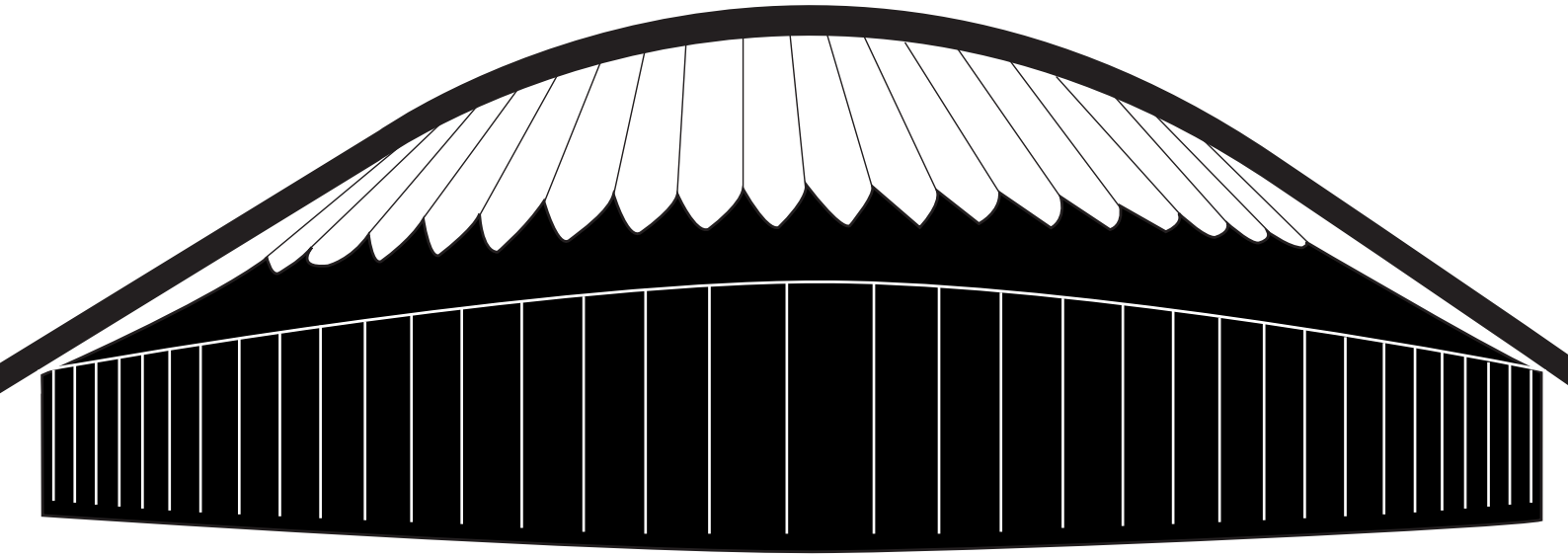
Data provided for the
CDP Cities 2015 Report

www.cdp.net

City of Durban



Written by

CDP
DRIVING SUSTAINABLE ECONOMIES

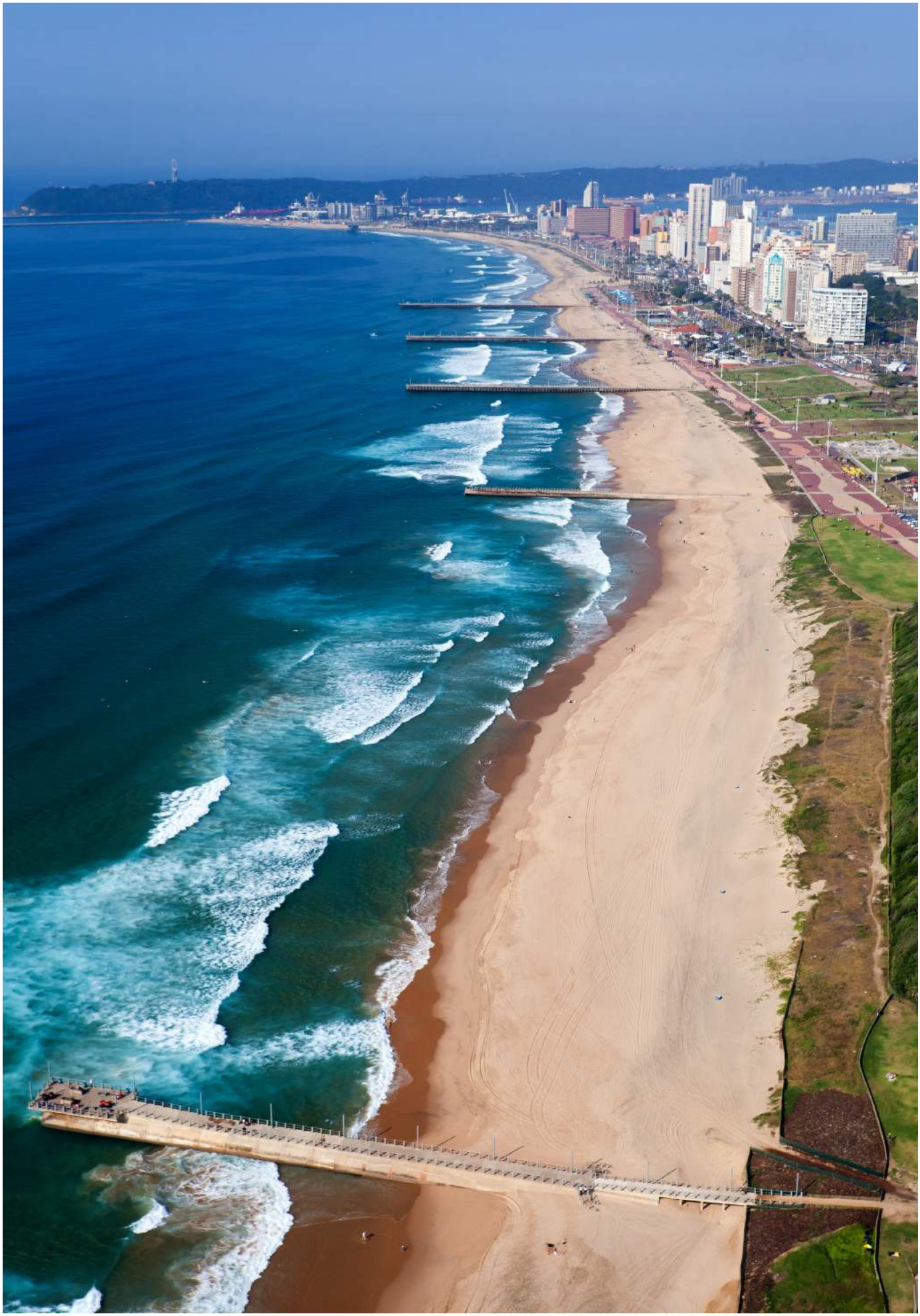
Report analysis & information design for CDP by

