



# LET'S RESPOND

INTEGRATING CLIMATE CHANGE RISKS AND OPPORTUNITIES INTO MUNICIPAL PLANNING



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA



**SALGA**  
South African Local Government Association



**cooperative governance**

Department:  
Cooperative Governance  
REPUBLIC OF SOUTH AFRICA



## Let's Respond Guide and Toolkit: Background

Government's National Climate Change Response Policy (NCCRP) was approved in October 2011 and was formally published as a White Paper in the Government Gazette (Gazette No. 34695, Notice No. 757). [www.environment.gov.za](http://www.environment.gov.za)

- ❑ Effectively manage inevitable climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity.
- ❑ Make a fair contribution to the global effort to stabilize GHG concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.

***Effective climate change response and the long-term, just transition to a climate resilient and lower-carbon economy and society.***



## Let's Respond Guide and Toolkit: NCCRWP Strategic Objectives

- **Policy and Regulatory Alignment** – Prioritise interventions already envisaged by national legislation or strategies that have climate change co-benefits. Review existing national policies, legislation or strategies, with a view to optimising and maximising the climate co-benefits of their intervention
- **Integrated Planning** – prioritise the mainstreaming of climate change considerations and responses into all relevant sector, national, provincial and local planning regimes such a, but not limited to the Industrial Policy Action Plan, Integrated Resource Plan for Electrification Generation, Provincial Growth and Development Plans and **Integrated Development Plans**



## Let's Respond Guide and Toolkit: Financing the NCCR Policy

■ In pursuit of a long term funding framework for climate change finance, Government will:

Mainstream climate change response into the fiscal budgetary process and so integrate the climate change response programmes at national, provincial and local government and at development finance institutions and state owned entities



## Let's Respond Guide and Toolkit : Durban Adaptation Charter for Local Governments

- Mainstreaming adaptation in the development planning
- Understanding climate risks through conducting impact and vulnerability assessments
- Promote adaptation for vulnerable communities and sustainable local economic development
- Prioritise the role of functioning ecosystems as core for municipal green infrastructure
- Promote partnerships at all levels and city to city cooperation and knowledge exchange

**“As a developing country the effectiveness of our response to global change impacts will not depend upon the quality of life among the most prosperous South Africans, but should be measured by the loss of quality of life among the most vulnerable”**



## Let's Respond Guide and Toolkit: Pilot Municipalities

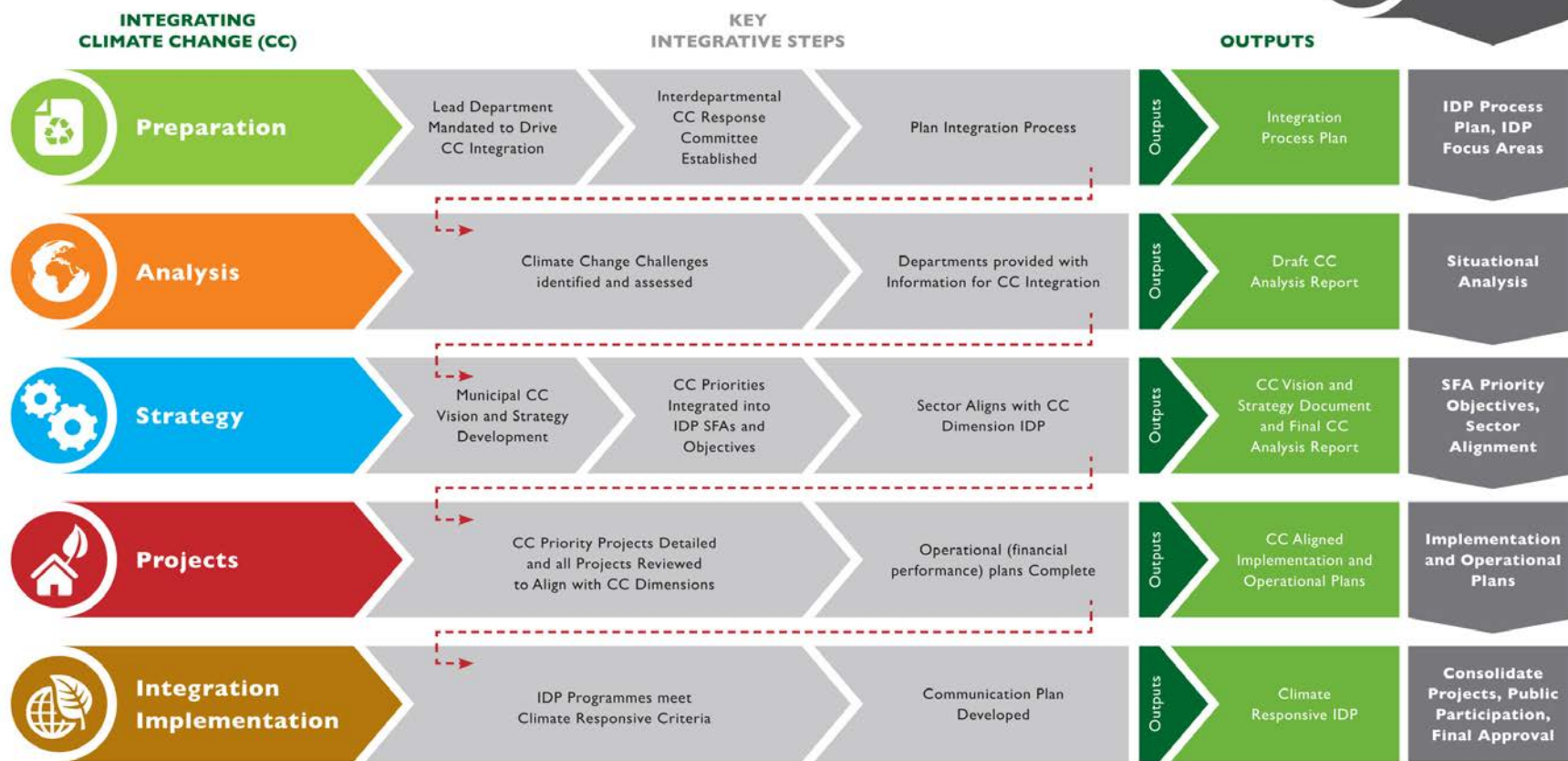
- |   |   |                              |
|---|---|------------------------------|
| <input type="checkbox"/> Amathole District Municipality         | } | <b>Eastern Cape Province</b> |
| <input type="checkbox"/> Buffalo City Metropolitan Municipality |   |                              |
| <input type="checkbox"/> Nxuba Local Municipality               |   |                              |
| <input type="checkbox"/> Emfuleni Local Municipality            | } | <b>Gauteng Province</b>      |
| <input type="checkbox"/> Thulamela Local Municipality           | } | <b>Limpopo Province</b>      |

***Rural, urban, larger, smaller, nesting, range of geographies***



# Introduction

## Let's Respond: Integrating climate change response into Municipal IDPs





## PREPARATION (Pre-Planning Phase)

- Mainstreaming Process into IDP
  - Identification of Leadership and Institutional Structures –  
*Identification of Champion*
  - Climate Response Integration Process Plan and Timelines
  - Endorsement by Council –  
*Climate Change Integration*
  - Set up Climate Change Committee
- *Tool 1 – CC Integration Support*
  - *Tool 2 – Communication Support*





# Let's Respond

## Toolkit Guide



## Preparation

The phase lays the foundations for ensuring the process is mainstreamed into the IDP. It requires council resolution and leadership, resources and a plan to underpin the process.

