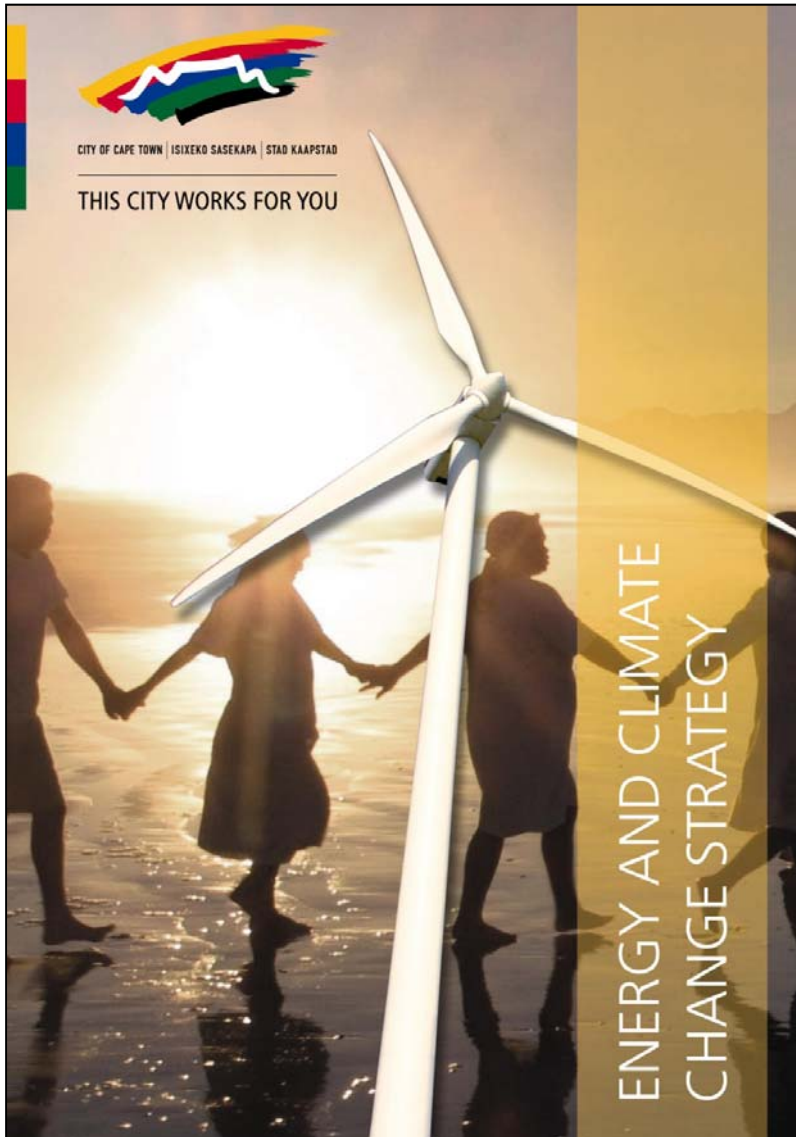




CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

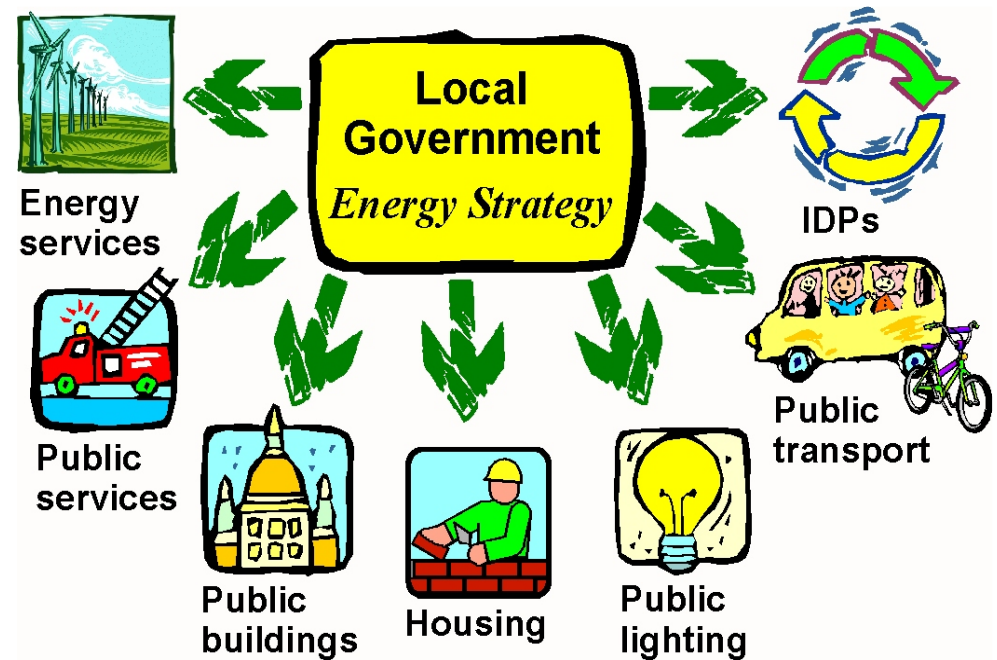


## Institutionalising Energy and Climate Change in the City of Cape Town

**Sarah Ward**  
**Energy and Climate Change**  
**City of Cape Town**

# Contents

- History of E&CC in the City of Cape Town
- Energy and Climate Change Strategy
- Data analysis of E&CC for CCT
- E&CC institutional arrangements in the City
- Projects



# HISTORY

Partnerships with energy  
NGOs and research

State of Energy Report  
2002

Draft Energy & Climate  
Change Strategy 2002  
analysis

Cape Town Energy  
Futures 2006

Energy & Climate  
Change Strategy 2006  
approved

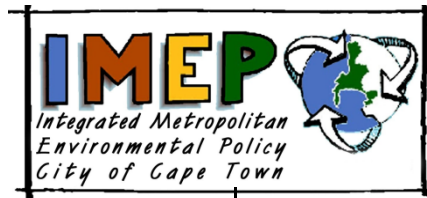
State of Energy Report  
2007

Institutional change –  
Strategic Focus Area 3  
Energy Committee  
(political)  
Cross council work  
streams

# Key issues which the Energy and Climate Change Strategy seeks to address:

<b>Energy security</b>	➤ electricity crisis, rising oil price – diversify supply, focus on energy efficiency
<b>Carbon mitigation</b>	➤ implement energy efficiency and renewable / cleaner energy sources
<b>Economic development and competitiveness</b>	➤ establish low carbon economy, ensure sufficient energy to support sustainable development
<b>Energy poverty</b>	➤ access to energy services, fire, indoor air pollution, unsafe fuels; high expenditure by poor households
<b>Transport</b>	➤ congestion, inadequate public transport, brown haze
<b>City form</b>	➤ sprawl, poor furthest from urban goods, long commute = high cost
<b>Council operations</b>	➤ inefficiency and financial waste, Council to lead by example
<b>Impacts of climate change</b>	➤ risk and adaptation, climate proofing of vulnerable communities and ecosystems

# The Energy & Climate Change Strategy



State of Energy Report

1. 2003 and 2. 2007

Energy & Climate Change Strategy 2006



IDP  
Strategic Focus Area 3  
Energy for a Sustainable  
City  
2008

## Goals of the Strategy

A leading African City in meeting Energy needs in a sustainable way

Access to appropriate, affordable, safe and healthy energy services

Efficient energy use and management

Efficient and equitable transport system based on public transport and compact planning

A city where energy supports economic competitiveness and increases employment

The Strategy sets out specific targets to achieve this vision derived from modeling.

