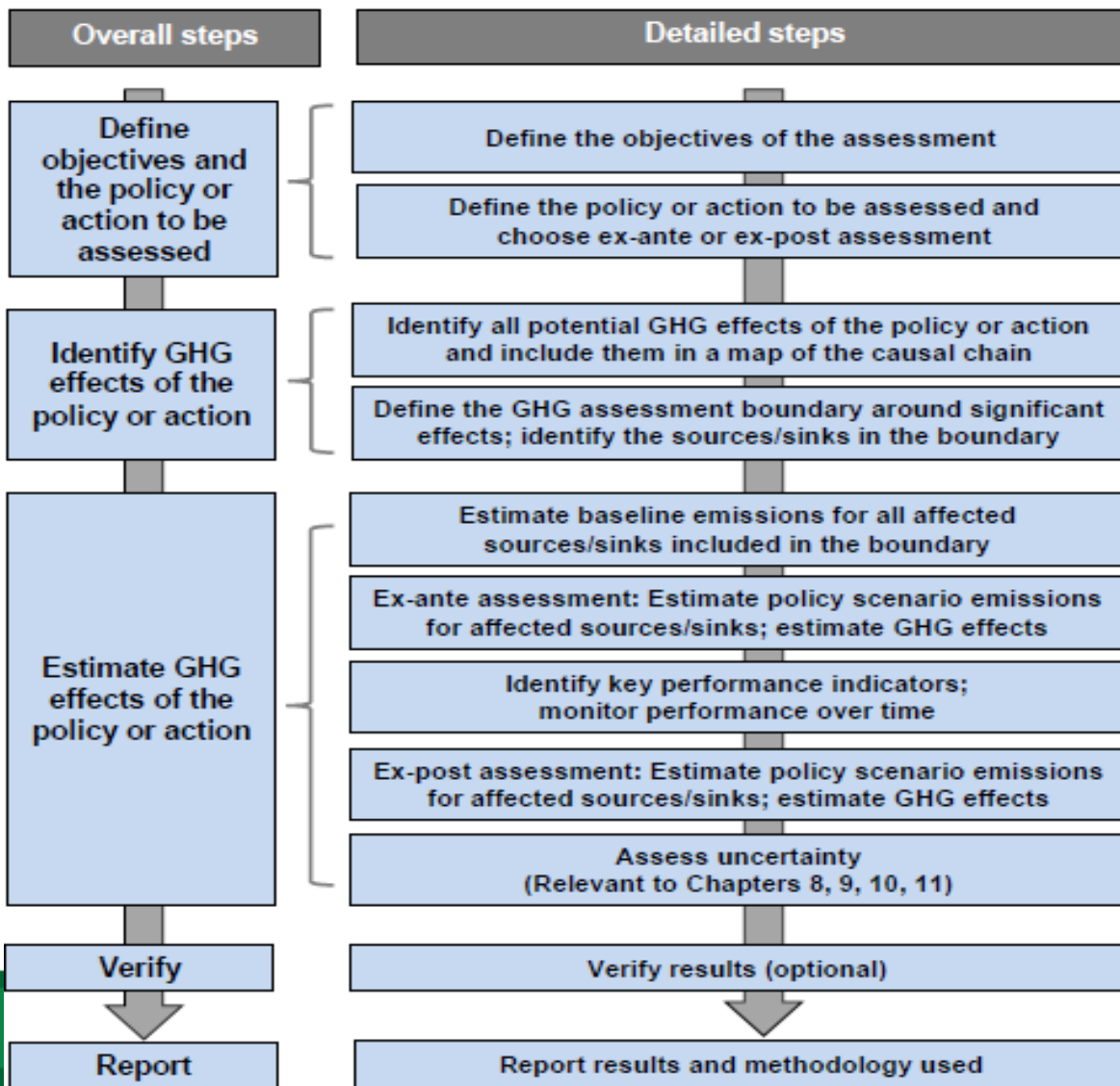
**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# Situational Analysis TIER3







**Definitions:**

- 1. Ex-ante:** before the response measure is implemented
- 2. Ex-post:** after the response measure has been implemented