<b>Objective</b>	Municipal commitment to integrating a climate change response into IDP planning processes.	Tool 1: Climate Response Integrated Process Planning Charter and Frameworks
<b>Timeframe</b>	Approximately four weeks	Tool 2: Climate Change and Municipal Planning Professional (CCTP) and speaker notes
<b>When to use</b>	This phase should align with the preparation phase of the IDP, especially undertaken between August and September. Where this is not possible, consider alternative entry points, such as the IDP mid-term evaluations or annual reports.	Tool 3: Directory of Key Climate Change Resources Tool 4: Determining Local Climate Change Impacts Support Sheet
<b>Expected outcomes</b>	A council resolution, process plan and institutional arrangements in place for integrating climate change responses into IDP planning.	Tool 5: Responding to Local Climate Change Impacts Support Sheet Tool 6: Sector Climate Change Response Options

**Step 1: Identify leadership and establish institutional structures**

Municipal climate change response has been identified in national policy for inclusion into IDP planning. The IDP office must ensure that a suitable line department is tasked to drive this work and represent climate change within the IDP drafting team. A first step is to get the council to endorse the integration of climate change response into the IDP process. This should be followed by the municipal manager delegating the responsibility to drive this process to a suitable **line department**.

The mandated department, through a 'champion' official will:

- drive the climate change planning process;
- gather necessary information and liaise with other departments and institutions where necessary;
- liaise with the IDP Office on integration of the process into IDP review timeframes;
- participate on the IDP drafting team; and
- establish a steering committee from a cross sector of relevant departments to address the issues or participate in an existing committee that addresses similar issues.



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### guide for municipalities

An illustrative example of Climate Change Responsive IDP outline

#### IDP Component

##### A. Executive Summary:

This overview of the document would identify climate change as a cross-cutting IDP development "dimension" and include the climate change dimensions incorporated.

##### B. Situational Analysis (Status Quo)

This report needs to include an assessment of the climate change challenge. This will draw on the **Climate Change Analysis Report** developed in the integration process. The information from internal and external stakeholder session must also be drawn in here.

The climate change input will cover:

- the current climate experience within the municipality
- likely local climate changes arising from global warming, climate variability and underlying situation and context, such as poor planning and infrastructure maintenance
- the resulting impacts
- key vulnerabilities and 'hotspots'
- an overview of GHG emissions within the municipal area and GHG emissions/capital (identifying degree of responsibility)
- key GHG emissions sectors
- a summary of the **Priority Issues in relation to climate change**

Climate change is cross cutting in nature and climate response will require the engagement of all municipal sectors. It is recommended that climate change be considered and incorporated into IDP planning as a cross-cutting development "dimension", similar to issues such as poverty or HIV/AIDS, rather than being considered a sub-category of Environment.

##### C. Development Strategies

The long term Municipal goals, Vision, Mission, Strategic Objectives and Strategies.

##### Vision and mission

This is a broad, aspirational statement, usually already set, and standing for a longish period. Common aspects, such as smart, vibrant, dignified, people-centred, sustainable, efficient resource mobilisation, are all sympathetic to climate response dimensions. An aspect of the municipal climate response vision, developed in the Climate Change Response Strategy may be included here.

##### Strategic Objectives (or Strategic Focus Areas – SFAs) and Strategies

Strategic Objectives flow from the Municipal Growth and Development Vision and are established by council. While these will be specific to each municipality, they generally cover the thematic areas in the table below. Climate change is a phenomenon that requires a cross-cutting response. A climate responsive IDP will build climate change response objectives, developed in the Climate Response Vision and Strategy stakeholder workshops, into each Strategic Objective (or SFA/ Priority Objective) of the IDP and into all areas of the municipality's overarching development strategies.

### guide for municipalities



An outline of what climate change responsive IDP development strategies might look like:

Focus Area	"climate responsive" Municipal Strategic Focus Area (SFA)	Climate Response Priority Objectives
Economy	Diverse, efficient and 'green' economy	<ul style="list-style-type: none"> <li>Value-added processing to local agriculture</li> <li>Efficient public lighting programme</li> <li>Renewable energy development</li> </ul>
Infrastructure	Sustainable and resilient infrastructure and services	<ul style="list-style-type: none"> <li>Storms water management</li> <li>Public transport investment to improve mobility</li> <li>Sustainable water supply</li> <li>Water demand reduction</li> <li>Universal electrification</li> </ul>
Social	Resilient communities with access to livelihoods, basic services, and climate safe locations	<ul style="list-style-type: none"> <li>Diversify livelihoods</li> <li>Development of quality low income housing stock</li> <li>Disaster risk reduction in informal, vulnerable settlements</li> <li>Additional capacity to health care facilities</li> </ul>
Environment	Conserve natural resources	<ul style="list-style-type: none"> <li>Rehabilitate wetland and river courses</li> <li>Biodiversity protection (including alien clearance)</li> <li>Pollution reduction programme</li> </ul>
Governance	Efficient and responsive local government	<ul style="list-style-type: none"> <li>Climate change integrated into municipal organogram</li> <li>Develop key databases</li> <li>Build relationships with climate knowledge institutions</li> </ul>

The Organisational Performance Management System component of the IDP would then ensure that appropriate Key Performance Indicators, and associated targets and baselines, are assigned to each objective.

##### D. Spatial Analysis

Climate change needs to be brought into the high level Spatial Development Framework. This would detail areas, and related communities, vulnerable to the impacts of climate change and extreme weather events. It would also need to show consideration of the need to enhance natural climate buffers and improve resource efficiency such as through healthy identification processes and spatial development supportive of public transport travel modes.

##### E. Implementation Plan (5-3 year; updated annually)

##### F. Annual Operational Plan (SOBIP) (Reviewed annually)

##### G. Financial Strategy (Reviewed annually)

##### H. Organisation Performance Management System (Reviewed annually)

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The climate response coordinating committee and IDP drafting team will have brought the climate response objective to the attention of all sectors and related departments. Sector strategies must be aligned accordingly, contributing to the Implementation Plan. Departments will provide technical detail to new or updated IDP projects (responsibility, cost, time-frame, baseline and performance measures) forming the Annual Operational Plan. This information all feeds into the Implementation and Annual Operational Plans with associated financial and performance management systems for the IDP.

An example of how climate responsive aspects of IDP Focus Areas are taken down into the Implementation Plans (down to project level), Financial Strategy and Organisational Performance Management System.

Sector or department	Priority SFA objective and related climate change response project	Budget Resp / Dept	Measure: KPI	Target	Baseline
Water	R/W: Sustainable and resilient infrastructure and services – water demand management Rollout of efficient water devices	X	R/W: percentage reduction in water consumption	100 000 low flow showerheads by 01/07/13	-
Environment	BNV: Conserve natural resources Wetland rehabilitation programme	X	BNV: percentage compliance with xx standard	Xx wetland rehabilitation by 30/03/13	-
	ECON: Diversify 'green economy' – promote RE BNV: Conserve natural resources- pollution reduction Solar water heater rollout programme	X	ECON: measurable increase in renewable energy business and uptake BNV: measurable decrease in local and global air pollution	50 000 SWH on mid-high income households by end 2013	-

##### J: Annexures

This section will bring in all applicable Sector Plans. Each sector will have been engaged through the Climate Response process and plans should have been updated to bring in the new climate response goals of the municipalities.