It also identifies projects to implement to achieve these targets.

# **E&CC Strategy: Summary of key energy targets per sector**

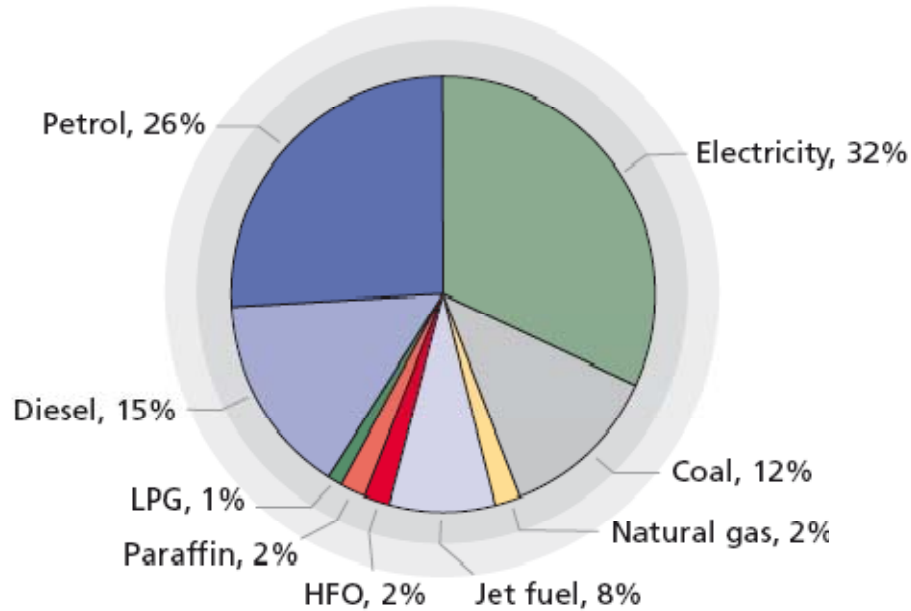
## **DERIVED FROM LEAP MODELING (Cape Town Energy Futures Report)**

<b>Residential</b>	<ul style="list-style-type: none"> <li>➤ 10% households to have Solar Water Heaters by 2010, 50% by 2020</li> <li>➤ All new subsidy housing to have ceilings; all existing homes to be fitted with ceilings by 2020</li> </ul>
<b>Transport</b>	<p><b>By 2010 (from 2005 levels)</b></p> <ul style="list-style-type: none"> <li>➤ 10% increase in rail transport share of modal split</li> <li>➤ 10% decrease in private vehicles commuting into city centre</li> <li>➤ Non-motorised transport strategy operational by 2015</li> </ul>
<b>Government</b>	<ul style="list-style-type: none"> <li>➤ 12% energy efficiency in all municipal buildings by 2015</li> </ul>
<b>Commerce and Industry</b>	<ul style="list-style-type: none"> <li>➤ 10% increased energy efficiency in industrial and commercial facilities by 2010</li> </ul>
<b>Energy Supply</b>	<ul style="list-style-type: none"> <li>➤ 100% of formal households connected to electricity from 2005</li> <li>➤ 90% of informal households connected to electricity by 2010</li> <li>➤ CO<sub>2</sub> emissions reduced by 10% from 2005 levels by 2010</li> <li>➤ 10% Renewable Energy Supply by 2020</li> </ul>