AECOM

In partnership with

C40 CITIES
CLIMATE LEADERSHIP GROUP

Bloomberg Philanthropies



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CDP, C40 and AECOM are proud to present results from our fifth consecutive year of climate change reporting for cities. It was an impressive year, with 308 cities reporting on their climate change data (six times more than the number that was reported in the survey's first year of 2011), making this the largest and most comprehensive survey of cities and climate change published to date by CDP. City governments from Helsinki to Canberra to La Paz participated, including over 90% of the membership of the C40 – a group of the world's largest cities dedicated to climate change leadership.

Approximately half of reporting cities measure city-wide emissions. Together, these cities account for 1.67 billion tonnes CO_2e, putting them on par with Japan and UK emissions combined. 60% of all reporting cities now have completed a climate change risk assessment. And cities reported over 3,000 individual actions designed to reduce emissions and adapt to a changing climate. CDP, C40 and AECOM salute the hard work and dedication of the world's city governments in measuring and reporting these important pieces of data. With this report, we provide city governments the information and insights that we hope will assist their work in tackling climate change.

This document contains the questionnaire data provided to CDP from Durban as part of its 2015 CDP submission.

To see all of the results for all participating cities, visit https://www.cdp.net/cities.

The graphics in this document are from the 2015 CDP Cities infographic.

Durban in context

Number of cities responding per year

2011	2012	2013	2014	2015
48	73	110	207	308
■	✓	✓	✓	✓

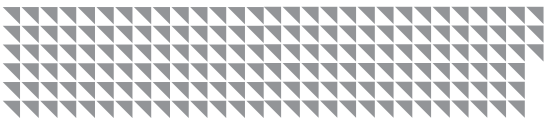
Durban participation

Total population of cities responding in 2015

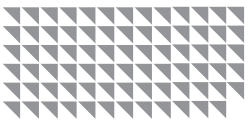
446,186,833

Durban (city proper)
3,517,157
people

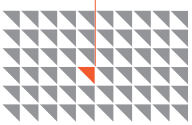
Where Durban fits



171 small
<600k population



77 medium
600k-1.6m population



60 large
1.6m+ population

Year reported

2015

Area

2,292

km²

Population

3,517,157

Durban in focus

Inventory method

Corporate GHG Protocol developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD)

