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Western Cape Climate Change Response

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Overview

- Context setting (impacts & vulnerabilities)
- Opportunities related to climate change
- Strategic approach to climate change
- Focus areas: projects & challenges
- Enablers
- Supporting municipalities
- Way forward

Context setting: climate change in the Western Cape

The WC is highly vulnerable to the impacts of climate change

Projection	Examples of impacts
Increased mean annual temperatures	• Higher evaporation rates – faster drying of landscapes • Heat stress implications on human and animal health • Threat to water security • Potential negative impact on food security (crop burn, deciduous fruit) • Potential negative impact on tourism • Change in disease vectors • Impacts on marine life • Loss of biodiversity • Hotter and more frequent fires
Increased frequency and magnitude of extreme rainfall events, with associated: • Stronger winds • Storm surges	• Flooding and storm damage – incl damage to riverine ecosystems & top soil loss • Health impacts related to flooding • Flood and inundation damage to critical infrastructure • Transport challenges • Increased runoff and slope instability • Agricultural impacts – food security

Context setting: climate change in the Western Cape

Projection	Examples of impacts
Increased intensity of winds associated with South Atlantic High Pressure system	• Increased rate of ecosystem drying • Increased evaporation from dams • Increased opportunity for wind farms • Increased sand movement
Extended dry periods between rainfall events	• Drought • Reduced water supply – knock-on effects to livelihoods, cots of water, biodiversity, economies • Potential negative impact on agriculture and biodiversity • Drying of alien vegetation fuelling hotter & more damaging fires
Shifts in seasonality and nature of shifts	• System-wide implications across the ecosystem. E.g. impacts on pollinators, breeding success, food availability, etc
Sea level rise	• Inundation of low-lying coastal settlements

Context setting: climate change vulnerability

Key drivers:

- Climate variability
- Socio-economic challenges with rapid urbanisation
- Ecosystem degradation - dwindling and degraded natural resources
- Legacy of bad planning decisions

Destroyed wetland,
Upper catchment, Duiwenhoks River

Need to adapt by addressing vulnerability & building resilience:

- In ecosystems: Ecosystem-based adaptation
- In society: Community-based adaptation
- In the economy: Green Economy

Darryl Colenbrander/CCT

Glencairn Beach, City of Cape Town

Context setting: addressing climate change in WC

- Climate change impacts complex social, economic & ecosystems
  - Many diverse drivers of vulnerability
  - Difficult to attribute & isolate 1 driver, viz climate change
  - Therefore difficult to assign targets & indicators
  - Remains M&E challenge
- 2009: approx 340 million GJ of energy consumed in WC - projected to continue to grow with current energy consumption patterns
- Very little understanding of climate adaptation and what it means, both within WCG and more particularly in local authorities.
- Formal plans for adapting to climate change at a local and provincial government level not in place (incl. limited inclusion into IDPs)
- Work is in long term, but need to show progress in short term

Opportunities related to climate change

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Resilient Western Cape

Western Cape Government approach to addressing climate change

Strategic

Mitigation

Reducing the causes of climate change

Energy efficiency, renewable energy, sustainable transport

Adaptation

Adapting to the impacts of climate change

Reducing climate vulnerability

- Legislation / policy
- Financing / funding
- Collaboration
- Awareness & capacity building

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Strategic approach

National Climate Change Response Policy

WC Climate Change Response Strategy and Implementation Plan

WC Sustainable Energy White Paper

Climate Change Targets

Climate Change Adaptation Work Group

High level municipal engagement

Energy Work Group

Awareness raising programmes

Financing for upscaling / mass rollout of projects

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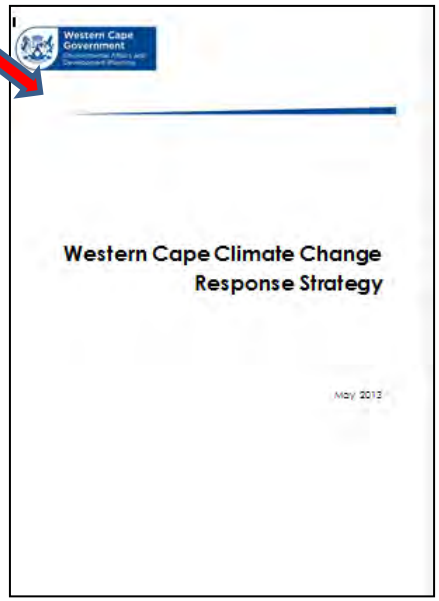
Reviewed Climate Change Response Strategy