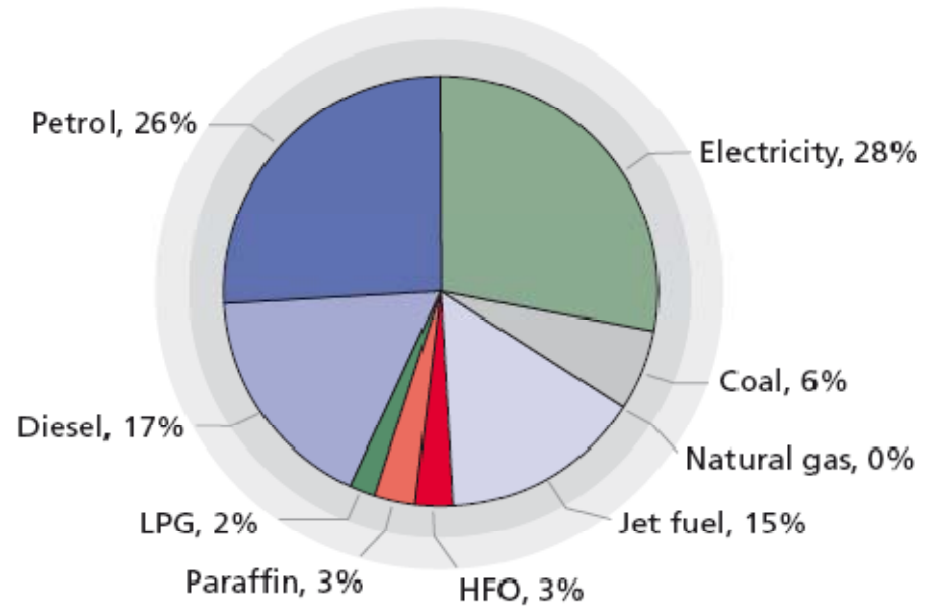
# Demand

## What are the main fuel sources being used?

### Metros

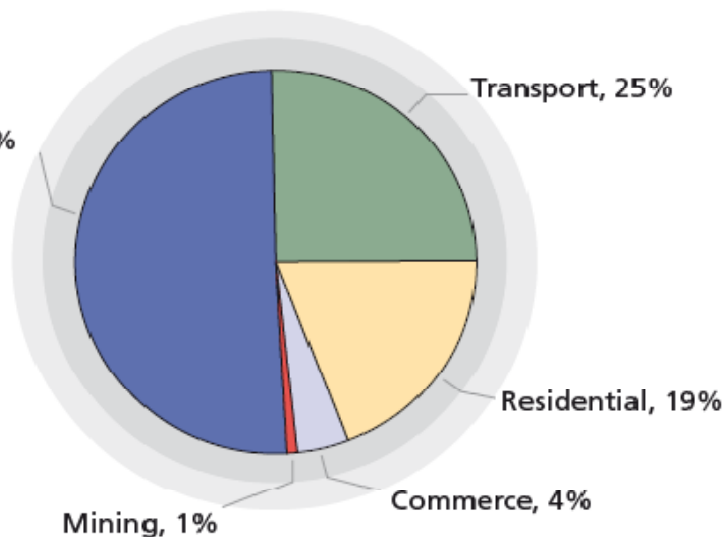


### City of Cape Town

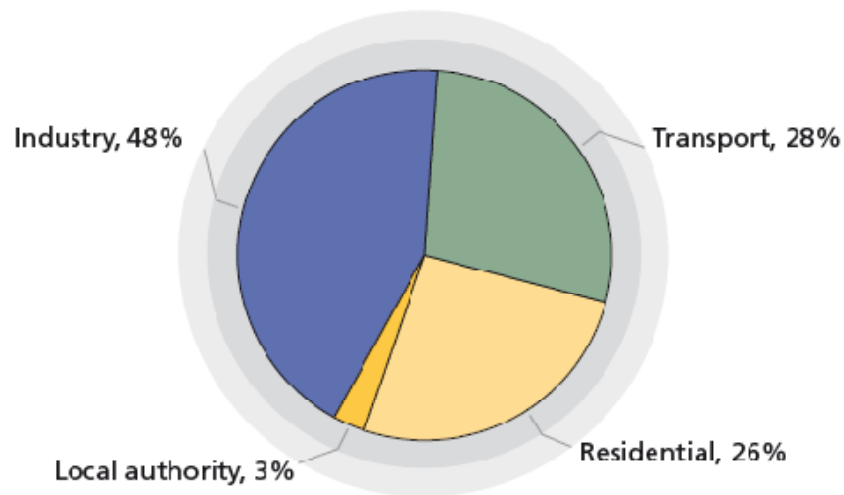


# Demand CO<sub>2</sub> by sector

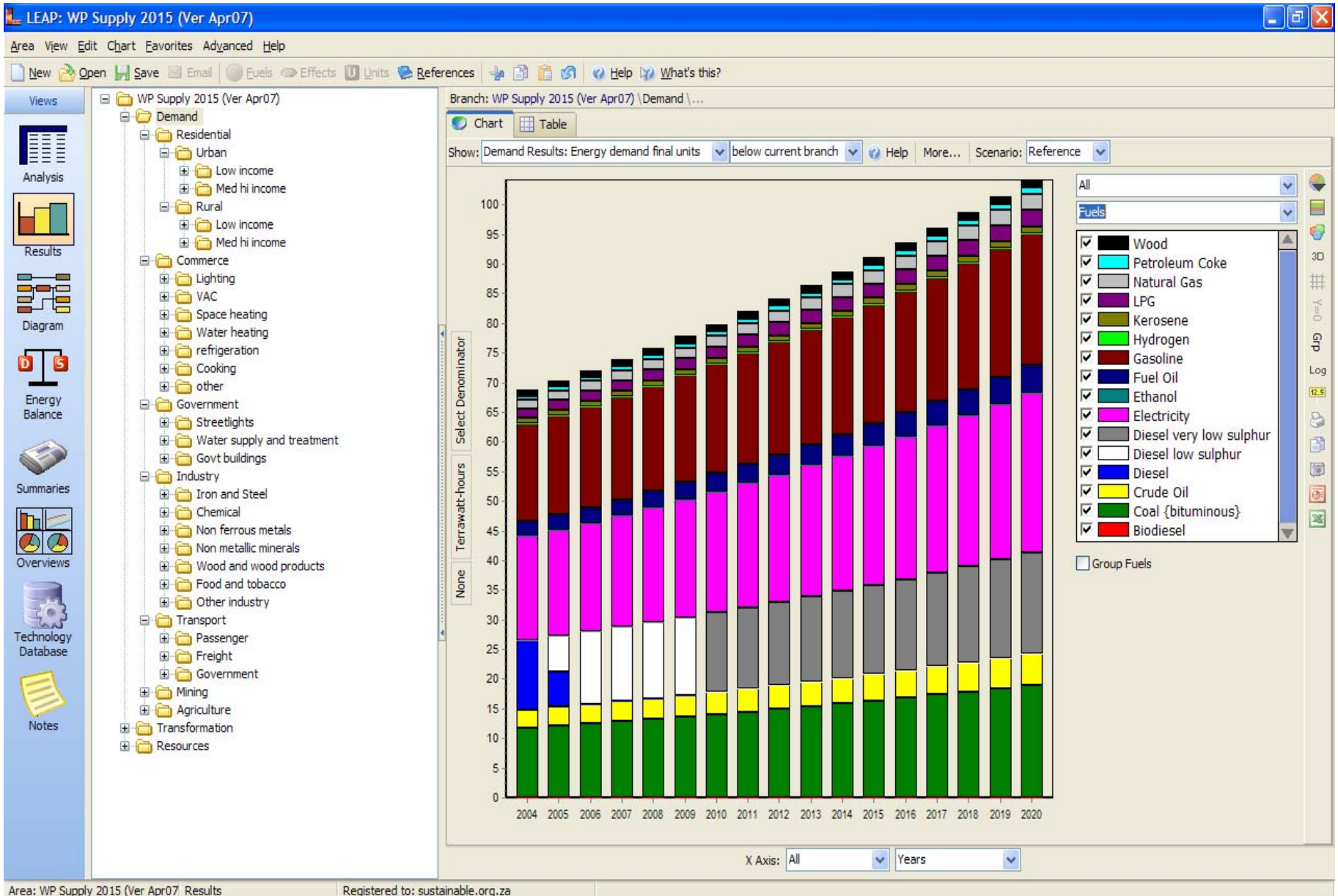
## South African Cities Network



## City of Cape Town



# Cape Town Energy Futures LEAP Modelling

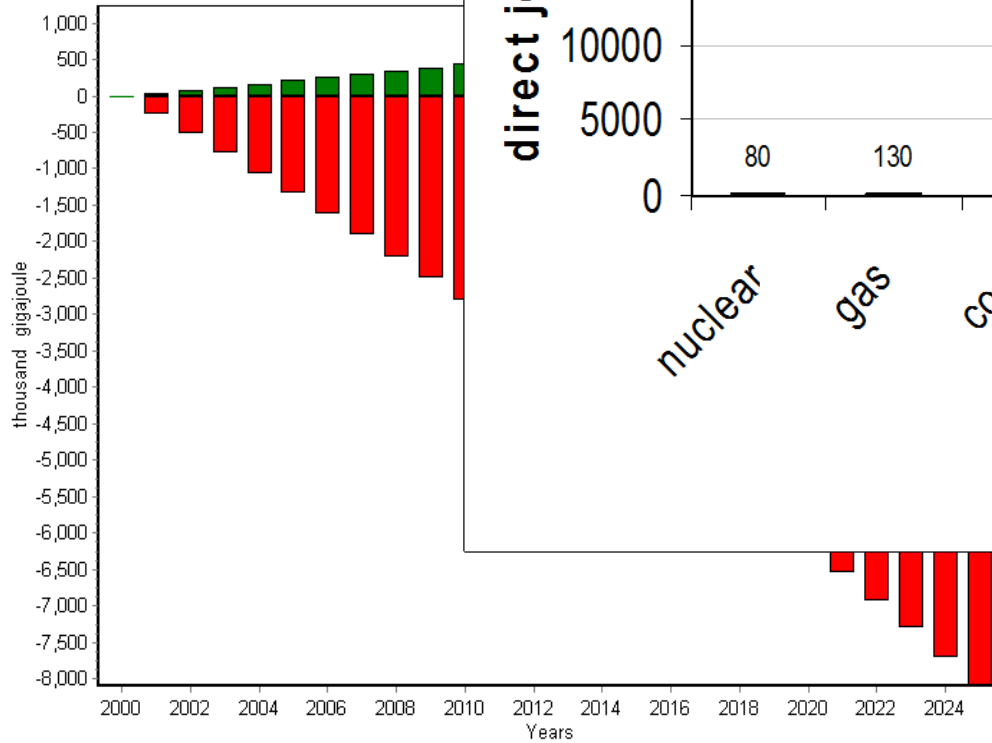


