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# 2014 GLOBAL EARTH HOUR CAPITAL

## MOVING MOUNTAINS:

Energy and Climate  
Change Action in Cape Town



CITY OF CAPE TOWN  
ISIXEKO SASEKAPA  
STAD KAAPSTAD

I.C.L.E.I  
Local  
Governments  
for Sustainability



**PATRICIA DE LILLE, EXECUTIVE MAYOR,  
CITY OF CAPE TOWN**



Cape Town is a beautiful city embraced by mountains and the sea, hosting unique flora and a special heritage. As one of the fastest growing cities in South Africa, we however face a host of challenges in meeting the needs of Cape Town's citizens, whilst building the economy and managing resource consumption in as sustainable a way as possible. The City is committed to tackling these challenges head on and building a better future for all.

Being selected as the 2014 Global Earth Hour Capital from among 163 entrants is truly an exceptional accolade that recognised Cape Town's innovative work on energy and climate change and its dedication to pursuing the goal of a sustainable urban environment while showing that it is possible to have a thriving, dynamic economy at the same time.

Traveling toward sustainability is a shared responsibility and requires long-term dedication. Through this award Cape Town is being acknowledged for the incredible efforts being made with the help of our residents, the business community and civic organisations, to make our city a more sustainable and more habitable place, together.

This brochure tells Cape Town's story by sharing some of the efforts we are undertaking in the journey towards building a resource efficient and resilient future for our city. Our participation in the Earth Hour City Challenge allowed us to learn from other cities and pushed us to think more creatively on energy and climate action in Cape Town. We would like to extend the challenge to other cities to build on the spirit of Earth Hour by taking action.

**MORNÉ DU PLESSIS, CEO, WWF-SA**

Entirely sustainable cities are a yet to be realised but nevertheless achievable ambition, and one well worth striving for.

While the Earth Hour City Challenge does not label cities as having achieved sustainability per se, it underscores the actions and commitment that can inspire other cities to work towards the goal of sustainability. In this respect Cape Town's recognition as 2014 Global Earth Hour Capital in the country's first year of participation in the programme was an outstanding achievement for South Africa.

As cities are responsible for close to 80 per cent of carbon dioxide emissions, how we manage our urban infrastructure over the course of the next three decades could become a force for either environmental destruction or ecological rejuvenation. To this end, investments in urban infrastructure, particularly in the world's small but fast growing cities and developing nations will present opportunities for the greatest impact.

Cape Town faces all of the challenges of the Developing World where access to even basic needs, such as food and shelter, is acute. In this context, Cape Town is an example which shows that sustainability features can be in support of dealing with real-world problems, rather than being unattainable as a result of them.

Cape Town has stood out as a role model for the global South with a showcase of replicable green programmes and actions, demonstrating how cities can take a stance against climate change while still addressing developmental priorities such as food, energy and water security.

As our cities increasingly recognise their importance in the transition to a one-planet future, we hope that Cape Town and other South African cities will continue to take bold climate actions to reduce dependency on fossil fuels and secure the environmental well-being of our country's citizens

**KOBIE BRAND, REGIONAL DIRECTOR,  
ICLEI AFRICA**

Cape Town is the longest standing member in Africa of ICLEI – Local Governments for Sustainability, having joined in 1994. As a global membership organisation, ICLEI supports over 1000 member local and other sub-national governments to chart their own unique journeys towards sustainable urban development.

ICLEI works with our members on diverse topics such as water and sanitation, climate change, low-carbon development, the green economy and biodiversity protection. We promote an integrated approach to urban planning which aims to strengthen service delivery to citizens while enhancing and sustaining local and global natural resources.

In the last 21 years, ICLEI has been proud to have been an active partner in the City of Cape Town's journey towards sustainability, which has so aptly culminated in its crown of "Earth Hour City Challenge Earth Hour Capital" of the world in 2014/2015.

The partnership between WWF, ICLEI and the City in the EHCC is celebrated in this marketing brochure. It highlights a diverse array of actions and commitments that the City is taking to reduce its carbon footprint and pursue a resilient local development path.

ICLEI commends the City on its innovation and achievements, and looks forward to working together to strive for more transformative solutions for Cape Town as a widely recognised global leader in this field and to working together to strive for more radical and more innovative solutions so that Cape Town can continue to be a global leader in this field.