- Alignment with National Climate Change Response Policy
- Provide guidance for CC work
- Promote integrated approach to climate change implementation
- Allow for a greater balance between mitigation and adaptation
- Allow for simplified and easy implementation (incl assignment of roles & responsibilities)
- Next step: revised implementation plan

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Implementation Framework

The Climate Change Implementation Framework will include details on:

- Key actions, including timeframes, responsibilities, targets
- The financial requirements for the implementation of key actions
- The monitoring of the Climate Change Response Strategy and Implementation Framework
- Development of monitoring and evaluation mechanisms and tools

Strategic approach: select Provincial climate change outcomes and targets

- Provincial Integrated Energy Strategy / Policy Developed by end March 2014.
- 15% electricity reduction for all provincial buildings in the CBD and 3 hospitals by end March 2014.
- 10% reduction in energy intensity (i.e. energy consumption / GDP) in Western Cape by 2014 (off a baseline of 2009) - *questioned*.
- 132 MW of energy supplied by renewable energy sources in the Western Cape by end 2014.
- Manufacturing hub for renewable energy and green economy businesses established by end 2013.
- Developed sustainability criteria for low income developments in the province before end March 2014.
- New buildings built by PGWC to meet 4 star GBCSA standards or be built according to green building principles where GBCSA standards are not in place by 2014.
- 13% modal shift from private to public transport by 2014.
- Tonnage freight transport by rail, rather than road increased by 10% by 2014

Strategic approach: select Provincial climate change outcomes and targets

Adaptation: proposed

- Develop proxy indicators to gauge development of climate resilience in society, economy and ecosystems across province by December 2013
- Collect climate adaptation project information from multiple stakeholders across the province by March 2013
- Institutional framework and mechanism to continue collecting and weighting climate adaptation project info by March 2014
- Institutional framework and mechanism established to continue collecting climate adaptation and vulnerability data by March 2014

Strategic approach: Provincial climate change outcomes and targets

- Targets constantly under revision
- Challenge in measuring particular targets (hence: some focus on development of proxy indicators)
- Working to collect or improve baseline data
- Assigning accountability to various role players
- Development of longer term targets
- Challenged by setting targets for direct control versus influence

Collaboration: Provincial strategic objectives

12 Provincial Strategic Objectives (PSOs) for the Western Cape

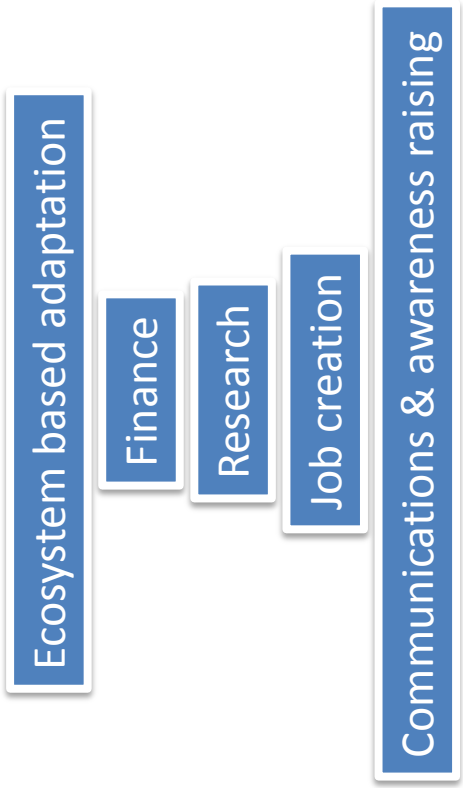
- Cross sectoral working & co-ordinated approach to addressing strategic issues. Incl all relevant WCG departments, national government depts, local government reps & reps from tertiary institutions, NGOs, business organisations etc.
- Key challenge - departments / organisations to take ownership of targets
- While climate change related issues should be integrated into most PSOs, for now, there are a number of work groups within the PSOs that have a specific focus on climate change related work.

