

enviroworks

SPECIAL EDITION: ENERGY & CLIMATE CHANGE

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Biannual environmental newsletter of the City of Cape Town

Published by the City of Cape Town Environmental Resource Management Department in partnership with a range of other City departments.

The time to act is now

Many respected world leaders in politics, science, economics and environmental affairs are outspoken about the urgent need for global action to combat climate change.

"Every child will remember the story their parents told of the three little pigs and the big bad wolf. In the world we live in, the bad wolf of climate change has already ransacked the straw house and the house made of sticks, and the inhabitants of both are now knocking on the door of the brick house, where the people of the developed world live."

Archbishop Emeritus Desmond Tutu

"Cities that sink their treasure into dirty coal infrastructure, high-carbon production methods and development that is not energy efficient, are not only jeopardising the health of the planet; they are jeopardising their own economic future."

After United States Special Envoy for Climate Change, Todd Stern

"There is no time to lose. Climate change is the challenge of all time. Addressing it will take collective political will. No part of the world is immune. We are all in this together, irrespective of our level of contribution to the problem. Business as usual for any one country would be a tragedy."

2004 Nobel Peace Prize Winner, Wangari Maathai



Urgent action is needed to avoid losing much of the natural beauty of Cape Town's environment and urban landscape due to the effects of climate change.

"Facing an uncertain climate future, Cape Town aims to be a low-carbon city – a city that is resilient, adapting well, and always acting in the common good, with social justice as our guiding principle."

City of Cape Town Executive Mayor, Dan Plato

"Climate change affects us all, but it does not affect us all equally. The poorest and most vulnerable – those who have done the least to contribute to global warming – are bearing the brunt of the impact today."

United Nations Secretary-General, Ban Ki-moon

"Leadership by all developed countries, through emission-reduction commitments that are in line with science and that address their historical responsibilities, would ensure much needed progress in the international negotiations. Now is the time to act, and to act decisively."

South African State President, Jacob Zuma

"The large part of the fight against climate change will be won through actions by citizens, businesses and local governments, in the towns and cities that you represent."

Executive Secretary, UN Framework Convention on Climate Change, Yvo de Boer

NEW-LOOK ENVIROWORKS

We have revamped this newsletter, and would like to know what you think. Please e-mail your comments to enviroworks@capetown.gov.za.



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All in it together

Everyone on this planet will have to do their part to fight climate change, and therefore, everyone should know what it is all about.

We often hear about climate change in the news, but perhaps do not fully comprehend just how serious it is. As it is probably the number-one issue in the world today, it is important to be fully informed of the challenges it brings. This is no longer something we can worry about later – it is vital that we tackle the problem head-on, and that we do so now.

So, what is climate change?

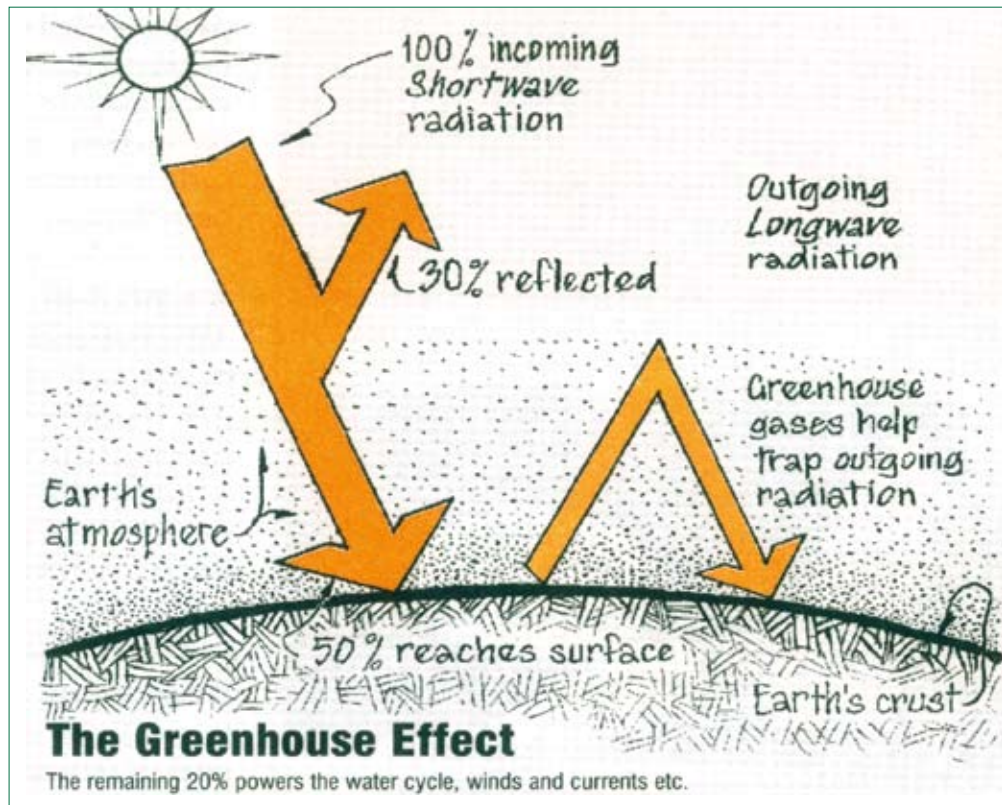
Since the Industrial Revolution, our energy use has increased markedly. More and more work is done by machines or vehicles, which either burn fossil fuels – coal, oil or gas – or need electricity generated by the burning of fuels. Most industrialised economies rely on fossil fuels, but now face two major problems.

Firstly, the stocks of fossil fuels are running out. In the last 50 years, we have used more coal than in the rest of human history, while we may run out of oil within the next 50 years. However, what is even more worrying is the damage our fuel reliance is doing to the environment.