# The economic, social and environmental case is clear....

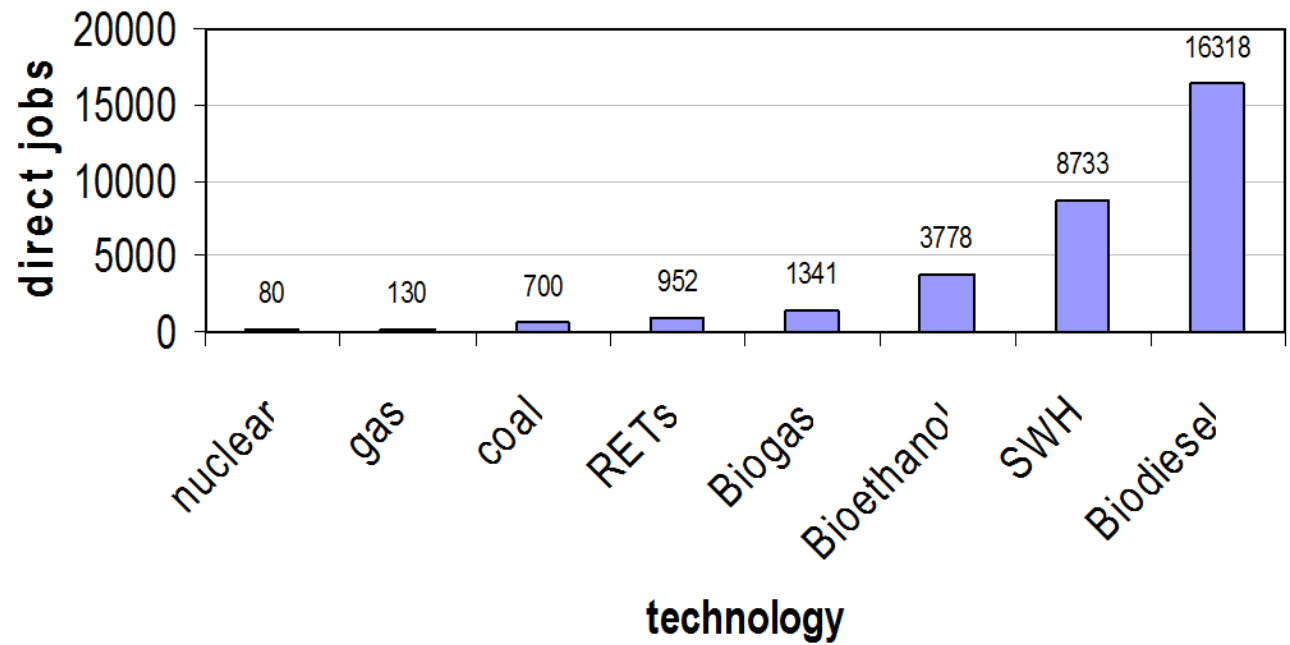
Savings of efficient li

Comparison of e  
modal shift to p

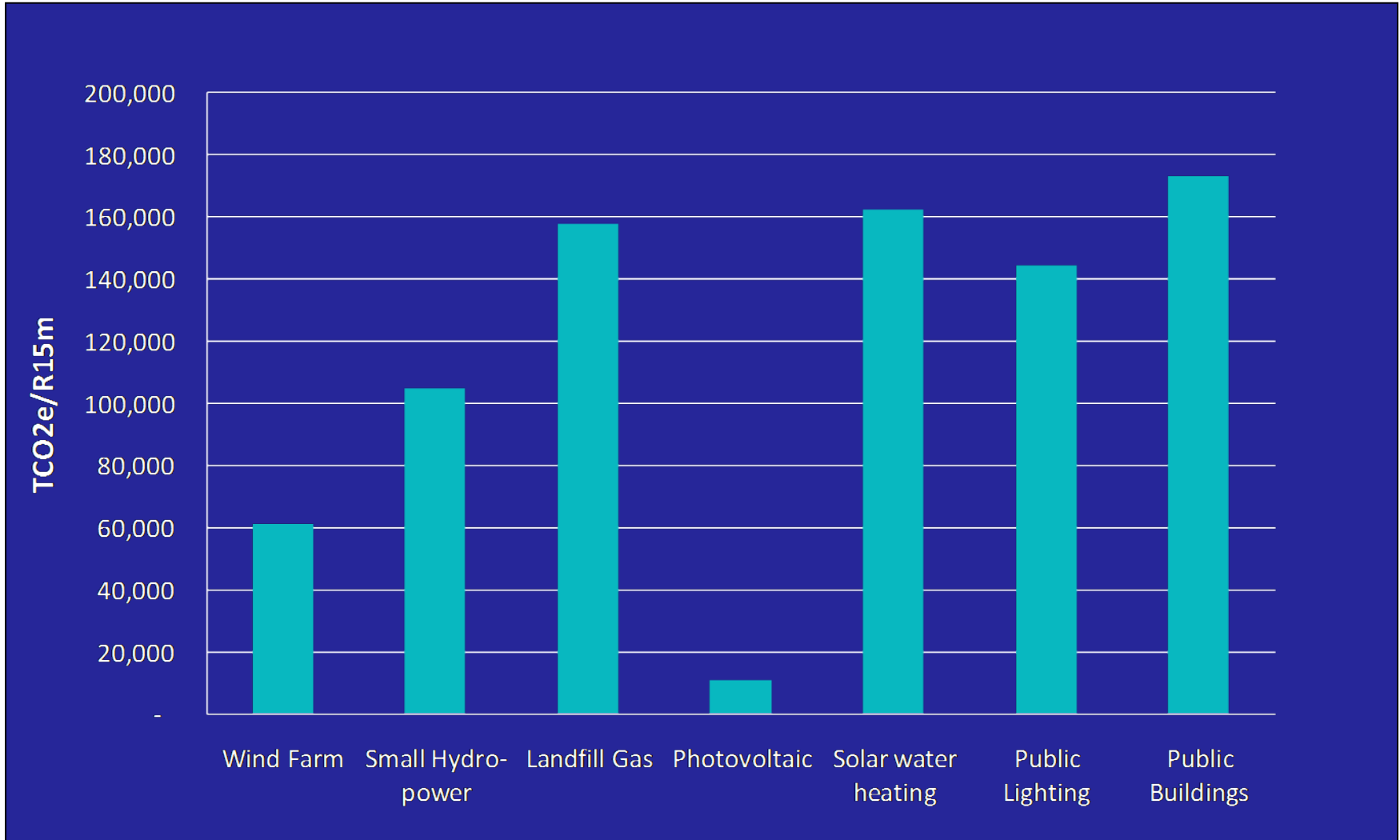
R 11



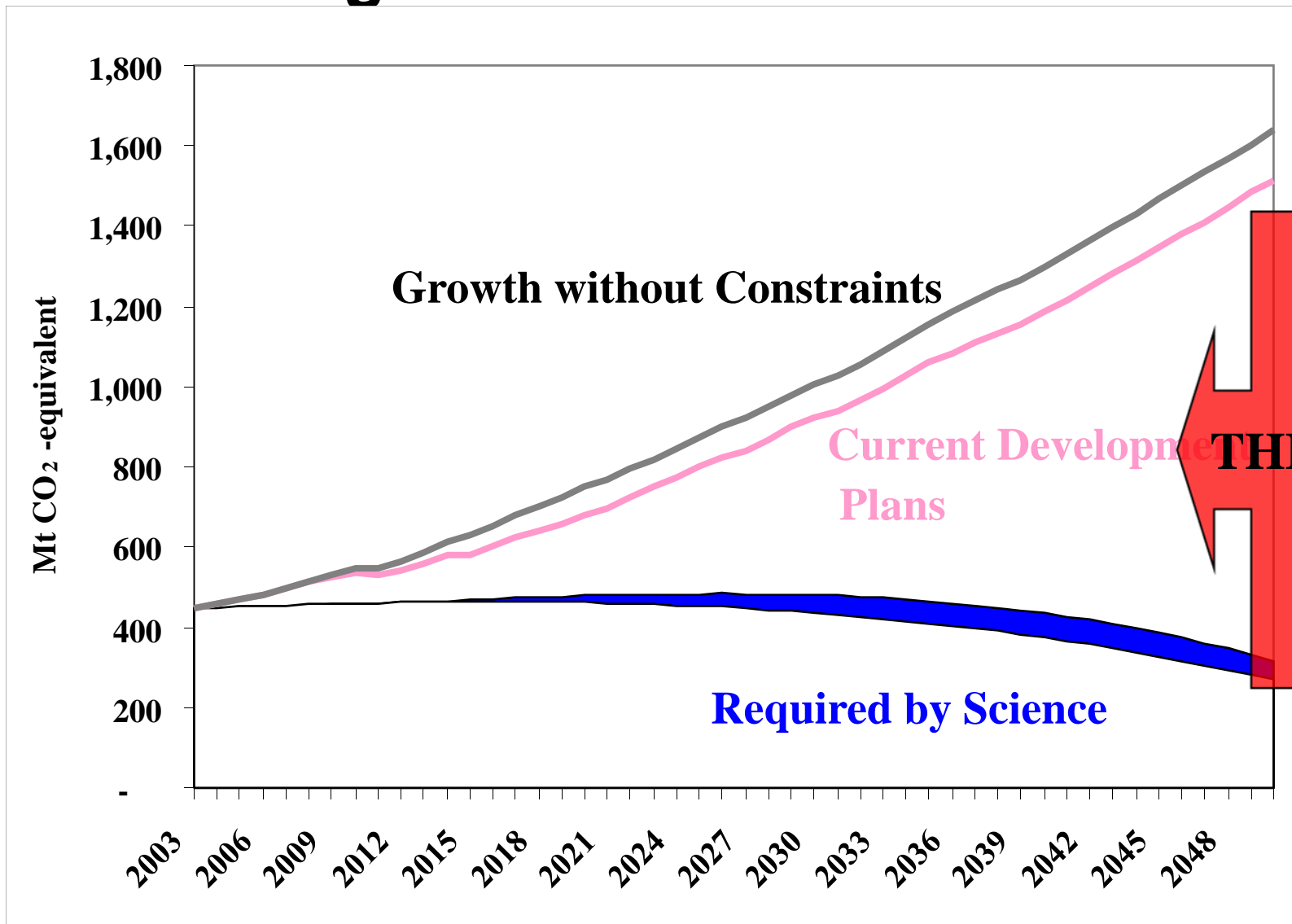
Comparison of all generation technologies:  
gross direct jobs/TWh-equivalent



# Carbon emissions prevented



# Long Term Mitigation Scenarios – National government commitment



# Western Cape Energy Targets - 2008

ACTION	TARGET	DATE
1. Renewable Energy generation (electricity only) in the Western Cape off the current consumption baseline of 4200MW	15% 1172MW of new RE needed by 2014	by 2014
2. Renewable Energy purchased by Provincial Government	10%	by 2010
3. Energy Efficiency against business as usual scenario	15%	by 2014
4. Carbon dioxide emissions reduction (in 2000 levels)	14%	by 2014

WC to establish CDM office for the Province – support development of programmatic CDM projects