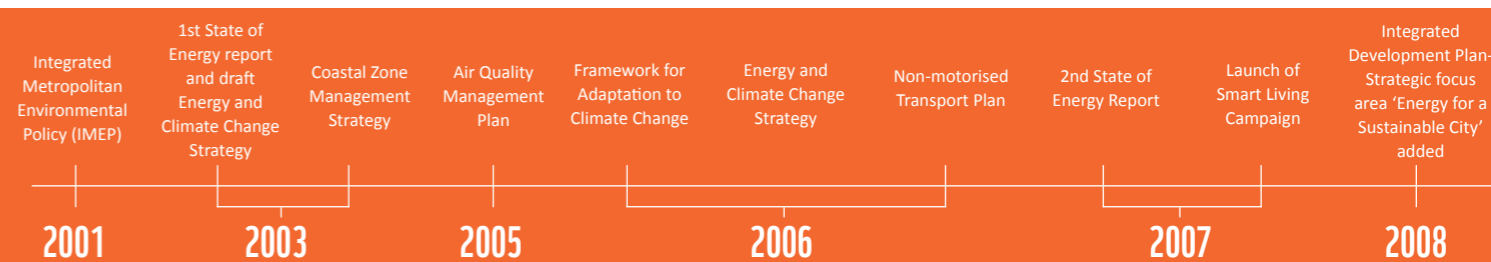
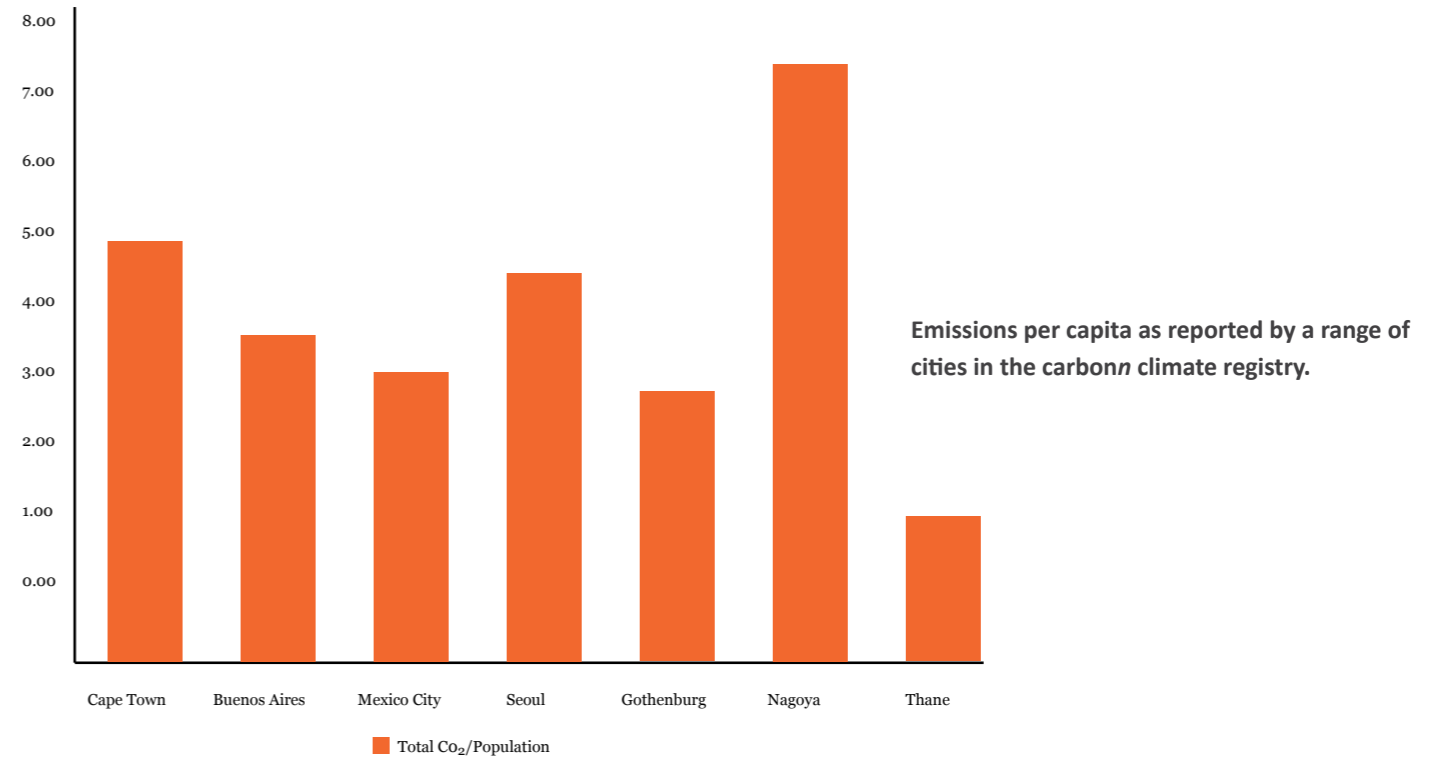
**THE EARTH HOUR CITY CHALLENGE:  
LOCAL ACTION DRIVING GLOBAL CHANGE**

The Earth Hour City Challenge (EHCC) is an initiative designed by WWF to mobilise action and support from cities in the global transition towards a climate friendly, one-planet future, and to stimulate the development and dissemination of best practices for climate mitigation and adaptation. In South Africa, the project is being run in partnership with ICLEI - Local Governments for Sustainability Africa.

The EHCC programme challenges cities to showcase their ambitious, holistic, inspiring and credible plans for low carbon development and to dramatically increase the use of sustainable and efficient renewable energy solutions in the future. For its 2014-2015 edition, workshop activities, strategic review and peer-learning workshops were made available to participating South African cities to support their initiative.