The burning of these fuels releases greenhouse gases into the earth's atmosphere – mostly carbon dioxide (CO₂). The generally accepted 'safe' amount of CO₂ in the atmosphere is 350 parts per million (ppm). Currently,

WHAT IS A CARBON FOOTPRINT?

A carbon footprint is a measure of CO₂ emissions that result from various activities of an individual, city or country during a given time period. For an individual, it is the total amount of CO₂ that your lifestyle produces and it indicates your impact on the environment through CO₂ emissions.



(The New Energy Book 2008, Sarah Ward)

we are at 390 ppm, with global concentration levels having climbed by 20% since measurement began in 1959. This could increase to 80% by 2050 if current usage levels are not brought down.

Worryingly, the coal-fired power stations planned for the next 25 years around the world will produce more CO₂ emissions than the total produced since the start of the industrial era.

The effects

Greenhouse gases change the way in which energy from the sun enters and escapes from the atmosphere. This is changing the balance of incoming and outgoing heat by trapping more of the outgoing heat, causing a greenhouse effect around the earth. This leads to a higher average temperature on

the earth's surface, and a change in worldwide weather patterns.

We have already seen the average annual global temperature reach a record high in 2005. This is causing unexpected changes, and the ice caps to melt rapidly, with the latter resulting in a sea-level rise that will flood low-lying coastal areas. Severe storms and huge wildfires are also becoming more common around the world, while the world's water supply is threatened and agricultural yield is decreasing.

These effects are set to get worse, unless we take action now. That is why it is vital that every person in Cape Town understands climate change – and does their part to help reduce the city's carbon footprint. □

In the front line

With its long coastline, unique environment and challenging socioeconomic conditions, Cape Town and its people will be hard hit by climate change.

Cape Town is home to some 3,5 million people, which is a tiny percentage of the world's total population. The Mother City accounts for a similarly tiny percentage of the world's total energy use and greenhouse gas emissions. However, Cape Town and its emerging economy are particularly vulnerable to a changing climate, and it therefore remains a major issue for the city and its people.

It is expected that Cape Town will experience an increasingly drier and warmer climate, with an increase in both the intensity and frequency of extreme weather events. This will lead to water shortages, agricultural failure, the loss of unique and globally critical biodiversity, coastal flooding and erosion, extreme wind and rainfall, and longer, more intense heat waves. The risk of fire will also increase.

Counting the cost

With 98% of freshwater resources already allocated, a drop in annual rainfall would force even stricter water restrictions than already imposed each year. But then the dry periods are expected to be interspersed with unusually heavy rainfall brought on by increasingly severe storms, leading to flooding and disruption of infrastructure and services.

Food security will come under threat. Adequate and sustainable adaptation strategies are therefore needed to ensure that the farms supplying the city continue to produce their crops as the climate changes. This may require a change in farming methods, and perhaps even in the type of crops that are cultivated.

A sea-level rise will have a huge impact on a coastal city like Cape Town, as scientists predict an 85% chance of a 4,5 metre storm surge sea-level rise in the next 25 years. This would see large areas of the city temporarily under water, possibly causing more than R20 billion's damage.

Furthermore, eco-tourism is a major contributor to Cape Town's economy, with people from all over the world visiting the city for its natural beauty and environmental biodiversity. Therefore, a loss of species and habitats would result in a decrease in tourism, as well as a decrease in the economic injection tourists bring to the city and its people. While global warming is not going to reduce the earth to a lifeless moonscape, scientists predict that as many as a million species on the planet could be extinct by 2050 if things do not change. Cape Town, with its hundreds of unique Cape Floral Kingdom species, would be particularly hard hit.

Of great concern is that uncontrolled climate change will most certainly widen the already vast gap between rich and poor. An economy placed under further pressure will be unable to address the current levels of poverty and social inequality, and the people having the least, will be



Climate change will threaten Cape Town's unique ecosystems and the city's vibrant eco-tourism industry.

***CLIMATE
CHANGE FACT**
Eleven of the last 12 years
rank among the hottest
years since 1850, when
records of global surface
temperatures began.



A rise in sea-level could see large sections of Cape Town under water, especially due to the storm surges expected as a result of climate change.



Poor communities will be hardest hit by climate change.

the people suffering the most under shortages, restrictions or limited access to resources and services.

To compound matters even further, there could be a significant increase in the number of people migrating to the city from surrounding regions as well as other Southern African countries. They will be looking for employment and access to Cape Town's already stretched resources and services, having seen their own regions or countries, and their livelihoods and communities, decimated by climate change.

Opportunities

Looking to the future, we as a city must firstly move towards clean and renewable energy, which will become the foundation of our economic growth and energy security. Secondly, we need to prioritise the extension of energy services to poorer communities, and thirdly, we need to create a compact, resource-efficient city, which runs on public transport. To achieve this without further contributing to global warming, means that we must start embracing new technologies,

compact city planning and a low-carbon economy.

However, Cape Town should not see the impending threat of climate change as a challenge only, but also as a major opportunity. Moving our city towards a low-carbon economy, using renewable and green technologies, provides massive opportunities for job creation, skills development and poverty alleviation. A compact city will also provide its citizens with ready access to urban opportunities, through integrated development and an excellent public transport system as its lifeblood.

ADAPTATION AND MITIGATION

There are generally two approaches to fighting climate change: adaptation and mitigation. The adaptation approach looks at measures to prepare for and respond to climate change by adapting systems, services, infrastructure and practices. The mitigation approach takes matters further, and reduces the human contribution to climate change, for example by releasing less CO₂ into the atmosphere.

Prevention is always better than cure – it is much cheaper and more effective in the long run to prevent climate change than to try to adapt to it. The City of Cape Town is looking to strike a balance between the two, by focusing on initiatives that address both adaptation and mitigation. For example, by insulating roofs in new housing, we will be adapting these houses to deal with higher or lower temperature extremes, while also mitigating climate change by reducing the energy needed for indoor heating or cooling.