# Institutional developments to address E&CC

Energy Committee Section 80

EMT Sub-committee

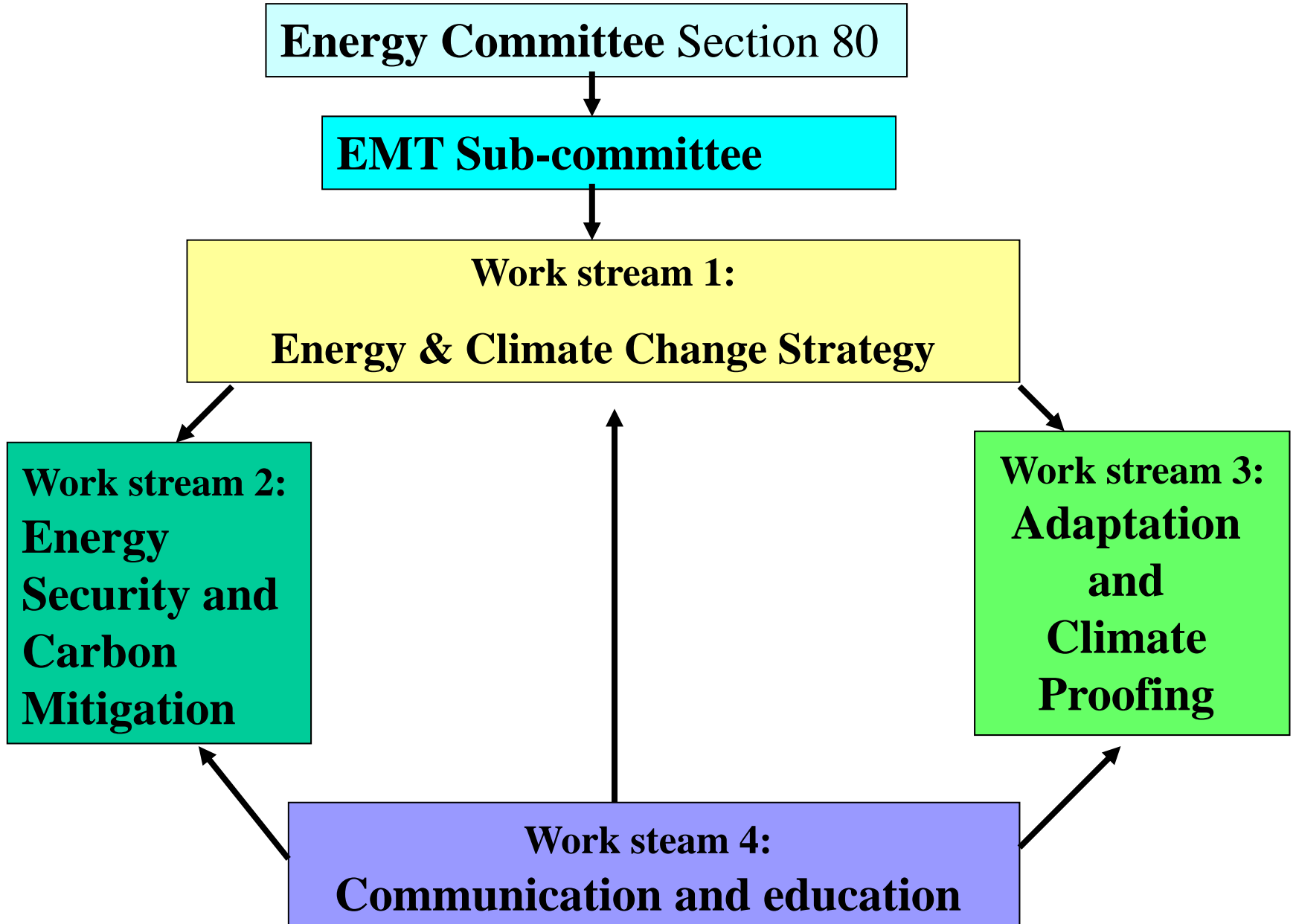
Work stream 1:

Energy & Climate Change Strategy

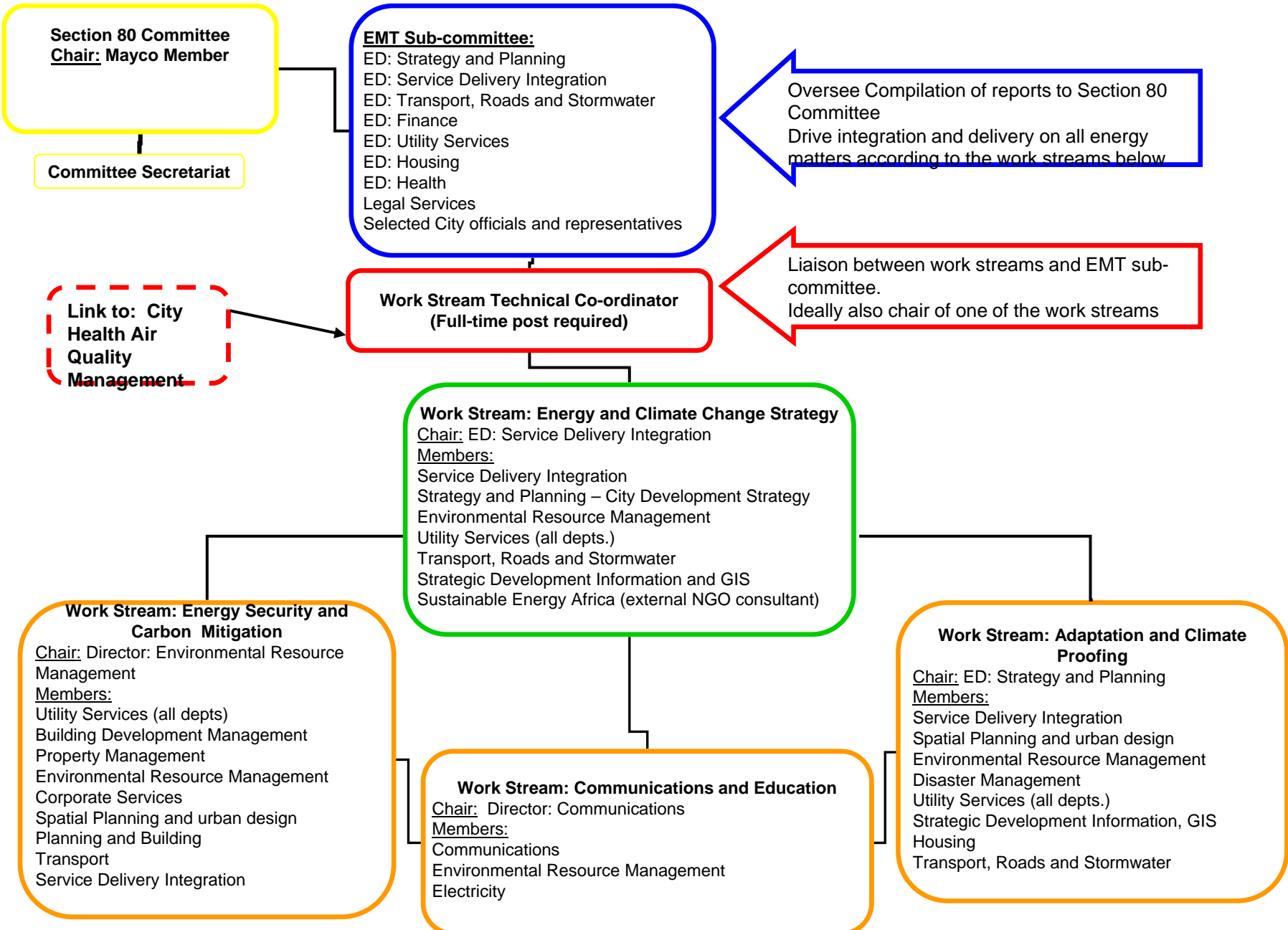
Work stream 2:  
Energy  
Security and  
Carbon  
Mitigation

Work stream 3:  
Adaptation  
and  
Climate  
Proofing

Work steam 4:  
Communication and education



# Institutional Structure and Work Streams



# Work stream 1: Energy & Climate Change Strategy

Chair: ED Service Delivery Integration, Mike Marsden

	Focus areas	Actions / business plans
1	<b>Monitor, evaluate and review E&amp;CC Strategy</b>	<ul style="list-style-type: none"><li>▪ Set up M&amp;E system for all E&amp;CC activities</li><li>▪ Set up review system for E&amp;CC Strategy</li></ul>
2	<b>Oversee and facilitate implementation of action plans as produced by work streams 2 – 4</b>	<ul style="list-style-type: none"><li>▪ Oversee and facilitate development of action plans by the work streams 2-4</li><li>▪ Oversee and facilitate implementation of action plans</li><li>▪ Assess achievement of KPAs on Score Cards</li></ul>