Cities enter the challenge by registering their data on the carbonn Climate Registry (cCR), a global climate reporting platform for cities. Aside from recognising cities' climate actions, this also strengthens local planning and action to enable access to financing. It also serves as a data repository for city actions and to inspire different municipal departments to work closely together in mainstreaming climate action. Sharing information promotes transparency, accountability, identifies good practice thereby inspiring a level of ambition among cities. Globally, the cCR is deemed as the official reporting platform for subnational and local actors through various initiatives such as the Mayor's Global Compact (C40, ICLEI, UCLG).

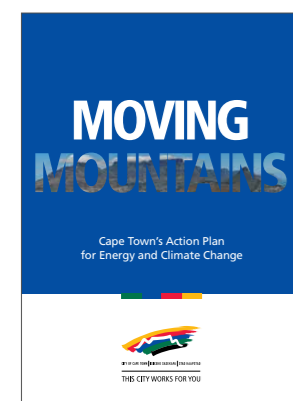
*The City of Cape Town's international commitments to addressing climate change include joining the C40 Network in 2014 and annually reporting to the Carbon Disclosure Project, signing the Durban Adaptation Charter at COP17 in 2011, signing the Mexico City Pact in 2010 and annually reporting to the carbonn Climate Registry. These international commitments have helped the City to track and benchmark its interventions, showcase leadership and receive support from other signatories.*





## CAPE TOWN AT A GLANCE 2012 DATA

Local Government name: City of Cape Town	Gini coefficient: 0.60
Province and country: Western Cape, South Africa	Unemployment: 23.9%
Area: 2 461 km <sup>2</sup>	Energy intensity: 36.8 GJ per capita
Population: 3.8 million (7.3% of SA)	Carbon Footprint: 5.2 tCO <sub>2</sub> per capita
Population density: 1 563 persons per km <sup>2</sup>	Waste per capita: 52.2 tonnes per capita
GDP (constant 2005 ZAR prices): R203,581 Million	Waste diverted: 11.8%
GVA (constant 2005 ZAR prices): R185 681 Million (11% of SA)	Transport modal split: private and public transport 54:46; motorised and non-motorised modes 84:16



The City of Cape Town has been a pioneer in the area of local energy climate action, being the first African city to complete a State of Energy Report (2003) and adopt an Energy and Climate Change Strategy (2006) (a component of the City's Integrated Environmental Policy), whilst also actively engaging in international climate reporting platforms.

As part of its increasing commitment to implementation, the City adopted an Energy and Climate Action Plan (ECAP) in 2010 and has made important institutional advances to coordinate energy and climate change response across the municipality. These include the establishment of an Energy and Climate Change Working Group Portfolio Committee (political) and a Green Economy, Energy and Climate Working Group (administrative).

The ECAP has 11 objectives, with targets and implementation plans involving 40 programme areas and more than 120 projects. The Plan makes the City's commitments operational, demonstrates its leadership role, and forms the basis on which to prioritise, budget for, implement, monitor and evaluate the City's energy and climate change programme. It is a living plan which is under constant review.

Resource efficiency, resilience and adaptation are the corner stones of the plan, which covers a wide range of projects from energy efficient behaviour campaigns across the city, efficient retrofits within council operations, increased renewable energy uptake and improved public transport, to sea level rise risk assessment and coastal protection.

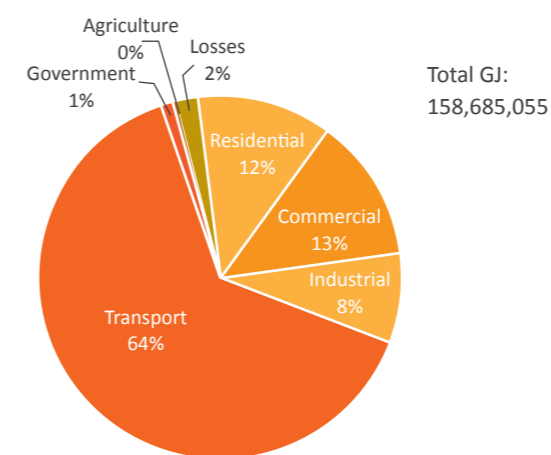
## CAPE TOWN'S ENERGY PROFILE

Cape Town's State of Energy report has been updated every 4-5 years since its inception in 2003 - a clear demonstration of the City's leadership in measureable and transparent energy data reporting.

The most recent version, updated in 2015 (2012 data year), highlights energy data trends and key drivers behind these, such as continued economic growth at a slightly faster rate than energy consumption, and in particular electricity consumption, indicating a trend towards the decoupling of economy and energy. The State of Energy Report furthermore builds the foundation for the modelling of current energy consumption patterns into the future to determine the impact of current growth rates in the city on future energy consumption.