144 cities reporting emissions in 2015

80,000,000
Metric tonnes CO_2e

12 cities reporting emissions of greater than 30,000,000 metric tonnes CO_2e

50,000,000
Metric tonnes CO_2e

Durban

22,656,509
Metric tonnes CO_2e

8 cities reporting emissions of 20,000,000 to 30,000,000 metric tonnes CO_2e

30,000,000
Metric tonnes CO_2e

22 cities reporting emissions of 10,000,000 to 20,000,000 metric tonnes CO_2e

20,000,000
Metric tonnes CO_2e

10,000,000
Metric tonnes CO_2e

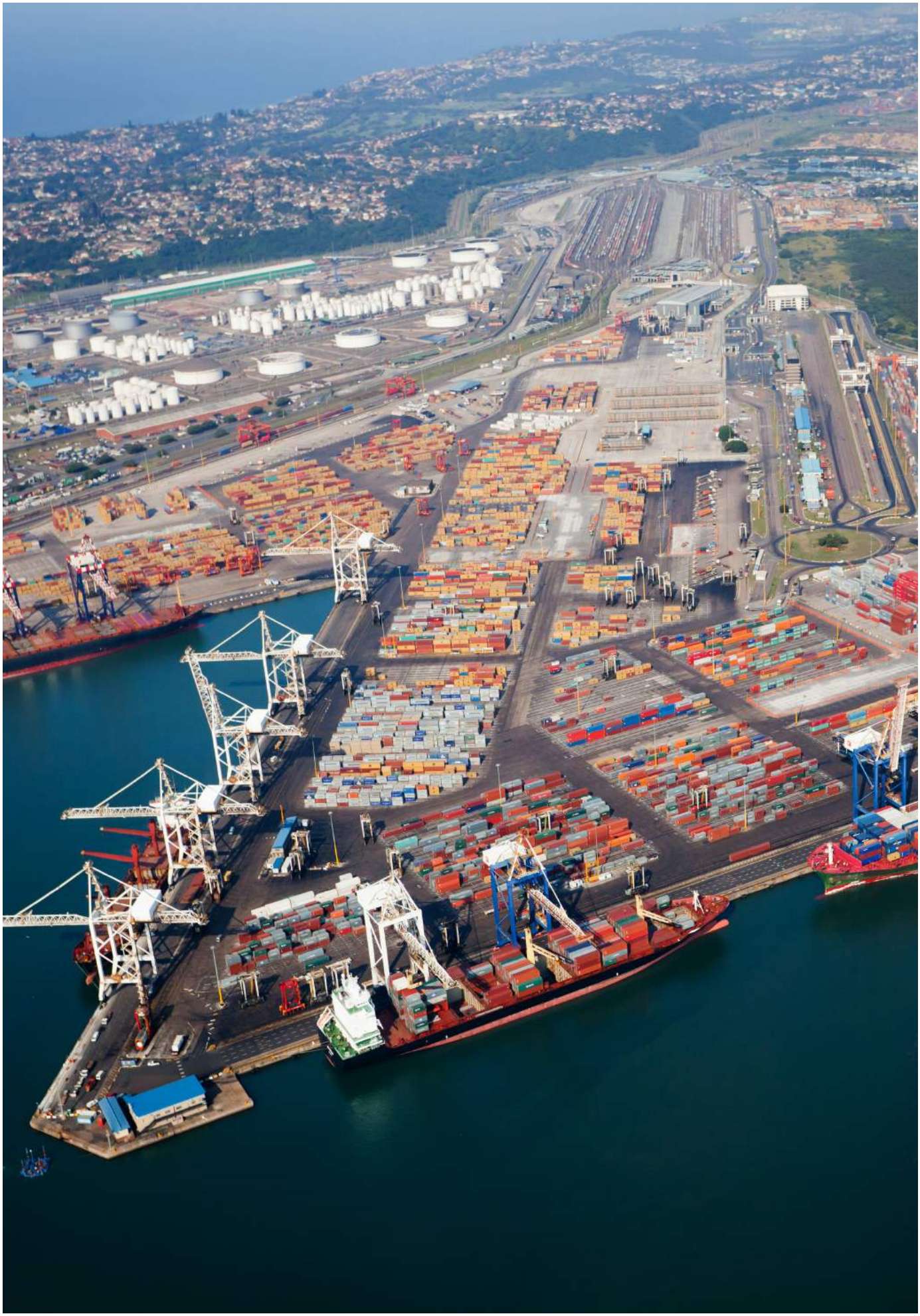
102 cities reporting emissions of less than 10,000,000 metric tonnes CO_2e

5,000,000
Metric tonnes CO_2e

0 **Introduction**

Durban is the largest city in the South African province of KwaZulu-Natal and the third largest city in South Africa. It forms part of the eThekwini metropolitan municipality. Durban is famous for having the busiest port in South Africa. It is also seen as one of the major centres of tourism because of the city's warm subtropical climate and extensive beaches. The municipality, which includes neighbouring towns, has a population of 3,4 million (2014), making the combined municipality the biggest city on the east coast of the African continent. The metropolitan land area of 2,292 km^2 is comparatively larger than other South African cities, resulting in a somewhat lower population density of 1,519 /km^2.

Introduction



1.1 **Governance**

Durban's process for managing progress and responsibility for climate action:

Emissions Reductions

The Energy Office (EO) is responsible for Climate Change Mitigation response. The EO has respective policy and plans in place to govern and manage activities in response to climate change. There is the Energy Strategy with sector specific Greenhouse Gas reduction targets and activities to achieve these targets.

Adaptation

The Environmental Planning and Climate Protection Department (EPCPD) is responsible for Climate Change Adaptation response. The EPCPD have respective policy and plans

Governance

in place to govern and manage activities in response to climate change. The Headline Adaptation Strategy, which outlines some of the key interventions required by the Municipality to successfully adapt to climate change and a series of sectoral adaptation plans.

Durban has committed to adapting to climate change.

Durban Adaptation Charter - The Durban Adaptation Charter was the historic outcome of the Durban Local Government Convention held in Durban, South Africa, in December 2011, during the course of the 17th Conference of the Parties to the Kyoto Protocol. The DAC spearheaded the development of an adaptation reporting template for the carbon Climate Registry (cCR) in partnership with ICLEI – Local Governments for Sustainability, which has now been adopted and 'gone live' for others to report to.

Durban has a plan that addresses climate change adaptation:

Climate Change Adaptation Planning for a Climate Resilient City. The plans went through a prioritisation and refinement process in 2011/12, and will be incorporated into the implementation of Durban Climate Change Strategy (DCCS) that combines adaptation and mitigation.

Durban anticipates that national and/or regional climate change activities will have impacts on Durban's own climate change activities.

There is collaboration between the eThekwini Municipality and regional Government, both through formal structures (e.g. Renewable Energy Work Group; Economic Planning Unit; KZN Department of Economic Development and Tourism) and informal networks that have been established. At times there is some duplication; but frequently the different activities have good synergies. The EPCPD is currently spearheading an initiative to set up a formal regional forum of Municipalities in the province of KwaZulu-Natal. This is an extension of the Durban Adaptation Charter and will see participating Municipalities cooperate on reducing vulnerability in our communities and increase resilience of eco and other systems. In addition, the success of the Buffelsdraai Reforestation Project model has been replicated in other Municipalities.

Durban plans to incorporate sustainability goals and targets into the master planning for the city.

This will be addressed through the City Planning Commission and the establishment of a Sustainability office under the City Manager. Currently the plan is being developed.