## Phase 1: Analysis

- Research your climate change projections for your area
- Understand the climate change challenges
- Knowledge on local climate impacts and GHG emissions
- National Climate Change Reports and Policies
- Municipal Adaptation Plans and Documents
- Scientific Institutions–
  - ❖ CSIR (SARVA)
  - ❖ Climate Systems Analysis Group (CSAG)

- *Tool 3 – Directory of Key CC Resources*
- *Tool 6 – Climate Information Web Portal*
- *Tool 7 – Climate Summary Report*
- *Tools 8 and 9 – Municipal GHG Emissions Calculator and Electricity Efficiency Planning*
- *Tool 10 – Climate Change Analysis Report Template*

*CD contains list of documents*



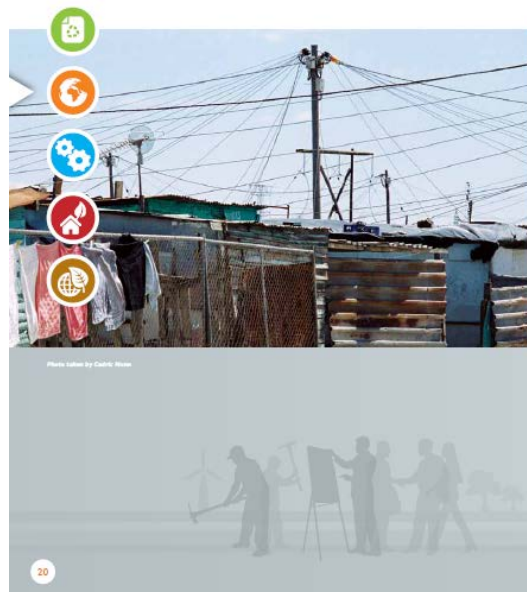
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### Phase I: Analysis

Climate change information gathering – an assessment of the problem



A picture of climate and environment and related challenges is developed and documented in this phase. Available information on potential climate impacts is researched and the related problems assessed. This information will form the basis of the stakeholder engagement process in Phase 2.

<b>Objective</b>	Develop an understanding of the climate change challenges, assess information on the climate change dimension of the IDP planning process in given to sectors.	Tool 2: Climate Change and Municipal Planning Presentations (PPT and speaker notes)
<b>Timeframe</b>	Approximately 4-6 weeks	Tool 3: Directory of Key Climate Change Resources
<b>When to use</b>	This work may begin as soon as you receive a mandate to drive the work. This phase aligns with Phase 2: Analysis of the IDP planning process.	Tool 4: Determining Local Climate Change Impacts Support Sheet
<b>Expected outcome</b>	Knowledge developed on local climate change impacts and GHG emissions responsibilities in preparation for planning exercise.	Tool 5: Responding to Local Climate Change Impacts Support Sheet
		Tool 6: Introducing Climate Information Web Portals
		Tool 7: CSAG Local Climate Report Example
		Tool 8: Municipal GHG Emissions Calculator and Electricity Sector Efficiency Planning Tool
		Tool 9: GHG Emissions and Energy Development Analysis Table
		Tool 10: Climate Change Analysis Report Templates

#### Step 1: Research likely climate change projections for your area.

Scientists emphasize that it is impossible to predict future climate, particularly at a local area scale. However, some understanding of the kind of impacts that may happen will help you to develop a sense of the kind of response capacity you need to build into your municipal plan. Read the summary overview of the major climate trends projected for South Africa in the inset below: future climate over Southern Africa. Note the likely impacts for your region. These broad brush-strokes are a sufficient base from which to continue the climate response integration process in this guide.

**NOTE:** South Africa has well developed information and a database on local climate variables and detailed information on climate across the country. Detailed data on past climate and future projections can be obtained from the Climate Science Analysis Group (CSAG) at the University of Cape Town. Tool 7: CSAG Local Climate Report Example shows the kind of climate report you can get here. Tool 6: Introducing Climate Information Web Portals provides an introduction to CSAG's Climate Information Portal (CIP), which houses this information and has contact details for CSAG.



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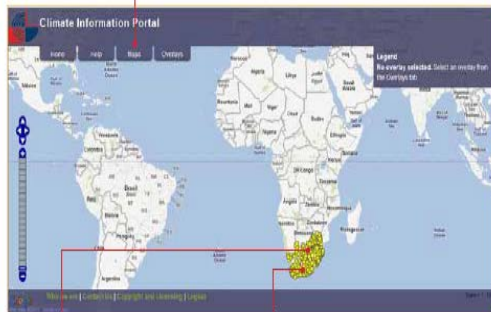
## Toolkit



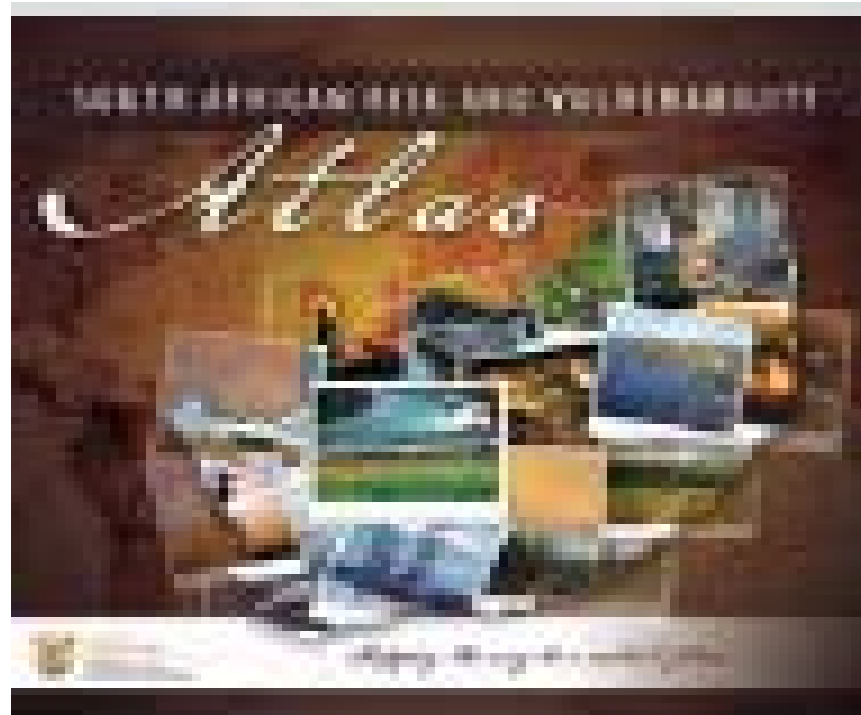
### Navigating the portal



1. Go to <http://cip.cog.uct.ac.za> register yourself and login.
2. If you wish to see projected change at the Global Climate Model scale, click on the overlays tab along the top of the screen; select an overlay, for example the 50<sup>th</sup> percentile for the month of January, and you will see a shaded picture of median projected climate change (hotter, wetter) for the selected month.
3. For locally specific information (statistically downscaled data), click on the maps tab along the top of the screen, and select South Africa from the drop-down menu.



4. Double click to zoom in on your region.
5. Then click and briefly hold on the yellow dot closest to or within your municipality.