It presents the city with the choice to create a sustainable future – one that provides for all its citizens. A future of quality living environments, and of greater social justice and equality. Remember, however, that this is not government's responsibility alone, but will require a collective effort by all Capetonians. □

High hopes for global change

Nearly 200 countries hope to reach agreement on climate change this year, so that cities like Cape Town can avoid the catastrophic impacts of this phenomenon in the near future.

This December, the 15th United Nations Conference of the Parties (COP-15) climate change conference will be held in the Danish capital, Copenhagen, aiming to establish a fair and effective global treaty to reduce the emission of greenhouse gases, and slow the rate of climate change.

South Africa will be one of the 192 member countries of the United Nations Framework Convention on Climate Change (UNFCCC) attending this meeting, which will also be attended by a large number of local governments, including the City of Cape Town, and environmental organisations.

It is hoped that COP-15 will finally pave the way to a legally binding convention, because previous conventions have proved ineffective.

First some background ...

In 1992, 154 countries signed the UNFCCC in Rio de Janeiro, volunteering to reduce atmospheric concentrations of greenhouse gases. This was followed by a series of COP meetings to assess progress, starting with the 1995 COP-1 in Germany.

At COP-3 in Japan in 1997, the Kyoto Protocol was formulated, with signatories agreeing to reduce emissions by 2012 to 5% below the 1990 levels. However, by 2007, only 37 countries had signed the protocol, for several reasons.

Firstly, developed countries were blamed for the majority of greenhouse gas emissions, and thus, some developing countries demanded to be compensated for the damage caused by the resulting climate change. Secondly, the voluntary basis for reduction in emissions, and the lack of measures to ensure compliance, meant that countries could carry on with business as usual, without fear of sanction.

The third and most important problem was that several leading industrialised countries did not sign

the protocol – notably the United States of America (USA), citing the detrimental effect this would have on its industries, while its economic competitors, such as China and India, would not be bound by the same restrictions. Fortunately, the USA seems to be committed to COP-15, and is expected to influence China and India to sign as well.

Invest now

This year, there is another potential problem. With the world suffering a global recession, most countries may be hard-pressed to invest in carbon emission reduction projects. However, the warning signs show that they no longer have a choice.

If agreement is not reached at COP-15, and the current rate of emission continues, it will result in further disruption of weather patterns and further global warming, which in turn will lead to further loss of environmental habitats and ecosystems, damage to agricultural and economic sectors, and job losses.

Achieving an effective and fair climate treaty at COP-15 is likely to define our future. □



The use of green energy, which does not require the burning of fossil fuels, needs to be globally promoted to reduce climate change.

*CLIMATE CHANGE FACT

The USA is the single biggest carbon-emitting country in the world, accounting for **24%** of the global total. China is next in line with **13,5%**.

Signed up

South Africa is fully committed to the global fight against climate change, but is still guarding the interests of its people.

When South Africa signed the United Nations Framework Convention on Climate Change (UNFCCC) in 1997, and then the Kyoto Protocol in 2002, the country agreed to fulfil certain obligations to help stabilise the concentrations of greenhouse gases in the earth's atmosphere. These included keeping a national inventory of emissions, and implementing national and regional programmes to mitigate climate change.

Part of this process saw the then Department of Environmental Affairs and Tourism (DEAT) – now the Department of Water and Environmental Affairs (DWEA) – develop a National Climate Change Response Strategy (NCCRS). It is designed to address the global priority issues for dealing with climate change, but also takes into account the economic realities of our country. Thus, the strategy aims to address climate change with all actions based on sound economic principles, which will bring tangible benefits to the country and its people.

Although DWEA acts as the lead agency for climate change response in South Africa, it is recognised as a cross-cutting issue that affects almost all other government departments. The NCCRS therefore requires that many government departments and local governments work together to ensure that response measures are properly directed, acceptable to all, and carried out with a national focus.

It starts here

In South Africa, we have historically had, and continue to have, access to relatively cheap energy. This has resulted in significant energy inefficiencies: in the way we use energy, generate electricity, design



South Africa's national strategy on climate change is designed to look after the interests of all the country's people.

our cities, commute from our homes, and plan our futures. This country ranks as one of the world's top 15 energy consumers and carbon emitters, so we cannot ignore our responsibility to help fight global climate change.

Even though South Africa is classified as a non-Annex I country by the UNFCCC, and is thus not required to reduce its greenhouse gas emissions, the country is already addressing the issue. The Department of Minerals and Energy has developed a strategy on renewable energy, clean energy development and an energy efficiency programme, to support the use of more diverse forms of energy in order to create a less carbon-intensive energy economy.

Another National Government initiative is the Long-term Mitigation Scenarios (LTMS) study, which aims to provide a sound scientific analysis, from which government can draw up

a long-term climate policy. This forms the basis of negotiations with the UNFCCC, and also ensures that South African stakeholders understand and commit to a range of realistic strategies for future climate action. □

*CLIMATE CHANGE FACT

South Africa's population makes up **0,7%** of the world total, but the country's carbon emissions account for **1,6%** of the world total.

To read the NCCRS, download a copy from <http://soer.deat.gov.za/themes.aspx?m=43>.

Committed to sustainability

The City of Cape Town is fully committed to its Energy and Climate Change Strategy with clear objectives and targets, and a long list of projects and programmes to achieve these goals.

With the world sitting up and taking notice of climate change and its effects, local governments and institutions are taking the lead in the fight against this global problem. The City of Cape Town is starting to link climate change to its development strategy and sees the opportunities for creating a lower carbon, more modern, liveable and equitable city, which builds on its competitive advantages.