Durban is developing a climate change action plan for reducing GHG emissions.

The plan will emanate from the climate change strategy, but there are existing initiatives being implemented within the City.

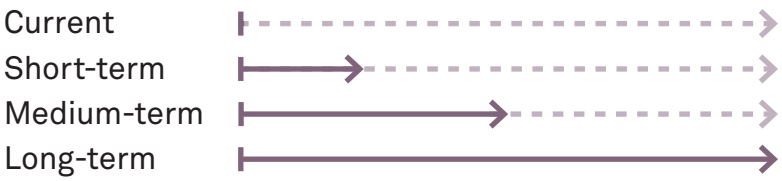
2.1 **Physical risks**

Current and/or anticipated effects of climate change present significant physical risks to Durban:

Seriousness

Less Serious ! ! ! Serious ! ! ! Extremely Serious ! ! !

Timescale



Risks & Adaptation

Increased average annual rainfall

Risk: !!! Timescale:

There are implications for building damage and flooding of houses, so there is a need to improve building quality and location of housing (e.g. increase the height of the 100 year flood line, review modelling that informs spatial planning, potential increase in available water for storage in dams). Erosion is likely to increase the sedimentation of dams, and an overload from wastewater treatment could potentially impact water quality. Low lying bridges are at risk and there is a general increase of risk to the transport industry during intense storm events, putting power supply stations at risk. There are possible benefits if increased storm energy can be harnessed, however communications will be at risk e.g. from lightning strikes, and there are obvious impacts on human health from flooding e.g. outbreaks of cholera and other water-borne diseases, especially when wastewater treatment works fail. There will be large impacts on the insurance industry, with an increased need for risk planning and reaction.

Sea level rise

Risk: !!! Timescale:

There is uncertainty in the degree of sea level rise along the Durban coastline. There is a need for coastal retreats and other measures to protect the coastline from storm surges e.g. dune development. Much of the city's water supply and treatment works are situated beyond the likely reach, so there is not much effect on water, but a major sewerage pumping station is likely to be affected, so plans are being made for retreat. Low lying coastal roads and bridges under threat are an example of recent damage: during 2007 major coastal infrastructure damage caused an estimated $34 million worth of damage. There are two desalination plants planned for the production of water in Durban in the near future, and these could be affected. SLR is not expected to have much impact on human health, but is more likely to impact upon infrastrcture.

More hot days

Risk: !!! Timescale:

The increase in temperature is likely to increase evaporation of the city's water supply, which could lead to water shortages, higher temperatures likely to increase rate of food spoiling with possible food poisoning increase, also impacts upon waste; deterioration in roads (macadam) from higher heat, more energy required for cooling likely to place a strain on city's energy supplies. Impacts upon the health of aged and frail, health strain from the import of novel tropical diseases in Durban e.g. malaria.

Decrease in the predictability of seasonal weather

Risk: !!! Timescale:

Main impact upon subsistence farmers and their practices, leading to potential reduction in food sovereignty.

Increased frequency of large storms

Risk: !!! Timescale:

Durban is already experiencing an increased frequency of large storms. This impacts upon the poorest communities the hardest, especially those living in inappropriately situated informal settlements. Impacts of large storms include flooding and loss of private and public property and infrastructure, an increased risk of lightning strikes and damage from strong winds.

Compounding factors may worsen the physical effects of climate change in Durban.

Durban faces development challenges as an artefact of apartheid. Climate change seriously threatens to derail development gains made since the advent of democracy in 1994. Two-thirds of the Durban area is rural or peri-urban, and there are large informal settlements. Many of these are inappropriately located in areas that put residents at risk from climate change impacts e.g. within flood lines. High levels of poverty and underdevelopment mean that many community members are directly reliant upon ecosystems services obtained from the ecosystems within which they live. Climate change has the potential to impact heavily upon these people if the ecosystems are degraded. If, however, these ecosystems are well conserved and managed, then they have the potential of buffering community members from impacts.

Durban considers that the physical impacts of climate change could threaten the ability of businesses to operate successfully.

Extreme weather events are likely to affect the city in many respects, affecting transport efficiency and power supply. Another artefact of apartheid is the location of many of the poorest communities far away from the central business district. Climate impacts could disrupt

transport into and out of the cities, either physically or indirectly via an unaffordable increase in transport costs. This could result in key staff and customers not being able to travel to the city and their place of work/ markets. Another obvious factor includes loss of utilities following extreme storm events. There are a lot of informal businesses and traders which are vulnerable to poor weather given their lack of infrastructure, although having little access to infrastructure could, ironically, help them re-establish their businesses sooner following down time in trading opportunities during extreme weather events. Traders in perishable items will also be threatened with stock loss during extreme heat waves.

A climate change risk or vulnerability assessment has been undertaken for the Durban area.

Community Based Adaptation Report

2.2 **Climate Hazards**

Durban currently experiences the following climate hazards:

Flash/surface flood

Coastal flood

Extreme hot weather

Drought

Durban expects the following hazards to affect the city in the future:

Rain storm

Extreme cold weather

Extreme hot weather

Flash/surface flood

Coastal flood

Vector-borne disease

Cities are at risk from climate change

2.3 **Adaptation**

Actions Durban is taking to reduce risks to infrastructure, citizens, and businesses from climate changes include the following:

Sea level rise modelling

Hazard: Flooding from sea level rise

This project involved a sea level rise modelling exercise to determine which areas are at risk, to inform sea retreat.

Projects and policies targeted at those most vulnerable

Currently the 46 adaptation plans are going through a prioritisation process to determine which plans will be most cost-effective.