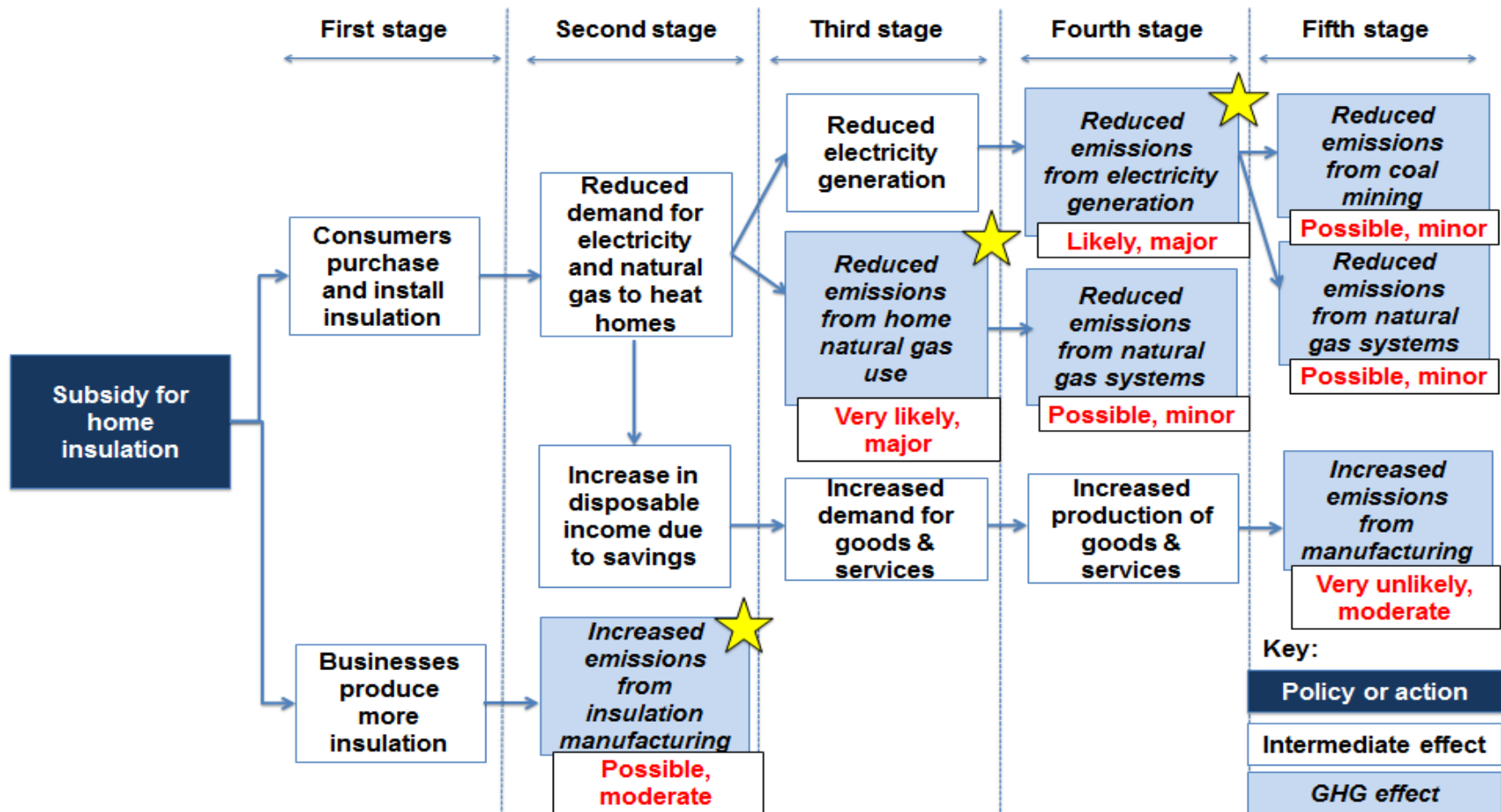
environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# WRI protocol for assessing policies and measures