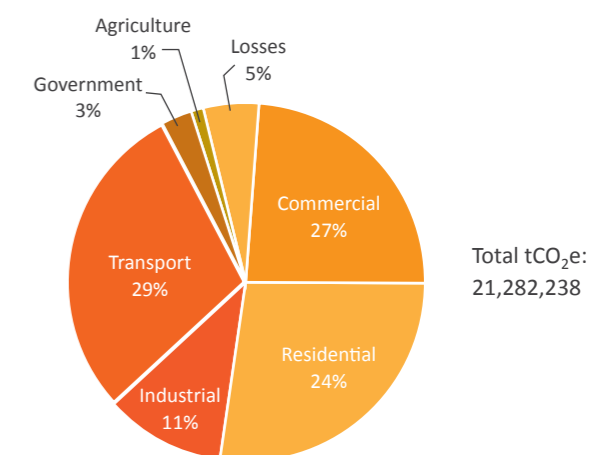
*The State of Energy data collection process is critical to ongoing monitoring and evaluation of Cape Town programmes and projects, to identifying and prioritising projects, to establishing some of the new targets for the City's Energy and Climate Action Plan (ECAP) and to reporting on various pacts, partnerships and agreements to which the City is a signatory.*

Figure1: Cape Town energy consumption by sector in 2012



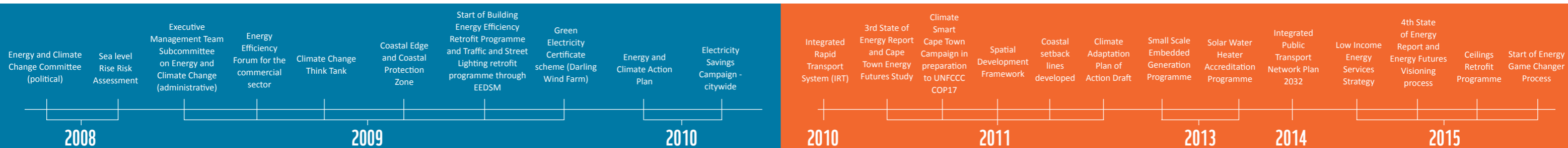
Source: 2015 Cape Town State of Energy Report

Figure2: Cape Town emissions by sector in 2012



Source: 2015 Cape Town State of Energy Report

Cape Town energy consumption (Figure 1) and emissions (Figure 2) per sector (including aviation, international marine, electricity losses) 2012





## CAPE TOWN'S CLIMATE ACTIONS SUCCESS STORIES

The journey towards Cape Town's vision of becoming a resource efficient and resilient city is being driven by a number of programmes and projects on the ground. The following current projects are but a few examples of how the City of Cape Town is taking action:



Proud Winners of the 2014 Energy Efficiency Forum Awards at the Awards Ceremony.



## THE ELECTRICITY SAVINGS CAMPAIGN

The City of Cape Town's Electricity Savings Campaign, which targets residential and commercial consumers, aims to reduce electricity consumption through a wide range of behavioural and technological changes.

The campaign started with a focus on no-cost and low-cost advice, and has recently moved to invest-to-save options, particularly promoting the use of solar water heaters, and heat pumps.

A dedicated Solar Water Heater Accreditation Programme has been established by the City which accredits a set of quality service providers and products, and inspects installations in order to improve households' trust. A media campaign, website, posters, publications, exhibitions and events are targeted at higher-usage electricity consumers. It offers tips and financial

savings information for saving electricity; and information about energy saving technologies.

For the commercial sector, the Energy Efficiency Forum was established in 2009 as a pioneering public-private initiative by the City of Cape Town in partnership with Eskom and the South African Property Owners Association (SAPOA).

The Forum is a platform for practical knowledge sharing and collective action, targeted to assist owners and managers of commercial buildings and operations. It meets 3 times a year, and offers case studies, an annual award programme and updates on financing options, innovations, policy and training/support opportunities.

**Websites:** [www.SavingElectricity.org.za](http://www.SavingElectricity.org.za) and [www.capetown.gov.za/EnergyEfficiencyForum](http://www.capetown.gov.za/EnergyEfficiencyForum)

*Given rising electricity tariffs and the serious constraints on South Africa's electricity supply, energy efficiency is critical to economic growth and stability. The commercial sector accounts for about 44% of the electricity supply in the Cape Town area, and has great potential to save energy and reduce their operating overheads.*

## THE SOLAR WATER HEATER ACCREDITATION PROGRAMME



Residential electricity consumption accounts for 37% of total electricity consumption in Cape Town, with water heating being the largest consumer of electricity in a typical Cape Town household.

As part of its efforts to reduce city-wide electricity consumption and CO<sub>2</sub> emissions and increase energy security, the City of Cape Town is encouraging the installation of high-pressure residential solar water heaters. The City has set up an innovative accreditation and marketing programme, as part of its Electricity Savings Campaign, where it helps residents save electricity by endorsing accredited service providers, promoting solar water heater uptake through training, communication and educational campaigns, monitoring the performance of the selected service providers and undertaking quality control.

Since its launch in November 2013, over 4400 SWH installations have been recorded. Within a year since the start of the campaign, the accredited service providers have installed over 4500 SWH systems. The Programme has contributed over R15 million worth of solar water heaters into the economy, has saved more than 8 323 000 kWh, has created approximately 128 job years of employment and reduced carbon emissions by 8323 tons CO<sub>2</sub>.