Collaboration: climate change related working groups

- Climate Change Adaptation Work Group: To improve the Western Cape's resilience to climate change
- Sustainable Resource Management Work Group: To implement programmes and projects towards managing our natural resources sustainably, without compromising ecosystem integrity (includes water security and air pollution)
- Land Use Planning Work Group: To ensure co-ordinated and integrated land use planning throughout the Province
- Energy Work Group: To ensure sustainable energy resources and reduce the provincial carbon footprint in the Western Cape
- Green Economy Work Group: Western Cape as a green economic hub

Western Cape focus areas

- Energy efficiency and demand side management
- Renewable energy
- Sustainable Transport
- Water security
- Built environment
  - Critical Infrastructure
  - Air quality & emissions
  - Waste Management
- Biodiversity
- Food security
- Social resilience (focus health sector adaptation)
- Coasts and Fisheries



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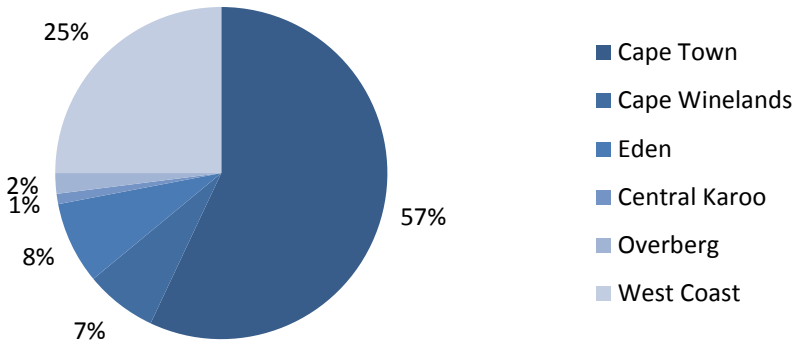
ALIGNED WITH NATIONAL FLAGSHIPS AS FAR AS POSSIBLE

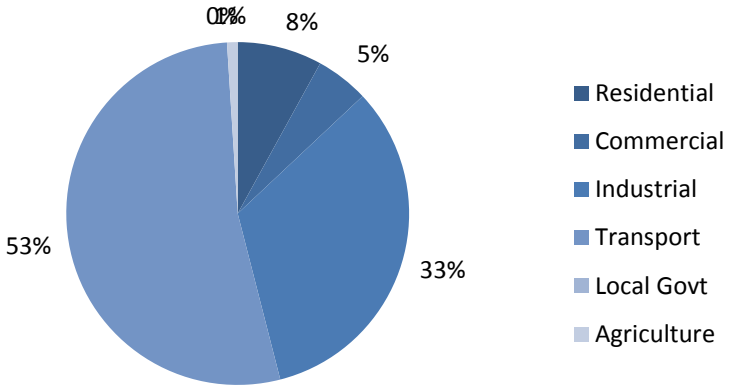
Energy efficiency and DSM: current / planned projects

- Energy consumption and GHG emissions database for the WC

Districts as % of Provincial Energy Total



Energy Use by Sector for the Western Cape, 2009 (GJ)



Energy use by district/metro in the Western Cape Province

Energy efficiency and DSM: current / planned projects

- Energy consumption and GHG emissions database for the WC
- Energy efficiency projects database
- TravelSmart campaign and greening of government fleet
- Energy efficiency in low income areas (e.g. hot box)
- Dept Human Settlements: building orientation; thermal efficiency; building materials; SWH; building contracts
- Supporting development of sustainable energy plans for municipalities (4 nearing completion)
- SWH rollouts – low and mid/high income
- Provincial Buildings energy efficiency (initial focus on hospitals & CBD)

Energy efficiency: project focus: Solar water heaters

- Pilot project of 1 500 SWHs in low income areas completed (2008 – Jan 2011)
- Strategy for mass rollout - October 2010. Take up needs to be assessed.
- Support for municipalities regarding contracts and maintenance of systems.
- Low pressure system rollout – clarity urgently needed from DoE.
- Different strategy needed for mid – high pressure systems – CCT and Nelson Mandela Bay examples.
- Glass tubes for the SWHs are being imported from China. The local manufacture - being explored by GreenCape.

Energy efficiency: project focus: WCG buildings

Internally:

- energy audits of Provincial buildings;
- retrofit in Department of Agriculture;
- Department of Health implemented energy efficiency measures, pilot energy metering at GSH & post to collate energy baselining (also work with DoE & DT&PW)
- retrofits as buildings are refurbished

Externally:

- awareness programmes to communities and hospitality industry (LIMITED)
- Industrial energy efficiency promotion through NCPC programme

Next steps:

- Identify how to overcome financial management obstacles
- Source funding (potentially through grouping projects across municipalities)
- Share best practice ideas
- Expand to work actively with other sectors.