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### TOOL 8

**Municipal Greenhouse Gas Emissions Calculations using a Transition Analysis**

Fuel	Unit	Quantity	Suggested Data Source	Conversion Factor (Metric)	CO <sub>2</sub> Emissions (Metric Tons)	Conversion Factor (Imperial)	CO <sub>2</sub> Emissions (Imperial Tons)	Percent CO <sub>2</sub> of total CO <sub>2</sub> emissions (Metric Tons)
Electricity (Canada)	kWh	100,000	Electricity consumption (municipal buildings)	0.0005	50	0.0001	50	0.04
Electricity (USA)	kWh	100,000	Electricity consumption (municipal buildings)	0.0007	70	0.0001	70	0.05
Gasoline	liters	100,000	Gasoline consumption (municipal fleet)	0.0025	250	0.0001	250	0.19
Gasoline	gallons	100,000	Gasoline consumption (municipal fleet)	0.0038	380	0.0001	380	0.29
Propane	liters	100,000	Propane consumption (municipal buildings)	0.0025	250	0.0001	250	0.19
Propane	gallons	100,000	Propane consumption (municipal buildings)	0.0038	380	0.0001	380	0.29
Heating Oil	liters	100,000	Heating oil consumption (municipal buildings)	0.0025	250	0.0001	250	0.19
Heating Oil	gallons	100,000	Heating oil consumption (municipal buildings)	0.0038	380	0.0001	380	0.29
Coal	kg	100,000	Coal consumption (municipal buildings)	0.0001	10	0.0001	10	0.008
Coal	lb	100,000	Coal consumption (municipal buildings)	0.0002	20	0.0001	20	0.016
Wood	kg	100,000	Wood consumption (municipal buildings)	0.0001	10	0.0001	10	0.008
Wood	lb	100,000	Wood consumption (municipal buildings)	0.0002	20	0.0001	20	0.016
Oil	kg	100,000	Oil consumption (municipal buildings)	0.0001	10	0.0001	10	0.008
Oil	lb	100,000	Oil consumption (municipal buildings)	0.0002	20	0.0001	20	0.016
Gas	kg	100,000	Gas consumption (municipal buildings)	0.0001	10	0.0001	10	0.008
Gas	lb	100,000	Gas consumption (municipal buildings)	0.0002	20	0.0001	20	0.016
Other	kg	100,000	Other emissions (municipal buildings)	0.0001	10	0.0001	10	0.008
Other	lb	100,000	Other emissions (municipal buildings)	0.0002	20	0.0001	20	0.016
<b>Total</b>					<b>1,000</b>		<b>1,000</b>	<b>100%</b>

**Notes:**

- Typically about 10% of total carbon footprint comes from electricity.
- Amount of electricity consumed depends on the type of buildings that are part of the municipal fleet and the region.
- Amount of gas consumed depends on the type of buildings that are part of the municipal fleet and the region.
- Amount of propane consumed depends on the type of buildings that are part of the municipal fleet and the region.
- Amount of heating oil consumed depends on the type of buildings that are part of the municipal fleet and the region.
- Amount of coal consumed depends on the type of buildings that are part of the municipal fleet and the region.
- Amount of wood consumed depends on the type of buildings that are part of the municipal fleet and the region.
- Amount of oil consumed depends on the type of buildings that are part of the municipal fleet and the region.
- Amount of other emissions depends on the type of buildings that are part of the municipal fleet and the region.

**CITY ENERGY SUPPORT LINK**  
A quick online tool to help you understand your energy profile and identify areas for improvement.

### TOOL 9

PHASE 1: Inventory of GHG emissions  
PHASE 2: GHG emissions analysis  
PHASE 3: GHG emissions reduction strategies  
PHASE 4: GHG emissions reduction implementation

### GHG Emissions and Energy Development Analysis Table

**Objective:** The table below based on a growing understanding of key emissions and energy issues across the country is designed to support the GHG emissions analysis (emissions tool) and make municipalities able to do a detailed GHG emissions analysis, to understand the climate mitigation and energy development issues they need to respond to. This information will contribute to your GHG Emissions and Energy report, which will inform the climate change response content of the EDP's Status Quo report (Strategic Analysis).

Profile	Key Issues
<ul style="list-style-type: none"> <li>relatively high per capita carbon footprint (around 8 tonnes/capita for some cities) and/or high per capita energy consumption</li> <li>significant contribution to the national emissions picture since 10% of national electricity generated is consumed within the target 15 cities and towns</li> <li>important responsible for around 30% of emissions</li> <li>households responsible for around 30% of emissions - most of this covering energy and high income households</li> <li>industry can be substantial</li> <li>built environment broadly is a significant emissions contributing sector</li> <li>buildings gas use account for as much as 10% of GHG emissions</li> <li>recycled activities account for only about 1-2% of emissions, but important area for quick wins and leadership by example</li> </ul>	<ul style="list-style-type: none"> <li>Critical partner in meeting national GHG emissions reduction targets for per international agreements</li> <li>city economies vulnerable to increasing costs of carbon</li> <li>need to reduce intensity of carbon per capita and economic activity through greater efficiency, renewable energy and encouraging diversification of economic activity</li> <li>improve mobility (better public transport) to keep emissions levels from rising and improve the (health) benefits/renewable economic mobility of people</li> <li>mid-high income households are large cost factors in emissions profile, usually 30% of household electricity in this sector is for water heating or introduction of water water heating is critical</li> <li>regulating to improve efficiency of the built environment</li> <li>engagement with commerce and industry to support more efficient electricity use</li> <li>enable energy use in poorer households contribute to fire and health issues that will be worsened by climate change - important to move to 100% electrification</li> <li>improve thermal efficiency of poor households, possible reduction of water water heating for greater resilience (water health, reduction of energy poverty)</li> <li>waste recycling and management of landfill gas is an important area to address</li> <li>lean planning and economic development approaches into the larger term</li> </ul>

Profile	Key Issues
<ul style="list-style-type: none"> <li>carbon footprint ranging from approximately 2.4 tonnes/capita (if towns/villages in the global average)</li> <li>digital task (mostly for transport) contributes significantly to the energy consumption picture (around 10%) but electricity is the largest contributor to GHG emissions</li> <li>Mid-high income households contribute significantly to electricity emissions</li> <li>recycled activities account for only about 1-2% of emissions, but important area for quick wins and leadership by example</li> </ul>	<ul style="list-style-type: none"> <li>mid-high income households large contributors to emissions profile</li> <li>usually 30% of household electricity in this sector is for water heating or introduction of water water heating is critical</li> <li>enable energy use in poorer households contribute to fire and health issues that will be worsened by climate change</li> <li>poor and informal households suffer from energy poverty - identify efficient houses and access to affordable, modern energy sources is important</li> <li>waste recycling and management of landfill gas is an important area to address</li> </ul>
<ul style="list-style-type: none"> <li>carbon footprint very small (1-2 tonnes/capita) - "carbon spare" for development</li> <li>electricity contributes substantially to emissions (except in areas that are off-grid)</li> <li>households are the major contributors to electricity consumption with commerce and agriculture following</li> <li>identification of real areas is still major issue</li> <li>mid-high income households are large cost factors in emissions profile, usually 30% of household electricity in this sector is for water heating or introduction of water water heating is critical</li> <li>regulating to improve efficiency of the built environment</li> <li>engagement with commerce and industry to support more efficient electricity use</li> <li>enable energy use in poorer households contribute to fire and health issues that will be worsened by climate change - important to move to 100% electrification</li> <li>improve thermal efficiency of poor households, possible reduction of water water heating for greater resilience (water health, reduction of energy poverty)</li> <li>waste recycling and management of landfill gas is an important area to address</li> <li>lean planning and economic development approaches into the larger term</li> </ul>	<ul style="list-style-type: none"> <li>enable energy use (and not coal fire, paraffin, candles, kerosene) electricity consumption) in poorer households contribute to fire and health issues and poor health which will be worsened by climate change</li> <li>electricity distribution often 100% in hands of others - need close cooperation to continue with identification programme</li> <li>information where used is used for recycling and heating</li> <li>commerce and industry build back by investment electricity supply and low voltage lines</li> <li>mid-high income households are large contributors to electricity consumption with commerce and agriculture following</li> <li>identification of real areas is still major issue</li> <li>mid-high income households are large cost factors in emissions profile, usually 30% of household electricity in this sector is for water heating or introduction of water water heating is critical</li> <li>regulating to improve efficiency of the built environment</li> <li>engagement with commerce and industry to support more efficient electricity use</li> <li>enable energy use in poorer households contribute to fire and health issues that will be worsened by climate change - important to move to 100% electrification</li> <li>improve thermal efficiency of poor households, possible reduction of water water heating for greater resilience (water health, reduction of energy poverty)</li> <li>waste recycling and management of landfill gas is an important area to address</li> <li>lean planning and economic development approaches into the larger term</li> </ul>