**Website:** [www.SavingElectricity.gov.za](http://www.SavingElectricity.gov.za)

**GET YOUR PIECE OF THE SUN, NOW FOR 5% LESS\***



**GET A QUOTE BEFORE THE END OF AUGUST AND RECEIVE A 5% DISCOUNT ON YOUR SOLAR WATER HEATER.**

If you have an electric geyser which is regularly in use and you want to save 25% or more on your electricity bill, then getting a solar water heater is the best investment you can make right now.

Contact an Accredited Service Provider today and receive a 5% discount on your solar water heater system.

The City of Cape Town has made it easy for you to replace your electric geyser with a solar water heater. Together we can save electricity and save money.

\*Ts & Cs Apply.



The City of Cape Town encourages the installation of solar water heaters through its SWH Accreditation and Marketing Programme advertisements, websites and exhibitions.  
Advertisement from 2014



## LEADING BY EXAMPLE - ENERGY EFFICIENCY IN COUNCIL OPERATIONS

The City of Cape Town is a major energy user in its own right, managing numerous municipal buildings and operations such as vehicle fleets, large scale water pumping, street lighting and traffic lights. It has a key role to play in leading by example, and has made a commitment to improve the efficiency and management of energy consumed for Council operations, thereby improving resource efficiency, reducing its environmental impact and avoiding excessive electricity costs.

### Public lighting and traffic light retrofits

The City of Cape Town has been in a process of retrofitting its traffic and street lights over the past few years. This programme was a collaborative effort between a number of City departments and boosted by national government funding for energy efficiency and demand side management assistance.





Energy efficiency retrofits in Cape Town Council operations in action.

All 1500 traffic intersections in Cape Town which contained incandescent and halogen bulbs have been replaced with Light Emitting Diode (LED) bulbs since the implementation of the City's traffic and street lighting retrofit programme. This resulted in energy and carbon emissions savings of approximately 37 294 MWh and 36 921 tCO<sub>2</sub>e per annum. 25 210 street lights have been retrofitted, with more efficient HPS (High Pressure Sodium) lights' resulting energy savings of 25 961 MWh.

#### Building energy efficiency retrofit programme

The City has been actively involved in energy efficiency within Council owned buildings and is running a successful Building Energy Efficiency Retrofit Programme. To date the City has completed the retrofitting of approximately 26% of its large buildings and has installed smart electricity meters (AMRs) in more than half of its largest administrative buildings. It also runs a behaviour change programme to capacitate building managers and users to effectively manage electricity consumption within their buildings.

The programme has resulted in energy savings of approximately 6865 MWh and carbon emission reduction of 6796 tCO<sub>2</sub>e per annum. Making administrative buildings more energy efficient not only reduces costs, but also often improves the quality of the working environment.

The programme is made possible through a dedicated unit coordinating its implementation, a strong collaboration with key departments, and both internal and external funding sources. The collection of high quality data has also played a significant role towards the successes achieved, by ensuring proper monitoring and effective tracking of performance.

## SMALL-SCALE EMBEDDED GENERATION

**In September 2014, the City of Cape Town laid the foundation for the growth of small-scale embedded generation in the city, by signing the first feed-in contract with a customer.**

To reach this point numerous factors needed be addressed by the City, including: the establishment of suitable tariffs; identification of suitable metering systems which can measure power flow in two directions; and the implementation of automated billing systems which take into account both the purchase and sale of electricity.

The City has set itself a target of sourcing 10% of its electricity from renewable energy resources by 2020. The citywide potential market for embedded generation is estimated to grow to 400MW in 10 years' time.

The provision of such opportunities contributes toward stimulating the green economy by increasing demand for solar panels and other sources of alternative energy. This will in turn help create jobs in this sector.



Cape Town Mayor, Ald. Patricia de Lille, proudly supporting the advances in small-scale embedded generation in Cape Town.



## SMART LIVING CAMPAIGN

The City of Cape Town's Smart Living and Working Programme, launched in 2007, aims to make sustainable living and working a reality in Cape Town.