The City's Energy and Climate Change Strategy of 2006 sets out the vision, objectives, targets, measures and projects for all City energy activities. It is based on the State of Energy Report, which maps out Cape Town's energy profile, and also on issues such as the city's energy security, residents' access to energy services and vulnerability to climate change impacts.

Alongside this, the City developed the Framework for Adaptation to Climate Change in the City of Cape Town (FAC⁴T).

The City has set itself a number of goals, including:

- a 10% reduction in electricity consumption on the 2006/7 baseline by 2014;
- energy-efficient lighting in 90% of all households by 2020;

- a 10% decrease in private vehicles commuting into the city centre by 2010;
- 10% renewable energy supply by 2020.

Further strengthening these commitments, the City has incorporated the following related targets into its Environmental Agenda, which Council approved in June 2009 and are to be achieved by July 2014:

- The development and endorsement of a progressive and effective Climate Change Adaptation Plan of Action (based on the FAC⁴T Framework)
- A reduction in the per capita carbon footprint to an annual average of 5 tonnes (a total reduction of 20 million tonnes) in CO₂ equivalents
- Improved electricity efficiency to achieve a 10% reduction on the total 2007 consumption figures by 2014

To achieve this, in 2008, the City made "Energy for a sustainable city" one of the priority strategic focus areas of its Integrated Development Plan (IDP), which sets long-term goals for Cape Town up to the year 2020. To drive this focus area, the Mayoral Committee determined that an Energy and Climate Change

Committee of 11 councillors should be established (in terms of Section 80 of the Municipal Systems Act). This committee is supported by an Executive Management Team Subcommittee on Energy and Climate Change, and three crosscutting work streams, which respectively address energy security, adaptation and awareness.

What's happening?

The City currently has a large number of programmes and projects under way, which address carbon mitigation through energy efficiency or renewable energy initiatives. Some of these projects are discussed in greater detail further on in this newsletter, but a few deserve to be highlighted here.

The inclusion of greening measures in the Council rental stock upgrade programme is one of several low-income housing projects to ensure that homes in Cape Town are retrofitted with energy-efficient lighting, low flow toilets and insulated ceilings. Streetlights and traffic lights are being retrofitted with energy-efficient lamps and systems as well.

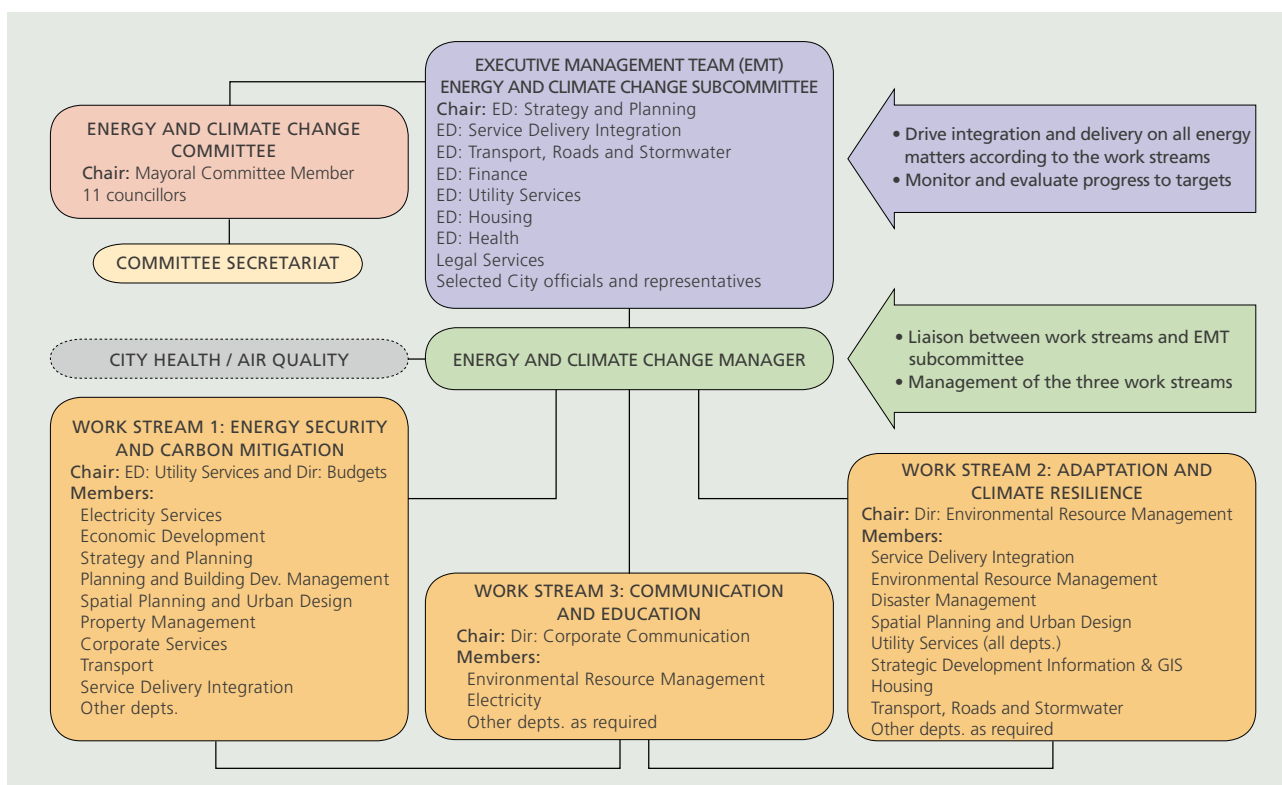
The Integrated Rapid Transit programme is aimed at improving public transport, thereby encouraging



*CLIMATE CHANGE FACT

Vehicles account for **65%** of air pollution and poor air quality in Cape Town, with industry next on the list (**22%**), followed by wood fires (**11%**).