Figure 3: GHG emissions by fuel type, 2010-2015 (Metric Tons)

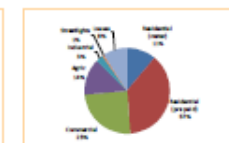


Figure 4: GHG emissions by fuel type, 2010-2015 (Metric Tons)



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### reference

#### Future climate over Southern Africa

The climate projection summary is derived from the South African Risk and Vulnerability Atlas and South Africa's Second National Communications under the United Nations Framework Convention on Climate Change. The Atlas project is a flagship science-to-policy initiative of the Department of Science and Technology's Global Change Grand Challenge. It aims to support improved planning and decision making through up-to-date information for key sectors in the areas of risk and vulnerability. A full copy of the Atlas is available for download on [www.rvta.org](http://www.rvta.org). South Africa's Second National Communications in accordance with Article 12 of the United Nations Framework Convention on Climate Change reports on the substantial advances in the national understanding of climate change issues, trends and projections (since the first National Communications) along with better informed climate-related policy development across all 3 spheres of government. A full copy of the 2nd National Communications is available for download on [www.environment.gov.za](http://www.environment.gov.za)

**The science of climate projection**

Observed trends in the global climate reveal that shifts in climate regions have occurred along with an increase in the frequency of severe weather events. Exactly what will happen to climate in the future is filled with uncertainty. This can be confusing and challenging for decision-makers and planners. Models (shown as global circulation models), that can support detailed projections, or scenario assessments, about future climate can be prohibitively costly to run. Scientists also feel that not enough is known about the role of natural variability in the global climate and the implications of downscaling global projections over Africa are not fully understood.

Another important variable making uncertainty worse is that nobody knows what the future rate of increase in GHG concentrations will be, or will the current trend of rising carbon emissions come down to what is "required by science" for stabilising climate change, or will the current trend of rising carbon emissions continue unabated? This is a political, not a scientific, issue. However, it will impact severely on the science.

South Africa has leading scientists working in the field of climate projection. A large body of climate change projections is available, obtained from both statistical and dynamic downscaling procedures – via the Weather and Climate portal of the South African Risk and Vulnerability Atlas (SARVA), and other electronic portals, one of which is the Climate Information Portal (CIP) of the Climate Science Analysis Group (CSAG) of the University of Cape Town.

**The regional climate projection**

The SARVA and 2<sup>nd</sup> National Communication, presenting only a single model outcome (50<sup>th</sup> percentile in terms of risk and degree of likelihood), suggest the following:

**Temperature projections:** All of Africa is projected to warm during the 21<sup>st</sup> century with the warming very likely to be greater than the global annual mean warming – throughout the continent and in all seasons. Drier, subtropical regions are projected to warm more than the moister tropics. Observed temperature trends indicate that change along these lines is already occurring.

The projected changes for the period 2070-2100:

- more than 2° Celsius median increase over the central and northern interior of South Africa.
- Over coastal regions, about 2° Celsius increase.
- Median increase in excess of 4° Celsius over central South Africa during autumns and winter.

Note: 75 percentile temperatures show somewhat larger (the 25th somewhat smaller) but trends remain the same.

### reference

**Regional rainfall projections:** Rainfall change is far harder to define and locate spatially than temperature. The indications are that rainfall is likely to decrease over the winter rainfall region of South Africa and the western margins of southern Africa, with possible increase in summer rainfall totals in the eastern areas of South Africa.

Projected changes for the period 2070-2100:

- A generally drier southern Africa (5 – 15% reductions in current rainfall).
- A distinct pattern of winter rainfall loss in the west and summer rainfall increase in the east, yet with some local scale deviations. Rainfall is indicated to decrease for the Limpopo province in spring and for the Western Cape in winter.
- Summer rainfall region projected to become drier in spring and autumn (shorter summer); however, during summer, more frequent cloud-band formation may take place over eastern South Africa, resulting in increased summer rainfall totals.
- General increase in relatively large rainfall events over eastern South Africa in particular, may take place. This area projected to experience an increase in frequency and intensity of rainfall concentrated in the early summer/autumn. The magnitude and intensity of storm events is expected to increase.
- Dry spells (longer summers) may be expected to occur more frequently along the western and northern margins of South Africa, between spring and autumn.

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## intro

### Integrating climate change response into municipal (IDP) planning

Climate change is happening and is one of the major challenges facing the world

- The average temperature of the earth's surface has risen by 0.24 degrees Celsius (°C) since the late 1800s. It is expected to increase by another 1.8°C to 4°C by the year 2100 should the necessary action not be taken (IPCC 4th Assessment Report, 2007).
- The main reason for the increasing temperature is 150 years of industrialisation: the generation of larger and larger quantities of oil, petrol and coal, the generation of larger and larger amounts of landfill waste, the cutting of forests, and the practice of certain farming methods. These activities have increased the amount of greenhouse gases in the atmosphere.
- The current warming trend is expected to cause the extinction of many plant and animal species in the next 100 years. Human beings are likely to face mounting difficulties. Recent severe storms, floods and droughts, for example, appear to show that computer models predicting more frequent extreme weather events are correct.
- The change happening to temperature, rainfall and climate are broadly predicted to get more and more severe, with impacts that include drought, water scarcity, extreme weather events and altered seasons.
- Climate change is a complicated, global problem, linked to difficult issues such as poverty, economic development and population growth. Responding to it is not easy but ignoring it will be even harder. Fortunately, there is much that can be done to limit the degree of climate change and to adapt to its impacts. In some instances climate change may even open up new economic opportunities.
- The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty which aims to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous levels of climate change. UNFCCC has 194 parties. Legally binding GHG 'limits' or reduction obligations have been set through the Kyoto Protocol (an update to the treaty).
- South Africa hosted the 17<sup>th</sup> Conference of the Parties to the UNFCCC (COP 17) in 2011. Here the South African COP Presidency was able to establish the Durban Platform which agreed that a new universally legally binding treaty to cut carbon emissions will be in place by 2015, and come into effect by 2020. This treaty would involve both the developed and developing nations. It also established a new commitment period for the Kyoto Protocol and launched the Green Climate Fund.

8 LET'S RESPOND - TOOLKIT GUIDE



# Let's Respond

## Toolkit Guide

### one | Analysis

**NOTE - continued:** The Future Climate over Southern Africa reference box that follows is from the work of Francois Engelbrecht and Willem Louwman in the South African Risk and Vulnerability Atlas. The SARA portal aims to become a site of spatial dissemination on climate projections.

#### Further Additional Value Steps Include:

- Check for **existing local studies**. Your province, or a city nearby, may have done a climate change study; local universities, research institutes, NGOs, or government departments may have undertaken work in this area. Key studies done to date in South Africa are included in Tool 3: **Directory of Key Climate Change Resources**.
- Check the **South African Risk and Vulnerability Atlas**, CSR, for updates: [www.wilds.org.za](http://www.wilds.org.za). This is the portal through which up-to-date information to support climate response strategy development will be provided by government.
- **Climate Information Portals**: The **Climate Information Portal (CIP)** has been developed by the Climate Science Analysis Group (CSAG) at the University of Cape Town and houses the only down scaled information on climate trends (precipitation and temperature) in South Africa, using local weather station data and drawing on a variety of scientific models. An introduction to this is found in Tool 4: **Introducing Climate Information Web Portal**, which also introduces the **World Bank's Climate Change Knowledge Portal**, useful for more regional scale information (<http://climateknowledgeportal.worldbank.org>).