Tree planting and/or creation of green space

Hazard: Flooding from increased frequency of large storms

This project is about restoring natural indigenous forest to buffer adjacent indigent communities from climate change impacts, like flooding, whilst providing these communities with employment.

2.4 **Social Risks**

Durban faces social risks as a result of climate change.

3.1 **Opportunities**

Climate change action presents economic opportunities for Durban.

Durban is positioning itself to take advantage of opportunities from taking climate change action.

Development of new business industries (e.g. clean tech)

The Municipality has established the KZN sustainable energy forum (KSEF) to assist in developing the sustainable energy sector in the province. More info here: (http://www.kznenergy.org.za/).

Opportunities

Improved efficiency of operations

The municipality has a number of municipal infrastructure energy efficiency programs underway. These include a complete retrofit of all traffic lights with LEDs. A large scale retrofit of Municipal Street lights with LEDs and building energy efficiency program and smaller residential how water pilots.

Durban is hoping to attract private sector involvement for the following climate-related projects:

Hydro electricity power.

Further roll-out of Solar water heaters

Medium to utility scale Solar PV

96 CITIES

or 1/3 of cities that reported are taking action to de-carbonize their energy supply.

86% **of these cities see an ECONOMIC OPPORTUNITY in climate change.**

4.1 **Date and boundary**

Durban is reporting a GHG measurement inventory for a period of one year.

Tue 01 Jan 2013 - Tue 31 Dec 2013

Boundary typology used for Durban's GHG emissions inventory:

Departments, entities or companies over which operational control is exercised

Emissions – Local Government

4.2 **GHG emissions data**

Durban's primary protocols to inventory emissions:

Local Government Operations Protocol (ICLEI/ The Climate Registry/California Climate Action Registry/California Air Resources Board).

Gases included in emissions inventory:

CO_2
CH_4
N_2O
SF_6

Total (Scope 1 + 2) emissions for Durban:

1,419,617

Metric tonnes CO_2e

Breakdown of Durban's GHG emissions by scope:

Scopes are a common categorisation method. Scope 1: All direct GHG emissions (with the exception of direct CO_2 emissions from biogenic sources). Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling.

Total Scope 1 activity

388,647

Metric tonnes CO_2e

Total Scope 2 activity

1,030,970

Metric tonnes CO_2e

Total amount of fuel (direct/Scope 1 emissions) consumed in Durban during the reporting year:

Diesel/Gas oil

9,951,434 L

Motor gasoline (petrol)

4,617,876 L

Bitumen

1,326,531 L

Heavy Fuel Oil

345,000 L

Liquefied Petroleum Gas (LPG)

197,180 L

Electricity, heat, steam, and cooling (indirect/Scope 2 emissions) consumed by Durban during the reporting year:

Electricity - buildings

284,143,083kWh

Durban measures Scope 3 emissions.

Emissions from Contracted Services

29,292

Metric tonnes CO_2e

Employee Business Travel

976

Metric tonnes CO_2e

Breakdown of Durban's GHG emissions by department (total):

Buildings and other facilities: Stationary emissions (Scope 1)

5,884

Metric tonnes CO_2e

Buildings and other facilities: Electricity consumption (Scope 2)

171,108

Metric tonnes CO_2e

Streetlights and traffic signals: Electricity consumption (Scope 2)

113,330

Metric tonnes CO_2e

Water delivery facilities: Stationary emissions (Scope 2)

44,903

Metric tonnes CO_2e

Wastewater facilities: Stationary emissions (Scope 1)

18,228

Metric tonnes CO_2e

Wastewater facilities: Process emissions (Scope 1)

28,301

Metric tonnes CO_2e

Vehicle fleet: Mobile vehicle fleet combustion (Scope 1)

37,314

Metric tonnes CO_2e

Vehicle fleet: Mobile transit fleet combustion (Scope 3)

29,292

Metric tonnes CO_2e

Power generation facilities: Transmission & distribution losses: Technical (Scope 2)

344,600

Metric tonnes CO_2e

Power generation facilities: Transmission & distribution losses: Non-Technical (Scope 2)

282,572

Metric tonnes CO_2e

Sanitation and solid waste facilities: Fugitive emissions (Scope 1)

92,768

Metric tonnes CO_2e

Sanitation and solid waste facilities: Electricity consumption (Scope 2)

512

Metric tonnes CO_2e

Sanitation and solid waste facilities: Certified emissions reductions (Scope 1)

202,601

Metric tonnes CO_2e

Employee business flights (Scope 3)

976

Metric tonnes CO_2e

Durban's emissions have increased.

Durban has undergone a recent inventory verification which has resulted in a more accurate and detailed emissions report, resulting in an overall increase.

4.3 External verification

Durban's emissions have been externally verified.

Name of Verifier: Escience Associates

5.1 **Date and boundary**

Durban is reporting a GHG measurement inventory for a period of one year.

Tue 01 Jan 2013 – Tue 31 Dec 2013

Boundary typology used for Durban's GHG emissions inventory:

Geopolitical boundary - physical areas over which local government has jurisdictional control.

Emissions – Community

5.2 **GHG emissions data**

Durban has used protocols designed to provide standardized set of guidelines to assist local governments in quantifying and reporting GHG emissions associated with their government and community operations.

Both protocols are based upon the Corporate GHG Protocol developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) as well as technical guidance provided by the United Nations Intergovernmental Panel on Climate Change (IPCC).

Gases included in emissions inventory:

CO_2
CH_4
N_2O
SF_6

Total (Scope 1 + 2) emissions for Durban:

22,656,509

Metric tonnes CO_2e

Breakdown of Durban's GHG emissions by scope:

Scopes are a common categorisation method. Scope 1: All direct GHG emissions (with the exception of direct CO_2 emissions from biogenic sources). Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling.