To read more about the City of Cape Town's energy and climate change initiatives, go to www.capetown.gov.za/environment, and download the Cape Town Energy and Climate Change Strategy and other related documents.



City of Cape Town institutional set-up for energy and climate change

private car users to switch to public transport. This will reduce the city's carbon footprint. With some 6 000 vehicles in its fleet, the City is setting an example by pursuing compliance with national and local air quality legislation through its Greening the Fleet programme.

In terms of renewable energy sources, thus far, the City is the only

metropole in South Africa purchasing wind power (from the Darling Wind Farm). Regulations are also being developed to facilitate the installation of micro wind turbines on private residences for wind-generated electricity, and to develop projects using methane from landfill sites and sewerage works for electricity generation.

A key focus of the City's climate change communication and education programmes is the Smart Living Handbook – a practical guide for Capetonians to make their homes safer and more cost-effective, while working to reduce their impact on our precious environment. The Youth Environmental School (YES) programme has made energy and climate change its major focus in 2009.

Another major research project is the City's Sea-level Rise Assessment, which has entailed a risk assessment to formulate a range of sea-level rise scenarios with which the City may have to contend.

Many of these projects are being conducted through the Urban Environmental Management Programme (UEMP), which is funded by the Danish International Development Agency (Danida) as well as by the City. □

ELSEWHERE IN SOUTH AFRICA

- Just like Cape Town, other South African cities are also addressing energy and climate change issues. Durban launched its Municipal Climate Protection Programme in 2004, and more recently, added the Durban Industry Climate Change Partnership Project.
- Down the coast, in Port Elizabeth, the Renewable Energies Pilot Project is testing a hybrid energy system, comprising solar panels, a wind turbine and battery storage in a typical house, while pilot projects are investigating the dimming of city streetlights to save energy, and a wind turbine on the Hobie Beach pier to promote renewable energy sources.
- Up in Johannesburg, the Rea Vaya Bus Rapid Transit System will reduce current CO₂ emission levels by 311 586 tonnes through promoting safe, reliable public transport, and reducing the number of private vehicles and taxis on the road. The installation of solar water heaters and energy-efficient lighting is another big focus in the Gauteng capital.

In power-saving mode

By saving electricity, the residents of Cape Town will help build a lower carbon, more economically competitive future for the city.



Saving electricity will be the focus of the City's energy and climate change communications campaign and it will include promoting the use of water and energy-efficient showerheads.
(Photo: Johnny Anderton)

As part of its energy and climate change focus, the City of Cape Town will be launching a communications campaign to show residents what they can do differently to help achieve the City's energy efficiency and environmental objectives – and save some money in the process.

The most important part of this will be the electricity-saving campaign. With Eskom having warned that there will be an electricity shortage for many years to come, it is essential to reduce power consumption if the city is to avoid a repeat of the load-shedding experienced in early 2008.

Recent electricity tariff increases may have led many Capetonians to start thinking about ways to save electricity, but a strategic behaviour change campaign will help convert this into a more purposeful practice. Donor funding has therefore been used to appoint an Electricity Efficiency Campaign Co-ordinator, and to fund the first year of the campaign's implementation.

As part of the campaign, the City launched an Energy Efficiency Forum for commercial building managers in October, and further engagement with industrial customers is on the cards. For households, the campaign will promote more efficient water heating as the first of a range of saving practices at home. □

For more information on the City's electricity-saving campaign, contact Sarah Rushmere at sarah.rushmere@capetown.gov.za.

Putting their heads together

The City of Cape Town is working with key thinkers to plan Cape Town's response to climate change.

With the City of Cape Town aiming to be a leading local authority in its response to the challenges that climate change presents, it has adopted an Energy and Climate Change Strategy, and established an Energy Committee. However, it is the newly formed Climate Change Think Tank, the first of its kind, which will proactively lead the City's response to climate change.

The Think Tank, which met for the first time in September, consists of more than 30 top academics and specialists from a number of Cape Town institutions, who will assess climate change and its effects on the city and its people.

Gregg Oelofse, the City's Head of Environmental Policy and Strategy, says the Think Tank is an innovative approach



The City's Climate Change Think Tank met for the first time in September.

that brings together key thinkers within Cape Town society to address the significant challenges the City will face in the future, which could impact heavily on the economy, service delivery, resource sustainability and vulnerable communities.

The Think Tank was established in partnership with the University of Cape Town's African Centre for Cities and Sustainable Energy Africa, with funding from the Royal Danish Embassy. It will meet quarterly for the next two years, and regular updates from the group will be made available to the public. □

Planning an energy-efficient future for Cape Town

Climate change and energy use have become central components of Cape Town's urban planning.

Modern urban planners are faced with many challenges, including water and electricity supply, waste removal, and access to transport. However, with the global focus on climate change, another challenge has been added to the list, namely ensuring a low-carbon future.

The planning and functioning of urban areas are fundamental to supporting low-carbon economies and creating societies with the smallest possible impact on the environment, through reduced energy consumption and greenhouse gas emissions. The City of Cape Town has embraced this new approach in its draft Cape Town Spatial Development Framework (SDF), which is aimed at densifying the city in order to make more efficient use of limited urban space and resources.

Densification would offer the city's residents more quality living environments, cut the cost of service delivery and waste removal, and reduce traffic congestion through more viable public transport, and as a result, the city's energy usage and carbon footprint will reduce.

Also, the creation of a lower-carbon economy in the city by using



Denser development in Cape Town, such as this in the Northern suburbs, will play a leading role in combating climate change.

renewable and green technologies for its energy needs, offers an excellent opportunity to create jobs, develop skills and alleviate poverty. This is Cape Town's chance to make an active choice for a sustainable future that provides for all its citizens.