### Step 2 | Do a Greenhouse gas (GHG) emissions scan.

Understanding what sectors contribute to global warming in your municipality will enable you to support national efforts to meet emissions reduction targets (and international commitments) and explore green economic opportunities. Follow the method notes in Tool 6: **Municipal GHG Emissions Calculator and Electricity Sector Efficiency Planning Tool** to conduct a GHG emissions scan for your municipality. This will provide you with a figure of how much carbon dioxide equivalent is produced in your municipality and indicate which sectors are responsible for these. Document all work done and develop a readily accessible system of storing the information.

If you are unable to collect the data required to do the scan, move on to Step 3.

**TIP:** Although data can be extremely hard to gather, it is increasingly important for local government to manage energy and GHG emissions (mitigation) and you are encouraged to develop this capacity. Obtaining this information should be prioritised as an action in the internal workshop coming up.

### Step 3 | Hold an internal workshop to introduce the climate change IDP planning dimension

With the IDP Office, call an internal workshop or meeting, with relevant departments to introduce the climate change IDP planning dimension. This meeting should cover:

- the legal and policy framework for local government to include the climate change dimension into IDP planning
- the process underway to integrate climate response planning and what their role will be: Tool 4: **Determining Local Climate Change Impacts Support Sheet** and Tool 5: **Responding to Local Climate Change Impacts Support Sheet**

### one | Analysis

#### TIP: Undertaking a Vulnerability Assessment and detailed Adaptation Strategy

A vulnerability assessment is the foundation for the construction of any adaptation strategy. Vulnerability varies across communities, sectors and spatial areas and MUST be taken into consideration within each IDP Priority of Focus Area.

An assessment will aim to find out who is vulnerable to what. It is important to draw on the experience within the affected sectors or communities and a workshop session is the best way to do this. Such a session would look to identify and establish:

- the existing stressors (economic, social, environmental) and climate conditions (climate variables and extreme weather events) affecting the sector or community
- are there any measures already in place to address these? Are these working?
- consider trends and changes likely to have an impact in the future for example, changes in local economy, population size, political environment.
- given this context, how might projected changes in climate conditions affect the sector/community: are there components of the sector more vulnerable than others?
- who are the most vulnerable groups within the municipality? Where are they located?
- What are the major climate hazards they are subjected to?
- What aspects of livelihoods might be threatened because of changing climate conditions?

For further detail and guidance on developing a full Adaptation Strategy in your municipality explore the existing strategies listed in the Resources Tool and the guide: **Adapting South African Cities and Towns - a local government guide to climate change adaptation planning** by Dr Gino Zorweg and Nadine Mettner for Sustainable Energy Africa: [www.cityenergy.org.za](http://www.cityenergy.org.za)

**PHASE II ANALYSIS: Deliverables checklist**

- Likely climate change researched and related impacts understood
- GHG emissions and energy assets researched and understood
- Draft local Climate Change Analysis Report completed
- Internal workshop with relevant departments

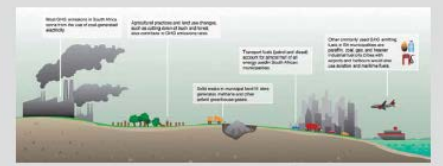
**PHASE II ANALYSIS: Additional values**

- Key local and national studies read
- GHG scan undertaken

### reference

#### Where do GHG emissions come from in a municipality?

GHG contribute to the phenomenon of global warming. GHG emissions are mostly made up of carbon dioxide and methane. Emissions are measured in terms of carbon dioxide equivalent (CO<sub>2</sub>e). For example, methane, which is a powerful global warming gas, with a global warming potential 21 times that of CO<sub>2</sub> (in trapping heat in the atmosphere). The majority of GHG emissions come from the burning of fossil fuels to generate energy for the purposes of lighting, cooking, warming, appliances, computers, industrial motors, air conditioning, and transportation. Our solid waste also results in the emission of methane gas.



Because methane is such a powerful greenhouse gas, landfill and waste sites contribute substantially to a municipal GHG emissions profile. Although transport fuels account for almost half of all energy used in South African towns, electricity consumption is responsible for most of the GHG emissions. This is because South African electricity is generated predominantly from 'dirty' coal that gives off a lot of carbon dioxide for every unit of energy it puts out. Households account for about one third of all electricity consumed – and this is largely electricity used in mid-high income household water heating (motors) and commerce (air conditioning, lighting and equipment) contribute substantially to the rest.



As a country we have made commitments to reduce GHG emissions. There are other important reasons why moving towards a lower carbon environment is a sensible course for municipalities. A lower carbon environment should:

- reduce the vulnerability of the local economy to carbon taxes and trade barriers;
- create relatively cheap electricity distribution capacity on overwired distribution grids through energy efficiency;
- insulate against oil price shocks in the future (public transport, compact cities) as the world moves towards 'peak' oil;
- create jobs in new energy sectors, such as solar water heating (DHW) and efficiency;
- improve energy security with local energy sources – solar water heating and local renewable energy; and
- reduce poverty and boost resilience: better insulated housing and DWH technologies can reduce the energy burden on poor households; access to cleaner energy sources will also increase resilience of households in the face of disease, fires and floods.





## PHASE 2: STRATEGY

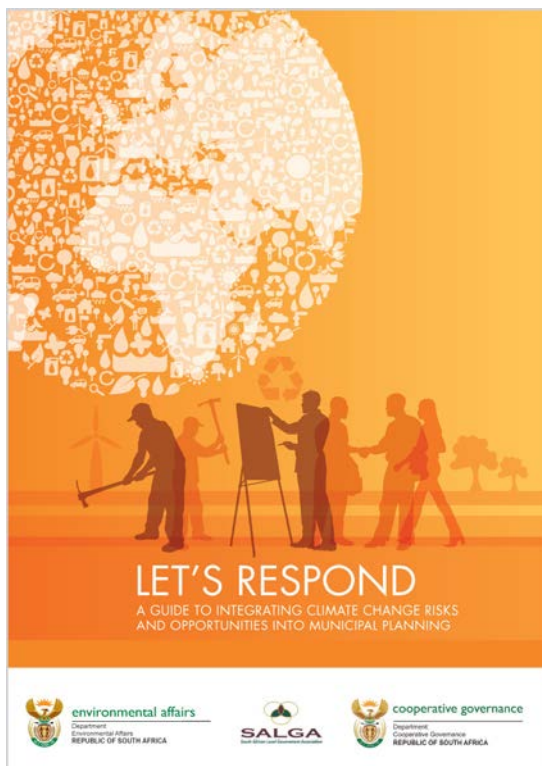
- Climate Change Response Vision and Strategy Workshop Develop Climate Change Response Strategic Document
- Climate Change Response Integration Planning Sessions – SDBIP
- Climate Change Response Objectives
- Sector Plan Alignment with IDP climate response priority objectives

- *Tools 4 and 5 – Determining and Responding to Local Climate Change Impacts Support Sheets*
- *Tool 11 – Developing a local government climate change response vision and key objectives (workshop template)*
- *Tools 12 and 13 – Climate Change Sector Response Options and Review Guide (municipal powers and functions)*



# Let's Respond

## Toolkit Guide



### Phase 2: Strategy

Stakeholder consultation towards a climate response vision and strategy – where to go and how to get there

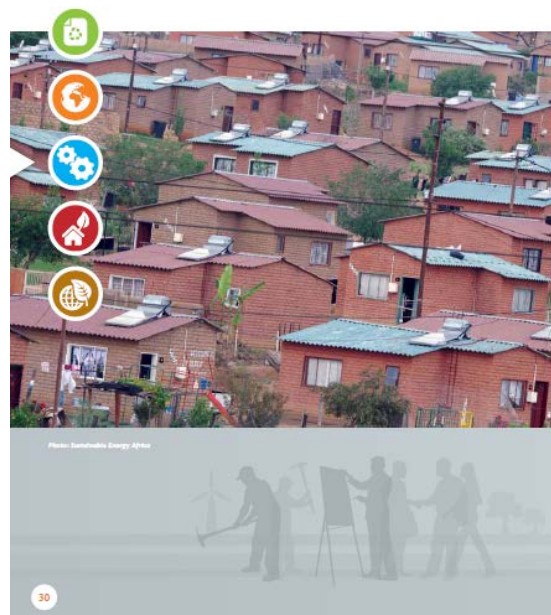
Phase 2 looks to find solutions to the problems assessed in Phase 1. A stakeholder workshop will support the development of a climate response vision and outline priority objectives towards addressing the challenges. Sector planning sessions will ensure these goals and strategies are set to be taken down into the municipality's operational plans in Phase 3.