Total Scope 1 activity

11,620,661

Metric tonnes CO_2e

Total Scope 2 activity

11,035,847

Metric tonnes CO_2e

Breakdown of these emissions by end user, economic sector, IPCC sector, GHG or any other classification system used:

End user: buildings, water, waste, transport. Economic sector: residential, commercial, industrial, institutional. IPCC sector: stationary combustion, mobile combustion, industrial processes, waste. Greenhouse gas: CO_2, CH_4, N_2O etc.

Residential: Stationary Fuel Combustion: Scope 1

232,183

Metric tonnes CO_2e

Residential: Electricity Consumption: Scope 2

3,645,812

Metric tonnes CO_2e

Commercial: Electricity Consumption: Scope 2

2,577,589

Metric tonnes CO_2e

Industrial: Stationary Fuel Combustion: Scope 1

4,364,716

Metric tonnes CO_2e

Industrial: Electricity Consumption: Scope 2

4,812,447

Metric tonnes CO_2e

On-Road and Off-Road Vehicles: Mobile Fuel Consumption: Scope 1

6,383,881

Metric tonnes CO_2e

Rail, Air and Water Transport Systems: Air Travel: Scope 3

206,365

Metric tonnes CO_2e

Rail, Air and Water Transport Systems: Water Transport: Scope 3

4,427,756

Metric tonnes CO_2e

Agriculture, Land Use and Forestry: Enteric Fermentation: Scope 1

21,323

Metric tonnes CO_2e

Agriculture, Land Use and Forestry: Sugar Cane Burning: Scope 1

71,310

Metric tonnes CO_2e

Solid Waste: Fugitive Emissions: Scope 1

205,740

Metric tonnes CO_2e

Total (Scope 1) fuel consumed in Durban:

Diesel

1,441,031,913L

Petrol

1,091,061,005L

Liquefied Petroleum Gas (LPG)

180,719,000L

Illuminating Paraffin

161,455,054L

Heavy Fuel Oil

41,131,428L

Total (Scope 2) electricity, heat, steam, and consumed in Durban:

Electricity

11,447,283,081kWh

Durban measures Scope 3 emissions.

Other: Air transport system

206,365

Metric tonnes CO_2e

Other: Water transport system

4,427,756

Metric tonnes CO_2e

Durban's emissions have decreased from their previous inventory year.

A thorough analysis is needed to determine the cause for the reduction of relevant sub-sectors.

5.3 **External verification**

Durban's emissions have been externally verified.

Name of Verifier: Escience Associates

CAN CITIES QUIT FOSSIL FUELS?

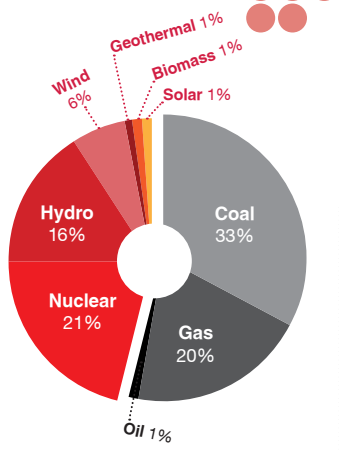
162 CITIES REPORTED THEIR ENERGY MIX,

revealing a diversity of responses, for cities large and small across all regions.

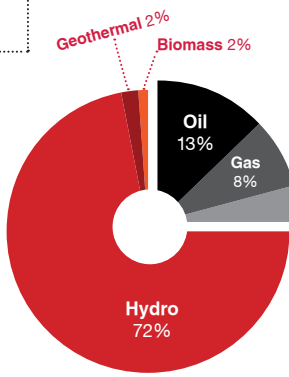
THE RESULTS ARE DIVERSE.

REVEALING MIXES FROM 100% NON-FOSSIL TO 100% CONTINUED RELIANCE ON FOSSIL AND MANY COMBINATIONS THEREOF.