World Town Planning Day

As part of its commitment to low-carbon planning, the City hosted its second conference and exhibition on 10 and 11 November to celebrate World Town Planning Day. This special day was first celebrated in 1949 to recognise and promote the role of planning in creating liveable communities, and is now celebrated in 30 countries.

The aim of the City's two-day conference was to provide a platform to discuss and debate low-carbon planning issues, and then integrate them with Cape Town's future urban planning and development practice. A number of international and local experts participated in the debates, whereafter smaller group discussions focused on more specific urban planning issues, particularly the changes needed to support a low-carbon future.

Participants in the conference included urban planners, development practitioners, researchers, property developers, and member cities of InWEnt's Low-carbon Economy Forum and Sustainable Energy Africa's city energy programmes. □

*CLIMATE CHANGE FACT

Houses with double storeys or shared walls have better thermal efficiency, and therefore require less energy for indoor heating or cooling.

For more information on the Spatial Development Framework, visit www.capetown.gov.za/en/sdf, or contact Cathy Stone at catherine.stone@capetown.gov.za.

Enviro-wise wheels

The City of Cape Town is leading the way in transport greening to reduce greenhouse gas emissions.



The Electricity Services Department is setting the standard for 'greening' the City's vehicle fleet.

More than half of the energy the City of Cape Town administration uses, is consumed by its fleet of 6 000 vehicles – the single largest fleet in the city. With transport consuming more energy than any other activity or industry in Cape Town, accounting for 55% of the city's total energy consumption, and 28% of all carbon emissions, it is essential for the City to 'green' its fleet – to save fuel, reduce emissions, and promote resource efficiency.

The City is busy doing so, and its Electricity Services Department is leading the way, having recently won this year's top prize for managing the most environmentally friendly vehicle fleet in South Africa. The Department garnered this national prize in September at the inaugural Green Supply Chain Awards in Johannesburg, hosted by the Consumer Goods Council of South Africa and the Chartered Institute of Logistics and Transport. This annual competition is aimed at recognising organisations that have significantly reduced their supply chain carbon footprint.

"Cape Town's Electricity Services Department impressed the judges with its 'green' innovations in managing its fleet of 740 vehicles," says Alderman Clive Justus, Mayoral Committee Member for Utility Services. "By implementing a comprehensive maintenance strategy, the technical support services team achieved a massive 22% reduction in fuel usage, despite a 9% increase in fleet size."

"We started by updating technical specifications for vehicle replacements to be on par with international standards, and tendered for vehicles that

incorporated the most fuel-efficient technology," says John Esterhuizen, Technical Support Services Manager for the Electricity Department. "Gas analysers were also introduced to ensure that the vehicles comply with emission limits."

The City also installed a satellite vehicle tracking system, enabling managers to keep tabs on every single vehicle to cut down on unnecessary trips and excessive mileage, drastically reducing fuel consumption.

Savvy driving saves fuel

Meanwhile, the City has launched a fuel efficiency campaign as part of its 2010 Green Goal Programme, in order to encourage motorists to drive more efficiently. Smooth, steady driving, lower speeds and a sleek vehicle profile all help to reduce fuel consumption, and result in less vehicle emissions into the atmosphere.

In addition, also as part of the 2010 Green Goal Programme, the City is partnering with the Western Cape Provincial Government and the South African Petroleum Industry Association (SAPIA) to undertake a pilot project to develop an eco-driving training programme for taxi drivers to improve fuel efficiency and reduce emissions. □

*CLIMATE CHANGE FACT

For every litre of fuel a car uses, it generates about **2,4 kg** of CO₂.

For more information on the City's transport greening initiatives, contact Niki Covary at niki.covary@capetown.gov.za.

Greener and smarter

A central focus of the City of Cape Town's efforts to combat climate change and promote energy efficiency involves a range of resource efficiency projects, from low-cost housing to traffic and streetlights.

Green building is about using resources efficiently when positioning, designing, constructing, renovating and operating buildings, so that they do not harm human health or the natural environment. To guide this process, the City of Cape Town is currently finalising its Green Building Guidelines, a comprehensive guide to more resource-efficient buildings and developments. (It is envisaged that these guidelines will be enacted through a Green Building Bylaw as well.)

This is one of the City's greening projects aimed at reducing Cape Town's and Capetonians' carbon footprint by changing behaviour patterns and introducing new technologies that reduce the amount of energy used for industry, commerce, transport and everyday life.

Another notable greening project is the Community Residential Units (CRU) project, which will use cost-saving, greening mechanisms – including insulated ceilings, low-flow showers, taps and toilets, and energy-efficient lighting – in the renovation of 40 000 Council-owned rental units. The City is also working on a greenfields housing project in the Ottery area to create a 'greener standard' for new low-cost housing.

Retrofitting

Another one of the City's programmes is to retrofit low-cost houses that were built before 2005 with ceilings. The national housing subsidy has only been providing for ceilings in the subsidy since 2005 in houses located in winter rainfall areas (i.e. the Western and Southern Cape). Therefore, many houses in Cape Town lack ceilings, which places a significant health, comfort and cost burden on the inhabitants.



The City is planning a Green Building Bylaw based on its Green Building Guidelines.

The retrofitting programme for Council-owned buildings aims to complete four buildings in 2010, and then roll this out to all other Council buildings and facilities. As a retrofit can typically reduce energy consumption by 20% to 25%, the City could cut its energy bill by up to R30 million, and significantly reduce greenhouse gas emissions in the process.

Similarly, the retrofitting of streetlights and traffic lights with high-pressure sodium energy-efficient systems; the replacement of potable water and wastewater pumps with new energy-efficient pumps, and the installation of energy-efficient field lighting in 2010 stadia, are all under way.