# Work stream 2: Energy Security and Carbon Mitigation

Chair: Director Env Resource Management, Ossie Asmal

	Focus areas	Actions / business plans
1	<b>Electrical efficiency (10%+ electricity saving)</b>	Management of demand and supply Sectoral action plans for : <ul style="list-style-type: none"><li>• Industrial</li><li>• Residential (SWH programme!)</li><li>• Commercial</li><li>• Buildings</li></ul>
2	<b>Energy supply security</b>	Diversification of sources of supply Generation by City Energy efficiency across all sectors Load management
3	<b>Council operations and systems</b>	Action plans to cover : <ul style="list-style-type: none"><li>• Buildings and other facilities (workshops etc)</li><li>• Water pumping / sewerage pumping</li><li>• Waste minimisation and methane projects</li><li>• Fleet tenders and management</li><li>• Greening of the procurement policy</li></ul> Institutional development: eg management of CERs, energy savings

# Work stream 2 cont: Energy Security and Carbon Mitigation

Chair: Director Env Resource Management, Ossie Asmal

	Focus areas	Actions / business plans
4	<b>Renewable energy and cleaner energy sources</b>	Action plan for RE development <ul style="list-style-type: none"><li>▪ Financing</li><li>▪ Tariffs</li><li>▪ Network development / management</li><li>▪ Power Purchase Agreements</li><li>▪ Support to Independent Power Producers</li></ul>
5	<b>City form and urban edge</b>	Spatial development which prioritises energy efficiency <ul style="list-style-type: none"><li>• Development of activity routes, densification, urban edge</li><li>• Priority given to public transport over private</li></ul>
6	<b>Transport Energy</b>	Metropolitan Transport Authority Plans to promote: <ul style="list-style-type: none"><li>▪ Public transport</li><li>▪ Alternative fuel and fuel efficient vehicles</li><li>▪ Non-motorised transport</li><li>▪ Energy efficient traffic management</li></ul>

# Work stream 3: Adaptation and Climate Proofing

Chair: ED Strategy and Planning, Piet van Zyl

	Focus areas	Actions / business plans
1	<b>Adaptation</b>	Plan to reduce / contain impacts Risk analysis incorp. into spatial planning and infrastructure planning and management Disaster Management
2	<b>Access to energy for the poor and climate proofing of vulnerable communities</b>	Identification of vulnerable communities – esp low income Prioritisation of interventions: <ul style="list-style-type: none"><li>▪ Energy sources – safe, affordable, efficient</li><li>▪ Energy efficient housing (ceilings in all houses, compact housing)</li><li>▪ Food gardens</li><li>▪ Water tanks</li></ul>

## Work stream 4: Communication and education

Chair: Director Communications, Pieter Cronje

	Focus areas	Actions / business plans
1	<b>Overall communication of new energy future for Cape Town</b>	Energy efficiency, public transport, renewables, solar water heaters, recycling. low carbon economy..... Council leading by example
2	<b>Internal education and communication plan</b>	All city departments
3	<b>Sectoral communication and education plan</b>	Plans addressing characteristics and needs of different sectors and income groups

# Plans, policies and projects

## Existing

- Integrated Metropolitan Environmental Policy (IMEP)
- Energy and Climate Change Strategy 2006
- Air Quality Management Plan 2006 Air Quality By-law (in review)
- Integrated Transport Plan 2006
- Integrated Waste Management Plan 200? By-law in development
- Power Purchase Agreement with Darling Wind Farm
- Free Basic Electricity scheme

# Projects

- Energy efficient housing
- Electricity consumption reduction
- Adaptation
- Energy efficiency
- Renewable energy
- Council operations
- Carbon trading

# EE housing, climate resilience, adaptation

## Low income housing projects

- Kuyasa: first CDM project in Africa, only housing one? 2300 units with ceilings, ee lighting, low-flow, SWH
- Council rental stock upgrade (CRU project): 40 000 units resource efficiency – ee lighting, low flow, ceiling insulation, SWH .
- Greenfields developments: tender to green the housing spec
- Programmatic CDM potential under investigation

## Sea level rise risk analysis –

- integration into Environmental Management Frameworks and Spatial Development Frameworks

# Electricity consumption reduction

- Power Conservation Programme (as per Eskom instructions)
- Communication campaign
- Green Buildings Guidelines
- SWH by-law – being prepared to go out for public participation
  - Workshops with industry / installers / possible endorsement of companies by Council
  - SWH in reserves / other council facilities

# Renewable energy

- Darling Wind power purchase agreement – current development of green power purchasing scheme – green energy certificates
- RE strategy development for City:
  - Net metering
  - Support for RE Independent Power Producers
  - Increasing City's share of green power

# Council operations

- Energy efficiency in Council Buildings Programme:
  - 200 Council buildings; now priority 16 blgs being assessed for retrofitting
- Greening of Procurement Policy: review of fleet tender etc
- Landfill gas – MoU with CEF to do scoping
- Water pumping projects
- Sewerage Biodigestors

# Transport

- Bus Rapid Transit programme
- Non-motorised mobility programme.....
- Rail?

Other.....

2010 offsets

# Critical issues for development of E&CC sector

## ➤ Institutional

- Cross cutting sector – need great deal of coordination between departments
- New area for the City to engage in – no blue print
- Lack clarity re EDI/REDS restructuring process
- Support for City initiatives from Province and National

## ➤ Legal

- MFMA and associated procurement complexities
- City mandates re energy
- Dependence on national developments (feed-in-tariff, subsidies for renewables etc)

## ➤ Human capacity

- Need dedicated staff in a number of positions and departments
- Complex and new sector – variety of specialist skills needed

## ➤ Finance

- New area for City to finance, but also an area which can realise significant savings and income – ring fencing of carbon income and energy savings???
- City 'dependent' on income from electricity sales for cash flow and to subsidise activities

# Carbon Work Group

- cross departmental (20 members) including legal and finance departments!!
- Intend to employ a Carbon Projects Manager

## Challenges

- Little in-house capacity to take this on
- No experience in carbon trading
- Many potential and actual projects – most with little carbon return: need programmatic /bundling approach – even more complex
- Upfront financing for projects
- Funding for project development costs
- City can't take risk with city funds
- 3 year 'restriction' on contracts
- Unsolicited bids
- Ringfencing an energy fund made up of carbon income and energy savings
- Policies and regulations which prevent carbon trading...?