# Mapping the causal chain: example



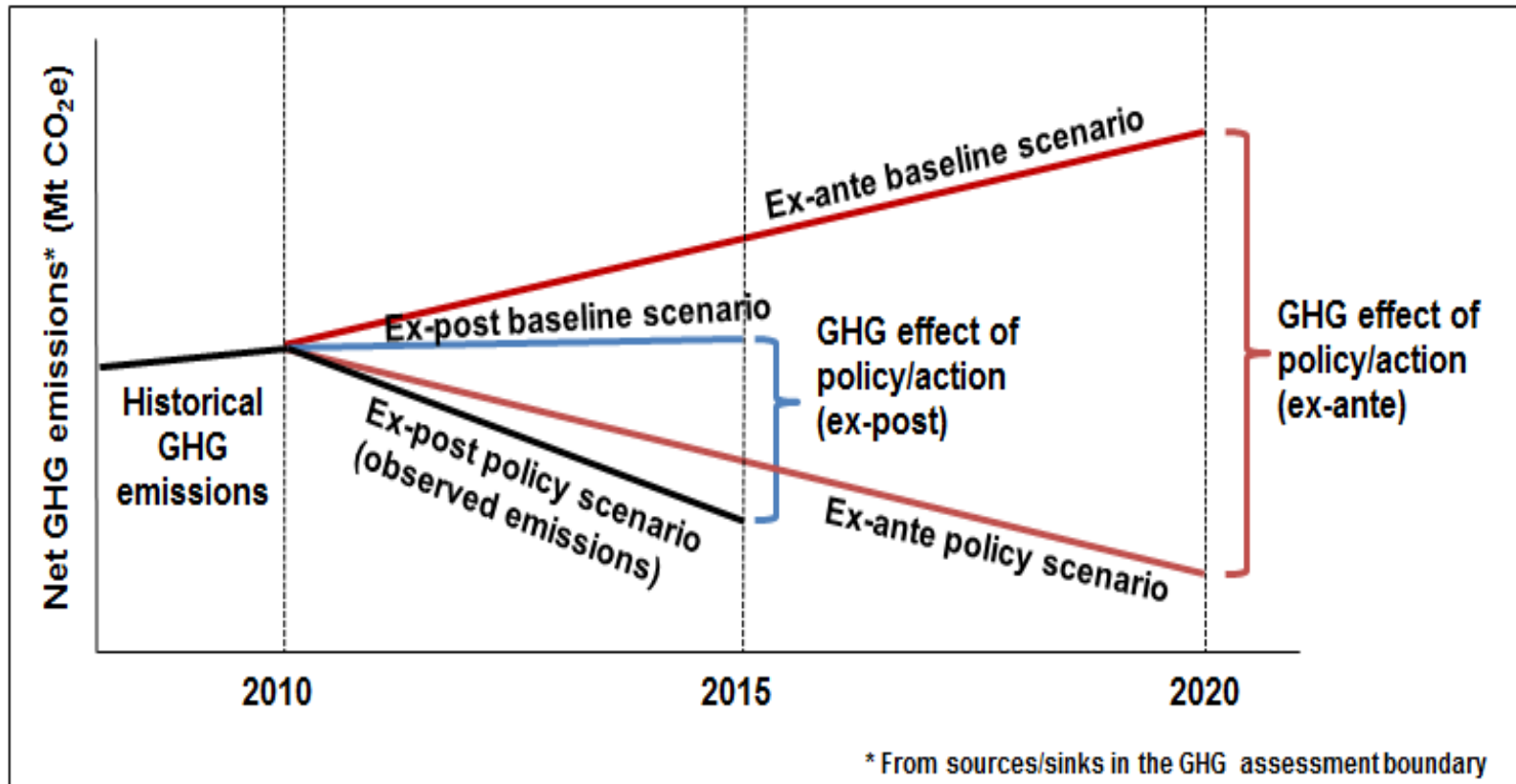
environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

## WRI protocol for assessing policies and measures



# Defining baselines & policy scenarios



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

## WRI protocol for assessing policies and measures





1. Many data-sources have lots of gaps and are incomplete
2. In the absence of a climate legislation, how do we ensure completeness of the info?
3. Causal chains are usually long and complicated
4. Baselines are dynamic
5. Ensuring credibility of the system (*Quality control; 3<sup>rd</sup> party verification, dealing with confidential information, etc.*)
6. Overlap and duplication of information from various data-sources
7. Capacity constraints in data-collection



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

**Key issues for consideration**



Thapelo Letete

Department of Environmental Affairs

Climate change Monitoring & Evaluation

E-mail: [tletete@environment.gov.za](mailto:tletete@environment.gov.za)

Thank You



environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