Spreading the message

The City has various communications and environmental education tools to promote its greening projects, and educate the public and business sectors about the need for and benefits of greening. As part of this, the City has launched an

Energy Efficiency Forum to provide owners and managers of offices, shopping centres, hotels and other commercial and public buildings with practical knowledge on energy-efficient solutions. □

To download a copy of the draft Green Building Guidelines, go to www.capetown.gov.za/environment.

*CLIMATE CHANGE FACT

Compact fluorescent light bulbs convert **80%** of the energy they use into light, and just **20%** into heat. Traditional incandescent bulbs are far less efficient, producing **20%** light and **80%** heat.

The ultimate investment

Protecting Cape Town's environment from unsustainable energy use and climate change makes great economic sense.



Cape Town's unique natural environment is the foundation of the city's economy and needs to be well protected.

While it is impossible to put an exact economic value on Cape Town's natural environment – it is, after all, priceless – we can estimate the contribution that the unique species and natural scenery and beauty make to the city's economy.

Conservative estimates place it between R2 billion and R6 billion per year, with the natural environment, including our beaches, making up at least 60% of the city's attraction for tourists. The film and advertising industry is another significant contributor to the city's economy, bringing in some R400 million per year, as Cape Town's terrific scenery, great weather and relatively low costs make filming here extremely attractive.

To say that the environment is the foundation of Cape Town's economy is therefore completely justified, and compels the City to ensure that this hugely valuable asset is well protected and utilised efficiently. That is why the environment features so prominently in the latest revision of the City's Economic and Human

Development Strategy (EHDS) – and why, these days, energy and climate change are so often mentioned in the same breath as economic issues.

Economic goals

The City simply cannot afford to look on as its environment is eroded by climate change. The resultant loss of species and habitats will hit the city and its people directly in the pocket with a loss of tourism, as fewer people will come here if Cape Town's natural environment loses its appeal.

Central to the EHDS, therefore, is the creation of an environment that grows visitor numbers to Cape Town. This not only entails investment in and management of the environment, but also making sure that Cape Town is marketed both locally and internationally as an investment, business, film and tourism destination of choice.

The EHDS is also aimed at positioning Cape Town as a leader in low-carbon, green industries and development, through the

promotion of energy-efficient and renewable energy technologies in the manufacturing, commercial and residential sectors.

This also presents a significant opportunity to revitalise the flagging manufacturing sector, by establishing Cape Town as a green technology centre, and promoting the establishment of green industries, such as the manufacture of solar water heaters.

This holds huge potential for foreign investment and green jobs, as international companies are increasingly choosing to do business with environmentally conscious companies and governments. □

*CLIMATE CHANGE FACT

Worst-case scenarios predict that at least **30%** of Cape Floral Kingdom species will be lost due to climate change.

For more information on the City's Economic and Human Development Strategy, contact Theminkosi Siganda at theminkosi.siganda@capetown.gov.za.

First line of defence

Protecting Cape Town's diverse and unique natural ecosystems could be a key defence against climate change.

One of the potential effects of climate change could be an increased loss of biodiversity and natural habitats. The loss or extinction of species could therefore be compounded by an erratic climate and more frequent extreme weather events.

Healthy, functioning ecosystems are globally recognised as the first line of defence against climate change and storm damage. Conserving our terrestrial, freshwater and marine biodiversity, and restoring degraded ecosystems, are urgently needed actions to adapt to and mitigate global climate change.

- We need the rivers, vleis and wetlands to absorb and process the potential increase in run-off water that would result from more intense rainfall.
- Vegetated coastal sand dunes are the first line of defence against coastal erosion, sea-level rise or large waves caused by extreme storms, which are all possible results of climate change.
- Natural ecosystems generally are more carbon dense in their natural state, and are important in sequestering carbon.
- Climate change is likely to increase water scarcity in Cape Town, as longer dry spells are expected. Indigenous vegetation uses less water than alien plants, and by reducing alien vegetation and promoting our indigenous flora, we can therefore mitigate and adapt to the impacts of climate change.



Conserving Cape Town's natural vegetation could be vital in the fight against climate change.

BIODIVERSITY HOT SPOT

Cape Town can be considered as an urban biodiversity hot spot. With the city located within the Cape Floral Kingdom, the smallest and richest for its size of the world's six floral kingdoms, many species that occur in Cape Town are found nowhere else on earth.

Unfortunately, Cape Town has the distinction of being the city with the highest number of threatened plant species in the world – almost a fifth of the threatened plants in the Cape Floral Kingdom are found within its boundaries. To top it all, of the 24 South African vegetation types rated as critically endangered, nine occur in Cape Town.

Defence plan

It is therefore essential that the City carefully plans all future development in order to halt the destruction of its natural ecosystems, and ensure the conservation of remaining biodiversity. That is where the City's Biodiversity Network (BioNet) comes into the picture.

BioNet has identified the minimum natural vegetation remnants needed to conserve a representative sample of Cape Town's biodiversity.

By conserving these remnants and corridors of vegetation, and controlling alien vegetation, we will ensure that the biodiversity that is vital to Cape Town's defence against climate change survives.

Also, BioNet will contribute to the City's goals of retaining the natural beauty of the city for both tourism and recreational opportunities, which will retain quality of life and economic opportunities for the people of Cape Town. □

For more information on BioNet, visit www.capetown.gov.za/environment, click on 'Functions' and 'Biodiversity Management', and follow the link to BioNet. Alternatively, contact Pat Holmes at patricia.holmes@capetown.gov.za. The City's Nature Reserves Booklet is also available as a download.

Youth say YES to climate change challenge

This year, the City's environmental education initiatives have focused on energy and climate change.



Learners from across Cape Town met in August to discuss energy and climate change at the annual Youth Conference on Sustainable Development. (Photo: Axel Unger)

Climate change has become a global environmental issue, but to many it remains a daunting one riddled with science. For that reason, initiatives such as the City of Cape Town's Youth Environmental School (YES) programme play an important role in educating people about the problem, in a people-friendly way.