# Thank you

Sarah Ward

Energy & Climate Change

City of Cape Town

Six Chix



# Six Chix

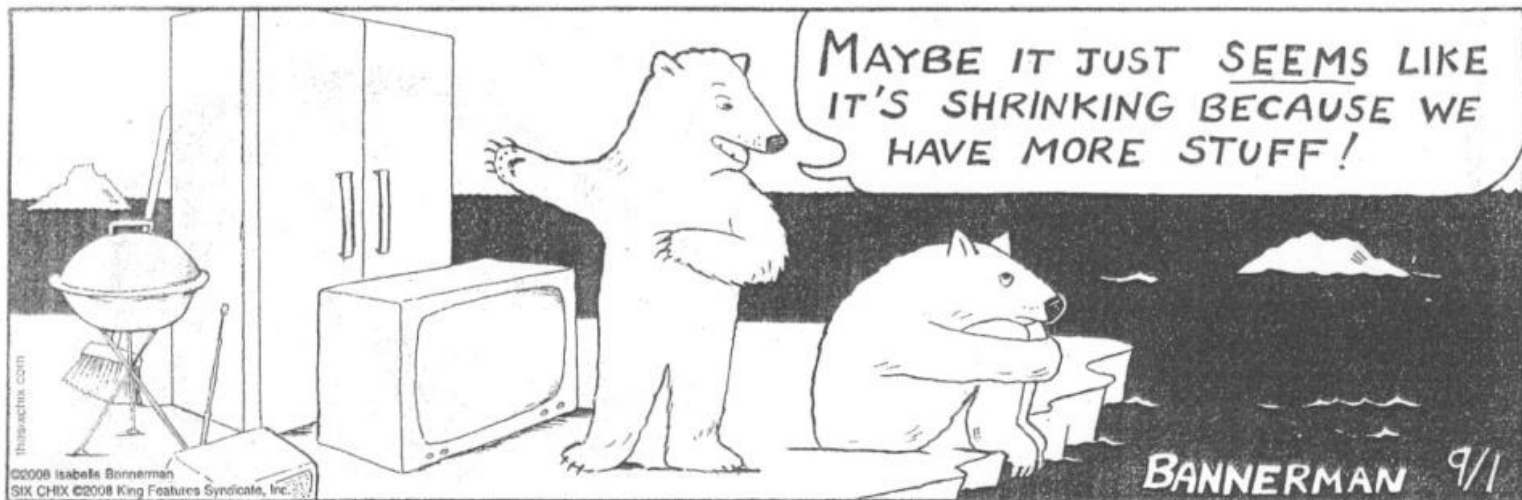


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# Six Chix



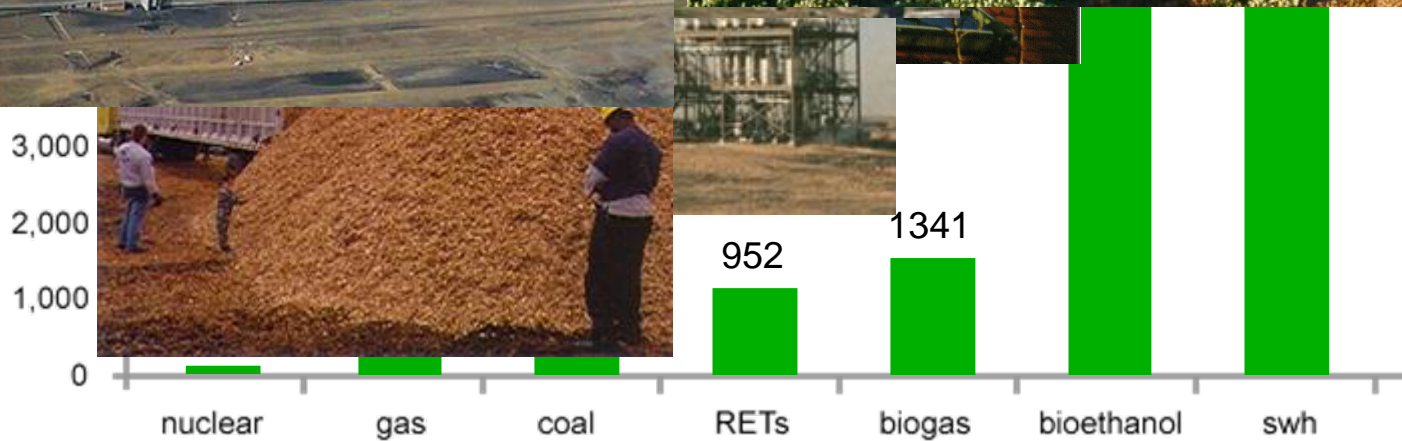
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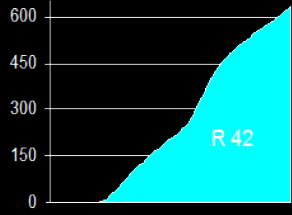
BANNERMAN 9/1

# Jobs for Africa / TWh SECCP 2003

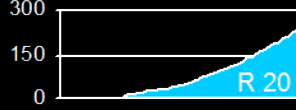
Technologies: Gross Direct Jobs



Escalating CO2 tax



Nuclear, extended



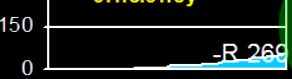
Electric vehicles with nuclear, renewables



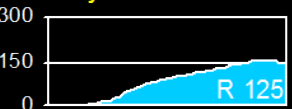
Renewables, extended



Improved vehicle efficiency



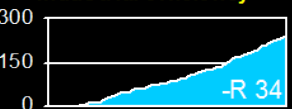
Subsidy for renewables



Renewables with learning, extended



Industrial efficiency



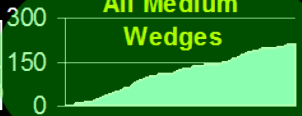
Nuclear



Renewables



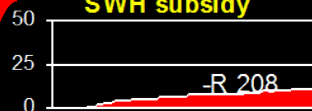
All Medium Wedges



All Small Wedges



SWH subsidy



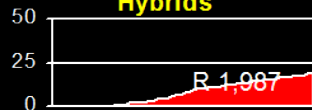
CCS 20 Mt



Biofuel subsidy



Hybrids



Residential efficiency



Cleaner coal



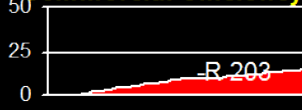
Fire control



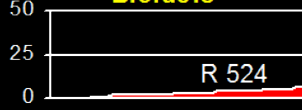
Electric vehicles in GWC grid



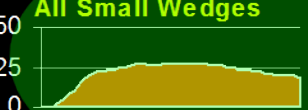
Commercial efficiency



Biofuels



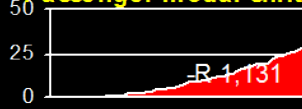
All Small Wedges



Waste management



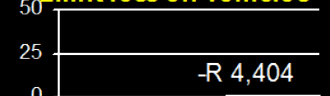
Passenger modal shift



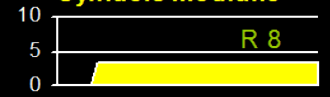
Synfuels CCS 23 Mt



Limit less eff vehicles



Synfuels methane



Manure management



Aluminium



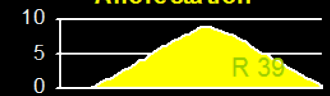
Enteric fermentation



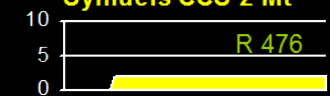
Reduced tillage



Afforestation



Synfuels CCS 2 Mt



Coal mine methane