<b>Objective</b>	The development of a municipal climate change response vision, goal and objectives (strategy) and integration of this into the priority objectives of the ICP and sector plans.	Tool 2: Climate Change and Municipal Planning Presentations (PPT and speaker notes)
<b>Timeframe</b>	Approximately eight weeks.	Tool 4: Determining Local Climate Change Impacts Support Sheet
<b>When to use</b>	The analysis process (Phase 1) must be completed in order to move into the stakeholder consultation. This study takes place between September and November. This phase aligns with Phase 2: Strategies of the ICP planning process.	Tool 5: Responding to Local Climate Change Impacts Support Sheet
<b>Expected outcomes</b>	A municipal climate change response vision and measurable objectives  Climate change response priority objectives within the ICP focus areas (IFAs)  Business/Sector plan alignment with ICP climate response priority objectives	Tool 11: Developing a Local Climate Change Response Vision and Key Objectives Workshop Template  Tool 12: Sector Climate Change Response Options  Tool 13: Sector Plan Climate Response Considerations Review Guide

#### Step 1: Prepare a Climate Response Vision and Strategy workshop

The approach here emphasises recognising and building on existing institutional knowledge and experience around responding to current and past climate events and development challenges. The more stakeholders brought into the process at this stage, the greater the depth of experience that will contribute to the unfolding process.

A wealth of experience and knowledge about climate events and development issues will be found amongst municipal officials and stakeholders as represented in the ICP Forum. These multiple perspectives are important for developing a robust response to climate change. In this step the stakeholders – officials and citizens – will consider the risks, vulnerabilities and opportunities it faces in terms of climate change and decide on a response. Include as much expert input as possible, such as other government departments, organisations and institutions of higher learning.





# Let's Respond

## Toolkit



### Workshop template: Developing a local climate change response vision and key objectives

**Objective:** This tool will help you plan and run a full day workshop designed to develop a municipal climate response vision and objectives. This session is really the heart of the climate response integration process. It will identify the objectives that will be integrated into the Strategic Focus Areas of the ICP. It will also form the basis for a Municipal Climate Response Strategy Plan; the session is a valuable public engagement, as supported in the integrated planning approach.

Various tools will support this workshop program, notably Tool 3-Climate Change and Municipal Planning presentation, Tool 4, 5 and 12 which look at climate change impacts and response options, and your Climate Change Analysis Report (based on Tool 10) will provide valuable information to be presented here, as will Tool 9-GHG Emissions and Energy Development Analysis Table for an overview of energy and emissions issues.

#### Participants

All stakeholders that form part of your ICP stakeholder forum should be considered for the workshop. In addition, key Municipal councillors and staff must be here.

Invite a **key councillor or top official** to formally open the workshop, help to build political commitment and leadership on the issue. This will ensure greater buy-in to the process by officials and stakeholders. If there are any **leading experts** you know of who could make a strong contribution to the workshop, consider inviting them to make a presentation.

#### Objective of the workshop

- To deepen the understanding of the impacts and effects of climate variability and change on various sectors and livelihoods in the municipality – both threats and opportunities
- To develop a local climate change response goal and identify priority objectives and actions
- To detail a way forward towards the viable integration of these climate response objectives and actions into all dimensions of the ICP – Strategic Objectives and Focus Areas, Sector plans, Departmental plans, budgets and KPIs

#### Agenda

Draft an agenda based on the workshop session outlined below, and send this out with your workshop invitation. The draft agenda presented here is a guide and you should adapt and change it to suit your local situation. The essential to be covered in this workshop is extensive, and a **full day** should be set aside for this.

Session	Time	Topic
1	9:00 – 9:30	Welcome and Introduction
2	9:30 – 10:15	Climate Change and municipalities (PPT presentation and discussion)
3	10:30 – 11:00	Understanding local climate impacts and responses <ul style="list-style-type: none"> <li>Presentation of climate projections for the region</li> <li>Participant engagement experience of extreme weather events and climate change and municipal responses</li> </ul>
4	11:00 – 11:40	Understanding GHG emissions and energy for development <ul style="list-style-type: none"> <li>Presentation of GHG emissions and energy development analysis</li> <li>Participant engagement key energy and emissions issues and municipal responses</li> </ul>
5	11:40 – 12:15	Developing a set of climate objectives, or elements of a climate response risks <ul style="list-style-type: none"> <li>12:15 – 12:30 lunch</li> </ul>
6	13:00 – 14:15	Sector plans and priority actions <ul style="list-style-type: none"> <li>Identify key priority actions for each sector to take forward</li> </ul>
7	14:15 – 15:00	Way forward, feedback and close <ul style="list-style-type: none"> <li>Key steps to bring climate response objectives into ICP process (outputs and time frames and responsible persons)</li> <li>Thanks and closure</li> </ul>

#### Session guidance notes

##### Session 1. Welcome and Introduction

- Welcome all and outline the aim of the workshop.
- Explain that in this workshop you will be drawing on their multiple perspectives to develop a municipal response to climate change and key actions to achieve this.
- Outline how the climate response will be integrated into the ICP

##### Session 2. Climate change and municipalities

**Method:** This information could be presented in the form of a power point presentation (PPT), or could be presented in the form of a table alternatively an 'expert' may make an input. Tool 3-Climate Change Municipal Planning presentation, introduced in Phase 1 can be used here.

### TOOL 12



Sector	Climate response options
<b>ELECTRICITY and ENERGY SERVICES - continued</b>	<ul style="list-style-type: none"> <li>Implement efficient appliance programmes (eg. k-fidge, laundie, light)</li> <li>Smart metering of top electricity consumers for better electricity management</li> <li>Green procurement to ensure all municipal projects, centers, lighting is efficient</li> <li>Materials of municipal/public lighting and buildings</li> <li>Greenhouse gas emissions data capture and reporting</li> <li>Monitor and record local air quality on a continuous basis</li> </ul>
<b>WASTE</b>	<ul style="list-style-type: none"> <li>Landfill gas capture and conversion to energy to replace GHG emissions</li> <li>Recycling and 'top back control' development</li> <li>Ensure proper disposal of waste (drinking water tanks, flooding coastal erosion can all impact badly disposal waste sites)</li> </ul>
<b>INFRASTRUCTURE, PLANNING and BUILT ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Map vulnerable areas (flood lines, etc) and implement development bans in highly vulnerable zones</li> <li>Implement land use planning and zoning to avoid building and development infrastructures in flood or landslide prone areas</li> <li>Re-evaluate building development from areas of high risk</li> <li>Strengthen building code requirements according to increased risks of flooding, heat waves, intense storms and wind speed on building and infrastructure development projects</li> <li>Maintain and update drainage systems</li> <li>Consider permeable pavements, green roofs and rain tanks to increase on-site retention of storm water</li> <li>Building regulation to ensure efficiency in all new buildings – monitor and enforce and encourage best practice development</li> <li>Classification of land use through zoning regulation to support high density living and work and retail use</li> <li>Development preference given to developments on public transport routes</li> <li>Ensure thorough planning reviews to ensure of regional population and economic growth and secure contingency for regional infrastructure/growth</li> </ul> <p><b>Coastal Areas:</b></p> <ul style="list-style-type: none"> <li>Coastal vulnerability mapping</li> <li>Shoreline management plans</li> <li>Flora strategies on beach dunes</li> <li>Use sea dunes as buffers to protect against increased runoff from more intense storms</li> <li>Research and monitor climate change impacts on beaches</li> <li>Re-evaluate building development from coastal areas at high risk</li> </ul>