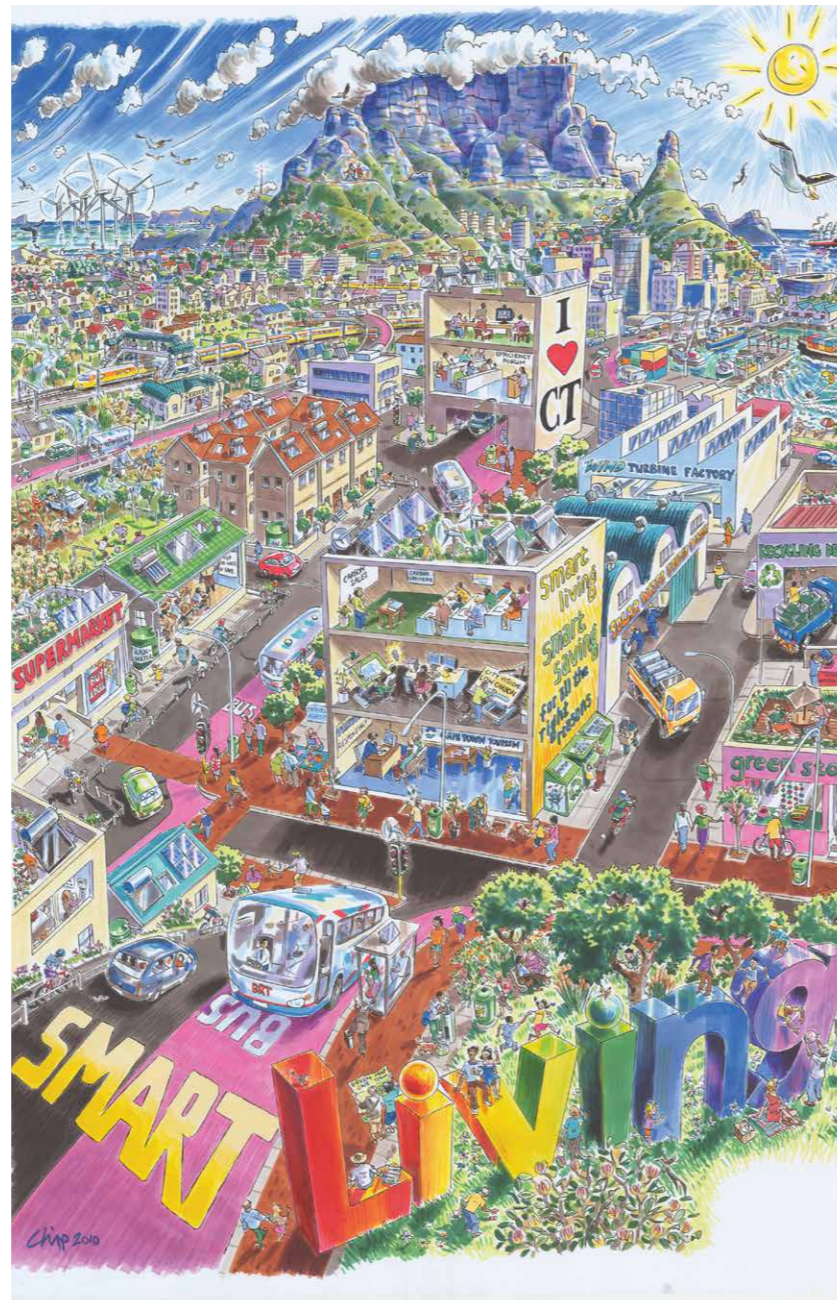
This comprehensive programme is coordinated by the City's Environmental Resource Management Department, in partnership with numerous departments and external stakeholders, and is targeted at City staff and councillors, office workers, learners, teachers and Cape Town residents.

Its aim is to stimulate positive consumer action to reduce the environmental footprint of households and businesses, by providing practical advice and do-able actions that are focussed on the four themes of waste, energy, water and biodiversity.

Training and information sessions include Smart Driver training for City fleet drivers, Smart Cooking training for City catering vendors, low-income households and feeding schemes, Smart Office training for City staff and external organisations, and Smart Living Community training. The Youth component includes, amongst others, the Smart Living Drama Festival and the Two Oceans Aquarium Smart Living education and outreach programme.

The Smart Living Handbook, around which the programme was developed, is supported by a variety of other resources, including the Smart Events and Building Handbooks and Smart Office Toolkit.

For more, see [www.capetown.gov.za/SmartLivingHandbook](http://www.capetown.gov.za/SmartLivingHandbook)



The City of Cape Town's Bus Rapid Transit system, MyCiTi, demonstrates its commitment to improving sustainable and integrated public transport.



## TRANSIT-ORIENTATED DEVELOPMENT - THE ROAD TOWARDS BUILDING AN EFFICIENT AND INCLUSIVE CAPE TOWN

The City of Cape Town is committed to building a more compact, resource-efficient city and a more sustainable transport system. As such, transit-oriented development (TOD) has been identified as one of the key components to achieve this. In 2014, the City embarked on the process of drafting a TOD Strategy which will determine the future of public transport systems across the city.

Development in the city is currently characterised by low densities, long distances between residential areas and workplaces, as well as historical disparities where the majority of low-income residents live far away from work opportunities and have to spend a significant percentage of their income on transport. TOD is the planning, design and implementation approach that the Transport for Cape Town department will be championing to reverse these anomalies. It will aim to improve the access to and efficiency of public transport and non-motorised transport across the city, minimise traffic congestion, create economic opportunity for all, deliver efficiencies in urban infrastructure and create a sense of place.

It is embedded as a priority in the City's Integrated Public Transport Network plan, which was adopted in 2014 to guide the City over the next 18 years to meet the travel demands of a rapidly increasing population.

The City has already made great strides in developing and expanding its Integrated Rapid Transit system, encompassing Bus Rapid Transit (BRT) (known as MyCiTi) and rail. It has invested R5.7 billion into the MyCiTi BRT system, and has a 20 year plan for its further roll-out.

The city's existing cycle network includes the popular 15 km stretch of cycle lanes between Table View and the CBD which run parallel to the red MyCiTi bus lanes, whilst plans are under to expand the cycle network to other areas of the city.



## COASTAL SETBACK LINES IN AN URBAN CONTEXT

Cape Town's coastline extends for 307km, the longest urban coastline in South Africa. Extensive areas of this coastline have been developed and pressure for development along the coastline is high.