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Renewable energy

- Focus on wind (primarily large scale), PV, solar water heaters (SWH) and waste to energy
- GreenCape (under DED&T) established in November 2010 as a special purpose vehicle to drive the green economy in the WC – to date focused on renewables, but expanding to broader green economy.

greencape
powering the renewable evolution

- Regional strategic environmental assessment of sites suitable for wind energy facilities in the WC. Balancing the interests of wind energy, agriculture, tourism, communities and biodiversity. Linking with national wind and PV SEA.
- Need to focus more on localised, small scale renewables and simple solutions (e.g. the wonderbox)

Sustainable transport

travel SMART

- Road to rail
- Sustainable transport planning
- Fleet greening

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Challenges: capital costs, public transport infrastructure & safety, mandates

Water security

Water scarcity – affecting crops, communities and industry – Dept Agriculture; Economic Development; Water Planning:; Public Works. Includes water retrofits of public buildings, integrated water management plans, more crop per drop, water pricing and effects on communities and economy

green drop
CERTIFICATION
waste water service
REGULATION

blue drop
CERTIFICATION
drinking water quality
REGULATION

MORE CROP PER DROP™

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Challenges: sustaining change, lack of urgency, focus on supply vs demand side, ‘full allocation’

Built environment: coastal management

Sea level rise (SLR) – salt water intrusion & coastal flooding. SLR projects conducted for Eden, West Coast and Agulhas (CCT own)

Challenges: competing land uses, short term vs. long term costs (proactive vs. reactive financing), capital costs

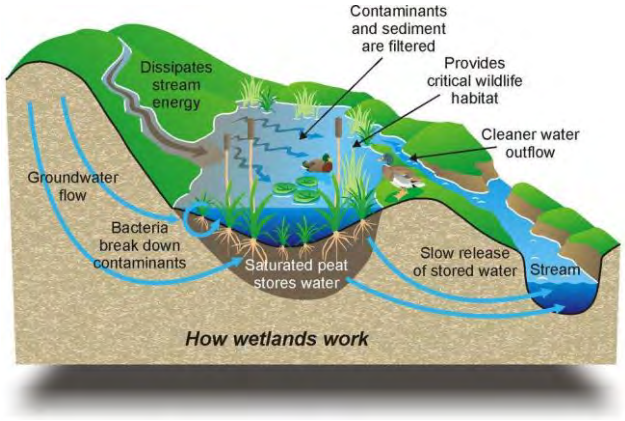
Built environment: disaster risk management

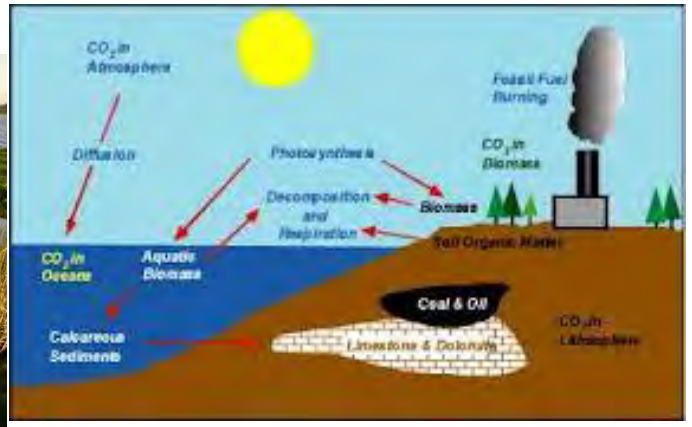
- Cost of damages in WC:
  - March 2003 to November 2008: 11 severe weather events with costs > R2.5 billion.
  - 2009/2010 Eden District Drought (R300 mill)
  - 2011 Eden District Foods (R350 mill)
  - 2012 Floods (R500 mill)
- Localised storms also v disruptive to local economies with municipalities ultimately bearing the brunt.
- Damages from unmitigated climate change could range between 5% and 20% of GDP annually by 2100 & huge social impacts

- Ecosystems approach:
  - Wetlands for flood attenuation & slow water release throughout dry months
  - Barrier dunes: Coastal barrier to storm surges

Challenges: ID critical & vulnerable infrastructure; CC considered in new infrastructure

Biodiversity





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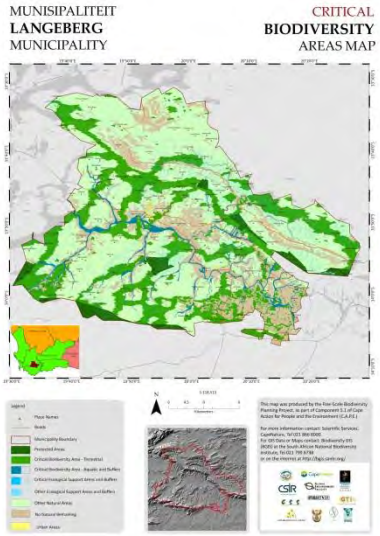
Challenges: valuing and mainstreaming