55 NORTH AMERICAN CITIES



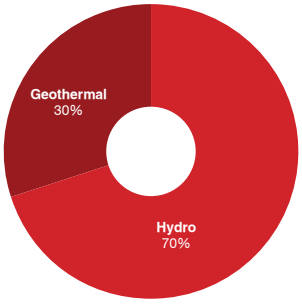
46 LATIN AMERICAN CITIES



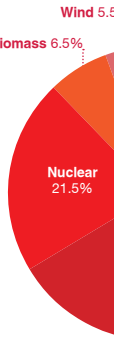
Energy mix by non-fossil %

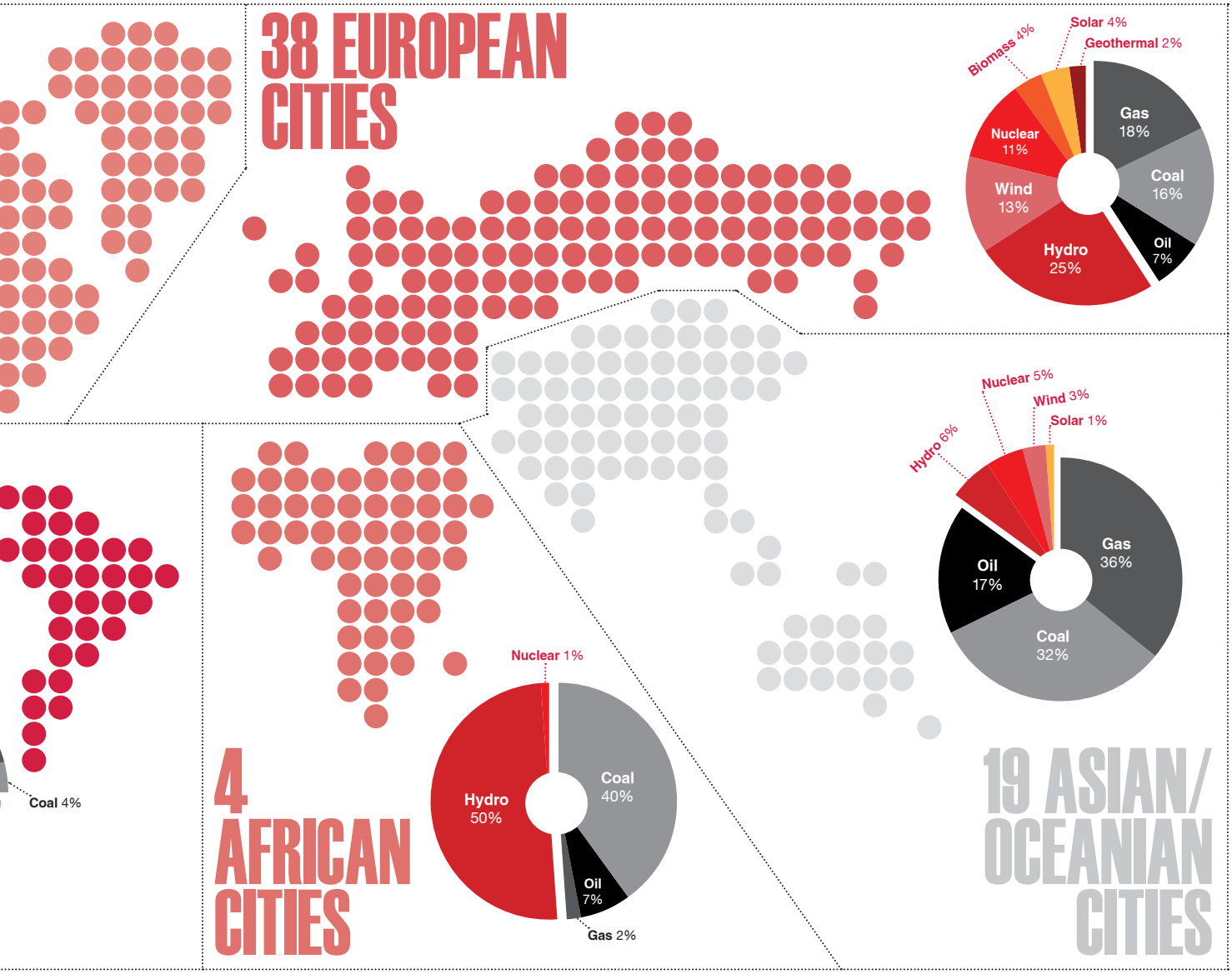
76% 0%

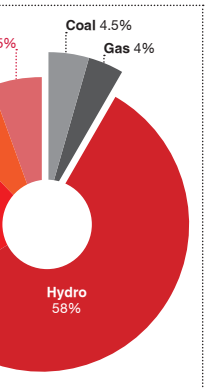
REYKJAVÍK, IS

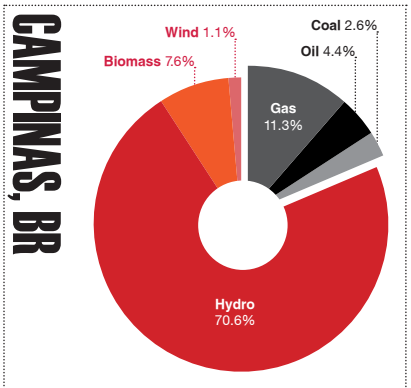


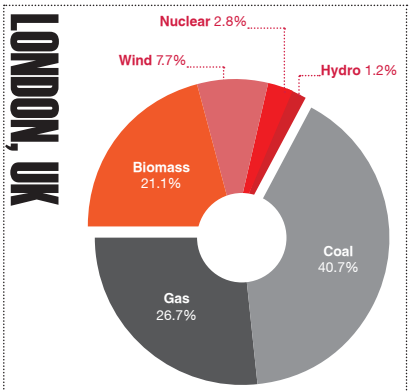
STOCKHOLM, SE

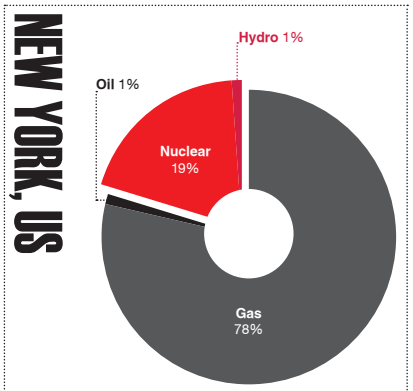



38 EUROPEAN CITIES
Biomass 4%
Solar 4%
Geothermal 2%
Gas 18%
Coal 16%
Oil 7%
Hydro 25%
Wind 13%
Nuclear 11%
Nuclear 5%
Wind 3%
Solar 1%
Hydro 6%
Gas 36%
Coal 32%
Oil 17%
Coal 4%
4 AFRICAN CITIES
Nuclear 1%
Coal 40%
Hydro 50%
Oil 7%
Gas 2%
19 ASIAN/ OCEANIAN CITIES


Coal 4.5%
Gas 4%
Hydro 58%


CAMPINAS, BR
Wind 1.1%
Coal 2.6%
Biomass 7.6%
Oil 4.4%
Gas 11.3%
Hydro 70.6%


LONDON, UK
Nuclear 2.8%
Wind 7.7%
Hydro 1.2%
Biomass 21.1%
Coal 40.7%
Gas 26.7%


NEW YORK, US
Hydro 1%
Oil 1%
Nuclear 19%
Gas 78%

Strategy

6.1 **Local government operations – GHG emissions reduction**

Durban has a GHG emissions reduction target in place for local government operations.