In 2011 the City of Cape Town completed a process to develop coastal setback lines (supported by a Coastal By-Law) that take into account sea level rise and storm surge increases projected as a result of climate change. The approach taken not only used empirical modelling of biophysical processes, but also adopted a more holistic, integrated and interdisciplinary approach that involved extensive stakeholder engagement so as to incorporate socio-economic dimensions into defining set-backs at the local level. The process intentionally excluded private property with development rights from its set-back determination exercise so as to develop a pragmatic line with greater stakeholder buy-in.

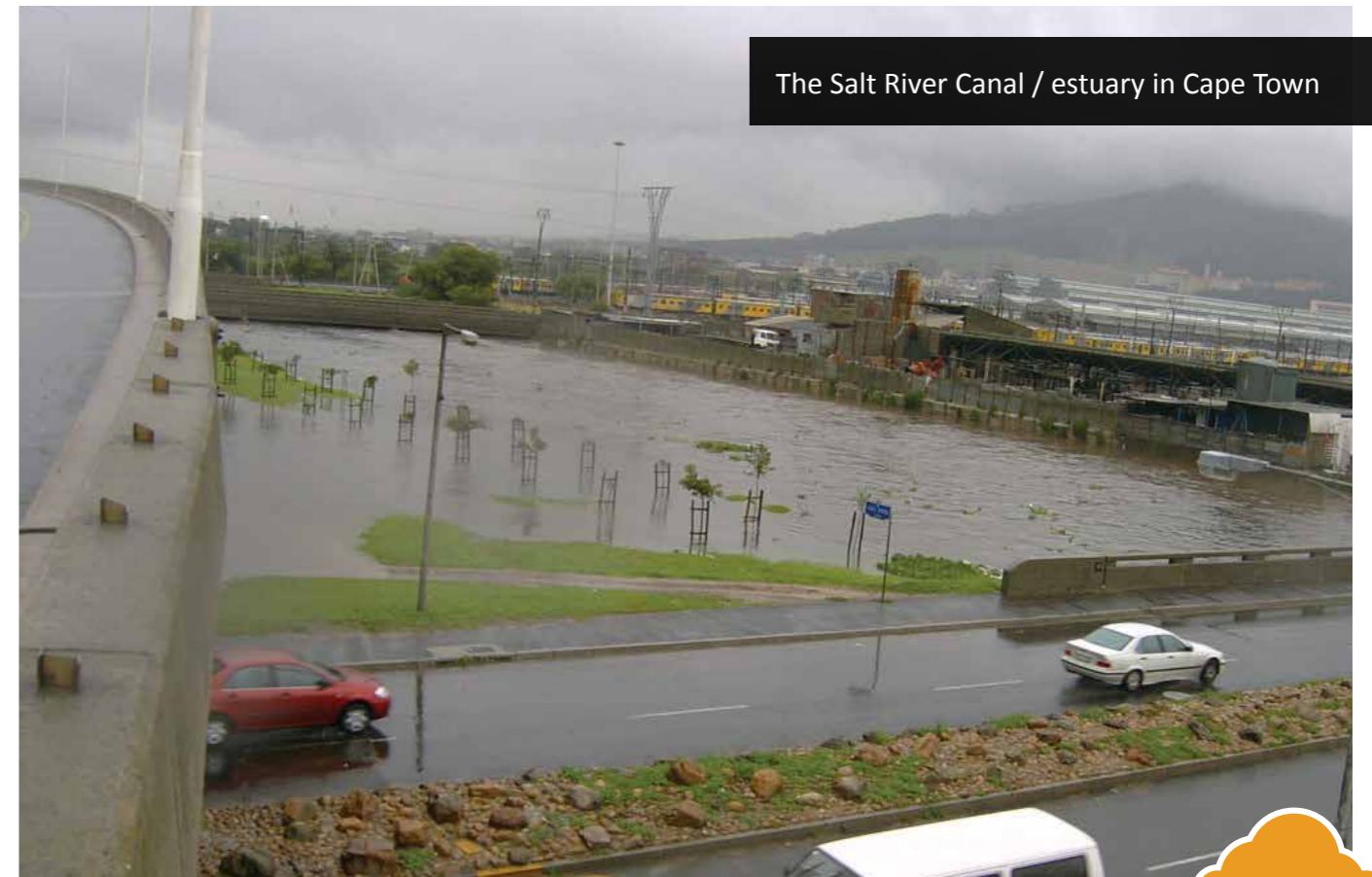
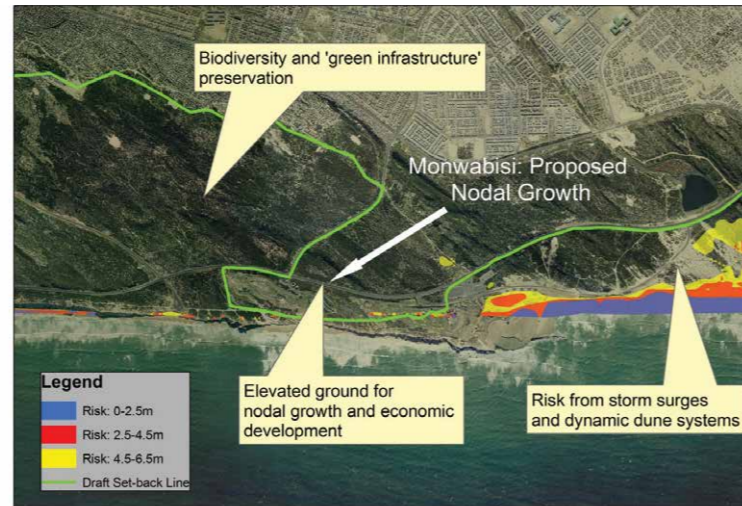
To deal with the consequent conundrum of property that is landward of its set-back, but still at risk from coastal hazards and acknowledging that a set-back in isolation is not capable of protecting or managing existing infrastructure at risk, the City has initiated the development of overlay zones. The overlay zones will be developed to focus on and address the property conflict.