Biodiversity

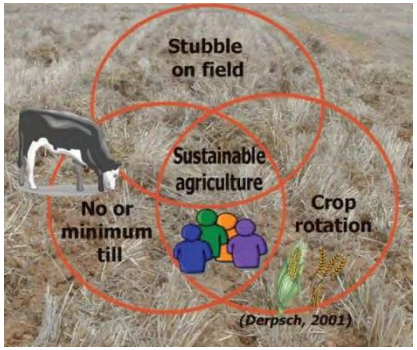
- CBAs/ESAs/finescale planning
- Corridors
- Stewardship programme
- Eco system valuation
- Fire management



Challenges: conserving land for long term, intangible needs, funding, mainstreaming of valuation, costs of fires & damage to biodiversity

Food security

- Exploring alternative crops and testing under drought conditions
- Conservation farming programme – crop rotation, more efficient use of water (satellite system), reduced fertilisers
- Sewage treatment to reduce water used and using as energy source; further investigating biogas
- Renewable energy demonstration farm planned
- Monitoring of plant and soil changes



Challenges: focus on agricultural productivity (vs. full system), cost of changing crops in face of uncertainty, farmers used to uncertainty

Social resilience

Challenges: most vulnerable comms, funding, mainstreaming, short term versus long term focus, massive urbanisation, health system preparedness

Social resilience: Health sector focus

- It has been recognised that the WCG needs to start addressing health adaptation issues on a provincial basis
- WCG DoH Climate Change Committee established.
- Focus areas:
  - Provision of environmental friendly services at health facilities (focus on water and energy efficiency, waste minimisation, substitution of harmful chemicals, travel strategies, sustainably grown food, safer & more sustainable products)
  - Health service preparedness for the consequences of climate change (incl. early warning systems)
  - Impact of CC on the health status of the population.
- Key links being established with UCT for Masters and PhD students to focus on climate change and health issues.

Coasts and fisheries

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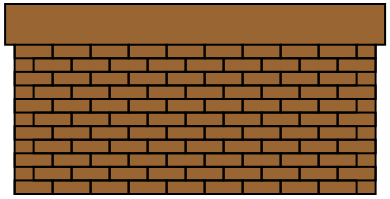
Challenges: not yet co-ordinated at WCG level; still to identify areas of focus

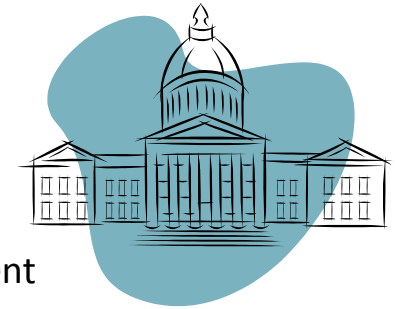
Enablers

Financing



Addressing barriers to financing (e.g. MFMA, PFMA

Innovative means of financing



Role of government

Communications

M&V

- Uncertainty
- Challenge in identifying causal links
- Baselining
- Systems / databases
- Working with national on adaptation, but not mitigation

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Supporting municipalities

- Development & implementation of sustainable energy plans and climate change adaptation plans - 4 municipalities for each in year one (2012/13)
- Integration into IDPs (incl use of DEA toolkit) & SDFs
- Identifying funding and financing opportunities
- Partnership approach
- Year 2 (2013/14):
  - 2 new municipalities for each plan
  - Knowledge portal for sharing of information / learning
  - Twinning of municipalities

Way forward

- Finalise and release WC Climate Change Response Strategy and develop Implementation Plan.
- Further expand the Climate Change Adaptation and Energy work groups – all stakeholders & stronger links with other PSOs and work groups.
- Continue to develop database of adaptation projects implemented or being planned in the Western Cape & identify gaps
- Develop database of mitigation projects implemented or being planned in the Western Cape & identify gaps
- Assign accountabilities for targets and reassess key WCG projects
- Continue to support municipalities more closely to develop and implement sustainable energy and climate change adaptation plans
- Find funding, develop financial mechanism models and help develop methodologies to rollout projects at scale

Final challenge: how do we instil a sense of urgency?

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