Durban's local government operations GHG emissions reduction target in detail:

Baseline year

2006

Baseline emissions

1,118,061

Metric tonnes CO_2e

Percentage reduction target

33%

Target date

2020

Activities undertaken to reduce Durban's emissions in its government operations:

Buildings

Energy efficiency/ retrofit measures

Institutional (municipal) buildings and facilities: Building energy management system

Currently in effect at a significant scale across most of the city. This is a building light retrofit program funded through the DORA fund.

Cost: (US) $1.000.001 - 2.000.000

Outdoor Lighting

LED / CFL / other luminaire technologies

More efficient luminaires (e.g. LED)

Currently in effect at a significant scale across most of the city. This is a street light and traffic light retrofit program funded through the DORA fund.

Cost: (US) $250.001 - 500.000

Buildings

Energy efficiency/ retrofit measures

Commercial buildings and facilities: Building energy management system

Currently in effect at a significant scale across most of the city. Retrofitting municipal buildings.

Cost: (US) $1.000.001 - 2.000.000

6.2 **Community – GHG emissions reduction**

Durban has a GHG emissions reduction target in place for its community.

Durban's community GHG emissions reduction target in detail:

2006

Baseline emissions

21,413,906

Metric tonnes CO_2e

Percentage reduction target

24.5%

Target date

2020

The target of 24.5% is articulated in the municipal energy strategy (2008). However, a climate change adaptation and mitigation strategy for the city is currently being developed which will revise these targets to align with the national climate change policy.

JUST A LITTLE CHANGE WILL GO FAR.

43 cities reported that they want private sector support to deliver community renewable projects. CDP data indicates that less than half of these projects are located in the global south.

$57 TRILLION

will be invested in infrastructure through 2030. That means that less than 0.01% of this sum, or just

$1 OF EVERY $8K

spent is required to support delivery of renewable goals for all the CDP cities that report a target. At just over $7 billion in total, this is still a large price tag and represents a considerable challenge for cities, but with global focus it can be achieved.

6.3 **Planning**

Durban has a city-wide renewable energy target.

Proportion of total energy from renewable energy sources

40%

Target date

2030

Implementing viable small-scale renewable energy generation such as hydro and rooftop solar photovoltaic within municipal assets. Introduce rebates and incentives to encourage electricity users to implement renewable energy technologies. Introduce renewable portfolio standard to increase production of energy from renewable source.

6.4 **Water**

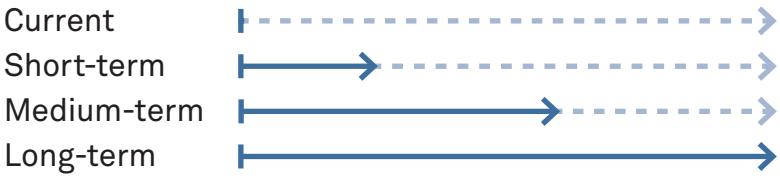
Durban foresees substantive risks to its water supply in the short or long term.

Risks to Durban's water supply as well as timescale:

Seriousness

Less Serious ! ! ! Serious ! ! ! Extremely Serious ! ! !

Timescale



Vulnerable Ultrastructure

Risk: !!! **Timescale:** ⟶

The most vulnerable site is identified as the Central Sewage Treatment Works. However, at least for the foreseeable future, protection in the form of increased rock armouring will protect the Works. As a long term measure alternatives to the siting of the Works will be investigated. In addition there are many sewage pumping stations which, positioned to serve coastal development, are themselves positioned in vulnerable areas. These sites can also be protected by gabions, rock armouring etc as dictated by the particular site. There is a growing recognition within Durban that development limits (potential erosion lines) need to be applied but the issue of compensation to coastal property owners is ongoing. Without such development controls the need for sewage pumping stations to be sited in areas which are potentially vulnerable will persist.

Increased water stress or scarcity

Risk: !!! **Timescale:** ⟶

- Initial indications are that the average potential increase in yield at Midmar Dam, for various planning horizons, could be:

- Immediate planning horizon (to 2030) - an increase of ca15% (i.e. an additional 70 Ml/day with an assurance of 99%)

- Intermediate planning horizon (2046 to 2065) - an increase of ca30%

- Distant futures (2081 to 2100) : an increase of ca50%

Actions (on the supply and demand side) that Durban is taking to reduce risks to its water supply:

A number of innovative approaches have been put into practise, or which are being actively pursued. These include:

- Methodologies used to empty Ventilated Improved Pit (VIP) toilets.
- Developing low cost, low maintenance sewage treatment system - which does not require electricity - with the effluent providing irrigation to a community garden. Once developed to meet local water quality standards the treatment system will facilitate the provision of water borne sewerage to Housing schemes situated in areas outside that served by Municipal sewerage infrastructure.
- Investigating water conservation by adopting catchment management practices which incorporate the payment for certain ecosystem practices. The investigation will add to the alternatives to large dams.
- Cultivation of a specific oil producing species of algae using treatment works effluent. In addition to supplying a bio-diesel this process having the added advantage of removing excess nutrients from the final effluent.
- The generation of hydro-electric power by utilising the high pressures inherent in the water supply mains.

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