Through this negotiated outcome, the City will proactively be able to move forward in protecting ecological infrastructure required to buffer against storm surges without removing development rights or sterilising key areas of the coast.

**Coastal Zone Management Strategy:** [www.capetown.gov.za/environmental/policies](http://www.capetown.gov.za/environmental/policies)

**Coastal Management Programme:**

<http://www.capetown.gov.za/en/EnvironmentalResourceManagement/projects/MarineCoastal/Pages/CoastalManagementProgramme.aspx>



The Salt River Canal / estuary in Cape Town



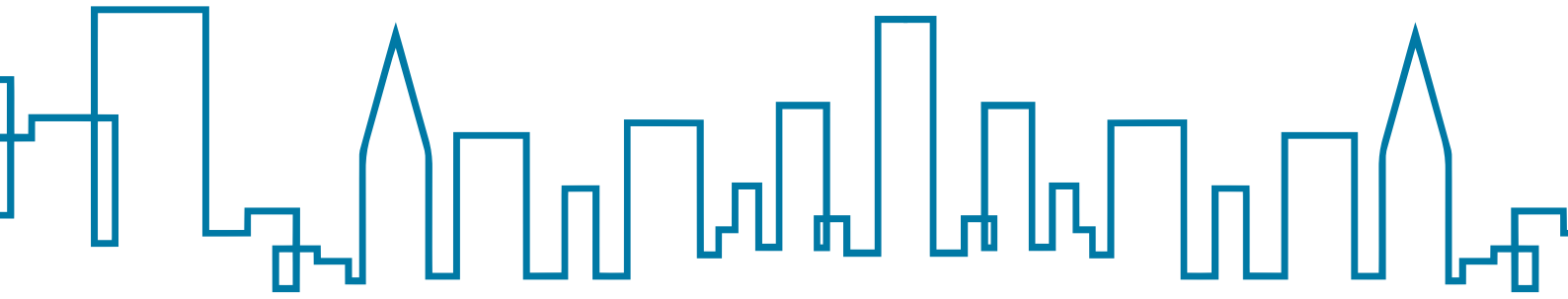
## EXPLORING THE IMPLICATIONS OF CLIMATE CHANGE ON FLOODING IN CAPE TOWN

Being a coastal city that receives winter storms and rainfall, flooding in Cape Town is impacted by both inland and coastal storm effects. There is a growing recognition that these flood risks are changing under climate change, in combination with the development, expansion and densification of the city. As a result, the City of Cape Town has been working with engineers and climate scientists to develop more detailed knowledge of how various scenarios of increasing sea-level, storm surge, rainfall intensity, wave height and freshwater run-off translate into altered flood levels.

In the first instance, this work has focussed on the Salt River catchment where detailed analysis was undertaken to determine flood levels in the lower catchment for 1:20, 1:50 and 1:100 year return periods. The results show that predicted localised scenarios of climate change, calculated for 2035 and 2060 using downscaled data from ten global climate models, together with predicted sea level rise, affect the flood risk profile of the catchment quite significantly. The City is therefore accounting for such changes in the planning of bulk drainage infrastructure and the delineation of floodlines, with implications for the assessment of land rezoning applications, the requirements placed on property developments, and the implementation of additional flood mitigation measures.

This sea level rise impact study was undertaken as part of the Climate Change Think Tank, a collaboration between the City of Cape Town and the University of Cape Town to establish a network of researchers and practitioners working on various dimensions of climate change.

**City of Cape Town stormwater planning:** <http://www.capetown.gov.za/en/CSRM/Pages/Stormwaterplanning.aspx>



**WWF** is one of the world's largest and most respected independent conservation organisations, with almost six million supporters and a global network active in over 100 countries. WWF's mission is to stop the degradation of the earth's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

**ICLEI** – Local Governments for Sustainability is the world's leading association of cities and local governments dedicated to sustainable development. ICLEI is a powerful movement of 12 mega-cities, 100 super-cities, 450 large cities and urban regions as well as 450 small and medium-sized cities and towns in 83 countries.

Designed by Apula

All images courtesy City of Cape Town

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