## PHASE 3: PROJECTS

Reprioritise other and/or existing projects

Project selection and prioritisation for the next budget cycle

Climate change co-benefit projects

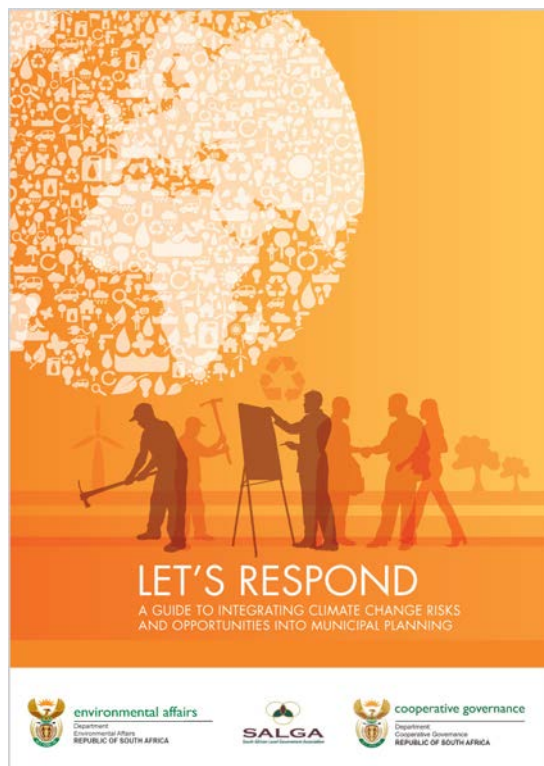
Development of Key Performance Indicators

- *Tool 14 – Climate Change Response Action Plan - SDBIP*
- *Tool 15 – Project Selection Support Tool - Prioritisation Criteria*
- *Tool 16 – Key Performance Indicator Tool*
- *Tool 17 – Local Implementation Case Studies*



## Let's Respond Toolkit Guide

### PHASE 3: PROJECTS





## PHASE 4: INTEGRATION AND IMPLEMENTATION

- Obtain Approval of the Climate Change Responsive IDP
- Communication of Municipal Climate Responses
- Cooperate with other municipalities
- *Tool 17 – Local Implementation Case Studies*
- *Tool 18 – Climate Change Assessment Framework*



# Let's Respond Guide and Toolkit: Integration and Implementation

## Is your IDP climate change “credible”



### Is your IDP climate response 'credible'?

**Objective:** This tool provides a guide to check that your municipality has achieved a 'credible' IDP from a climate response perspective.

The tool is based on the format developed by the Department of Cooperative Governance's IDP Evaluation Framework, which aims to support effective IDP content and engagement by Provincial Government MECs for Local Government during assessment missions. Integrating climate response into the framework is under development.

ASSESSMENT CRITERIA	YES/NO COMMENT
<b>1. Spatial Development Analysis and Rollback</b>	
Does the municipality exhibit a good understanding of areas vulnerable to the impacts of climate change and extreme weather events?	
Do the strategies for spatial reconstruction (and related social and economic infrastructure and commercial developments) show they have factored climate change impacts (extreme weather events, changes, but also changes in economic comparative advantages arising from political agreements around carbon emissions)?	
Does the spatial rollbacks show consideration of the need for more resource efficient development and decreasing dependence on energy intensive mobility modes?	
<b>2. Service Delivery and Infrastructure Planning</b>	
<b>Water and Sustainable service delivery</b>	
Does the IDP's vision/intentions cover future related water resources and water service losses and does this include consideration of future climate impacts projections?	
Are projected climate impacts on the water table within the WQDF Panel future plans and implementation strategies?	
Do projects in the IDP portfolio address the climate challenges identified and water knowledge reduction strategies?	

ASSESSMENT CRITERIA	YES/NO COMMENT
<b>Energy and electricity</b>	
Is there a budget and plan to secure enhanced access to electricity?	
Are alternative and renewable energy options considered?	
Do projects in the IDP portfolio include energy efficiency initiatives, including efficient water heating?	
<b>Roads and Transport</b>	
Is there a budget and plan for an integrated road and transport system (including non-motorised transport), with an emphasis on improving the quality of the public and non-motorised transport available?	
Is there a budget and plan for new roads and operation and maintenance of old roads? Do these plans show a contribution of climate impacts?	
<b>Storm Water Drainage</b>	
Is there a budget and plan that factor in likely climate change impacts, to manage storm water drainage and maintain related infrastructure?	
<b>Waste management</b>	
Does the Integrated Waste Management Plan show plan and budget to reduce waste and associated gas emissions, through waste reduction approaches, gas flaring or waste to energy projects?	
<b>General Infrastructure Planning</b>	
Does the Integrated Infrastructure Investment plan show consideration of the potential impacts of projected climate change and adequate response?	
<b>3. Local Economic Development</b>	
Does the LCD strategy take into account projected future climate change impacts and show consideration of diversification/adaptation of livelihoods where there is a large dependency on climate sensitive livelihoods (such as agriculture, forestry/fishing, carbon intensive industry)?	
Does the LCD strategy show consideration of potential 'green' economic opportunities, such as in energy efficiency water heating, cooling, services, new crops viable under changing climate conditions, and?	
Do economic development strategies show adequate consideration of the spatial impacts of climate change (see land release, productive capacities of land)?	
Is the area's competitive and comparative advantages understood? Does this show an understanding of changing climate conditions (and political climate regime conditions)? Is this exploited when looking at 'green' economic opportunities?	
<b>4. Good Governance</b>	
Has the IDP planning process included steps to integrate climate change responses?	
Has the municipality demonstrated leadership on climate change issues, for e.g. energy and water efficient retrofitting of public buildings?	





## Let's Respond Guide and Toolkit: Summary

### Preparation

- Allocates responsibility to drive the process, plans the way and facilitate council commitment to the climate change response approach

### Phase 1 Analysis

- Development of **Climate Change Analysis Report** for inclusion in the IDP Situational Analysis (Status Quo Report)

### Phase 2 Strategy

- Supports a participatory planning exercise to develop a **municipal climate response vision and objectives**, for **inclusion in the IDP** Strategic Focus Areas and alignment of Sector Plans





## Let's Respond Guide and Toolkit: Summary

### Phase 3 Projects

- Takes the **new climate priorities into detailed project development plans**, and identifies capacity, resources and performance management systems to integrate into the Municipal Operational Systems

### Phase 4 Integration & Implementation

- Ensures that climate response work is **visible throughout the IDP** and related development plans.
- **Communicating** what the municipality is doing about climate change to its community, and establish important learning networks



## Let's Respond Guide and Toolkit: Conclusion

- It is important to interact with sector departments in the process of developing climate change response plan
- Tools can be applicable in more than one PHASE of the process
- Projects reprioritisation should not compromise the country and municipal developmental needs



# THANK YOU

*“We don’t inherit earth from our ancestors but we borrow it from our children”*