The year-round YES programme is designed to help young people across Cape Town understand important environmental issues, and devise working solutions at community level. As part of the 2009 programme, the City hosted the YES Climate Change and Disaster Risk Management Week in August. The aim was to make the learners aware of:

- climate change's impact on our biodiversity;
- the increasing risk of droughts, extreme storms and desertification brought about by climate change;

- alternative energy sources; and
- what we can do to make a difference.

The learners explored these issues through plays, presentations, music, and visits to places like Kirstenbosch, Koeberg Nuclear Power Station, Table Mountain and the Fossil Park on the West Coast.

The week was rounded off with the City's annual Youth Conference on Sustainable Development, where high-school learners discussed and put forward their ideas on how to reduce our ecological impact, focusing on moving beyond awareness to action. The theme for this year's conference was "Climate change and energy efficiency".

The build-up to the conference began in February with a series of workshops, followed by a mini-conference at the beginning of August, where learners presented

their projects under the subthemes waste, energy, water and biodiversity. The top six projects were then selected for presentation at the main conference on 22 August, with the conference coordinators hard-pressed to choose between all the excellent submissions.

Green audits for schools

Another educational climate change initiative is the Global Change and Green Audit Project, a partnership between the City and the African Centre for Climate and Earth Systems Science (ACCESS). The main aim of this curriculum-linked project for Grade 10 learners is to do school audits, using the Green Audit Toolkit to focus on waste, water, energy and biodiversity, with a special section on carbon footprinting.

During phase 1, the Green Audit Toolkit was developed. Phase 2 saw the learners gathering information, verifying data, and compiling a retrofit plan for their respective schools. During phase 3, the schools will undertake a second audit, and then finalise and implement their retrofit plans. □

*CLIMATE CHANGE FACT

Every kilowatt-hour of electricity you don't use saves **1 kg** of carbon dioxide from being released into the atmosphere.

For more information on the YES Programme or to download the Green Audit Toolkit, visit www.capetown.gov.za/environment or contact e-mail yes@capetown.gov.za.

Scoring a Green Goal

The Green Goal 2010 Programme's aim is to ensure that the 2010 FIFA World Cup™ has the smallest possible impact on the city's environment.

The 2010 FIFA World Cup™ will give Cape Town an opportunity to show the world that it can successfully host major international events that also leave a positive environmental legacy. To achieve this, the City is implementing Green Goal 2010, the official greening programme of the 2010 tournament.

Today, international environmental considerations demand that events of this magnitude be as environmentally friendly as possible. This is called 'event greening'. The first FIFA-endorsed World Cup greening effort was pioneered by the organisers of the 2006 FIFA World Cup™ in Germany.

The City of Cape Town and the Western Cape Provincial Government therefore developed a 2010 FIFA World Cup™ Host City Cape Town Green Goal Action Plan during a series of workshops sponsored by the Konrad-Adenauer-Stiftung. The Action Plan consists of 41 projects relating to energy, water, waste, landscaping, biodiversity, transport, tourism, sustainable lifestyles, communication and monitoring.

One area where the impact of the event is considered to be most severe, relates to its carbon footprint. An estimation of the 2010 event shows that transport is by far the greatest contributor to carbon emissions. The accommodation sector, stadium construction and operational activities are other major contributors. Energy and climate change is therefore one of the Action Plan's focus areas, with a number of projects under way to mitigate carbon emissions.



The Green Goal 2010 Programme will ensure a greener 2010 FIFA World Cup™.

Good progress

September saw the release of the Green Goal 2010 Progress Report, documenting progress with projects, as well as lessons learnt along the way. The Executive Mayor of Cape Town, the Premier of the Western Cape, and the Environmental Project Coordinator of the Local Organising Committee (LOC) applauded the progress made to implement the programme.

Along with infrastructural modifications – such as the construction of two new waste recycling facilities – the energy-efficient lighting and water-saving devices in Green Point Stadium, new non-motorised transport routes, the construction of the new Green Point Park, and the use of spring water for irrigation of the Green Point Common will all have long-term economic benefits for the city in terms of reduced operational and environmental costs.

*CLIMATE CHANGE FACT

Transport has been identified as potentially the largest carbon emitter during the 2010 FIFA World Cup™. Initiatives are under way to ensure that at least **50%** of fans travel to the matches by public or non-motorised transport.

Green Goal 2010 uses the high media profile of the World Cup to create awareness of Cape Town's unique and vitally important natural assets, and promotes more eco-conscious behaviour patterns in the city. Such a behavioural change will enable a reduction in the consumption of critical resources, such as water and energy, well beyond 2010. □

For more information and the published reports on Cape Town's Green Goal 2010 Programme, visit www.capetown.gov.za/en/greengoal.

Mobilising the African continent

The City of Cape Town recently joined over 180 African local governments to sign the ICLEI African Local Government Declaration on Climate Change.



Cape Town is one of the signatories to the ICLEI African Local Government Declaration on Climate Change. (Photo: Philippe van Wesemael - UCLGA)

ICLEI - Local Governments for Sustainability is an international association of over 1 100 local governments and local government organisations from across the globe, including the City of Cape Town, that have committed to lead locally in the field of sustainable development.

As part of its climate advocacy efforts, ICLEI Africa is coordinating the African leg of the global Local Government Climate Roadmap process. This runs parallel to the United Nations (UN) Climate Roadmap, and focuses on both strengthening national-local partnerships and including cities and local governments in a post-2012 Climate Agreement.

Together with various partners, ICLEI Africa therefore hosted a three-day African Local Government Climate Roadmap Pre-Copenhagen Summit in Tshwane in July. More than

180 participants from 14 countries attended the summit, and the key outcome was the African Local Government Declaration on Climate Change to be delivered at COP-15 in Copenhagen, and which clearly indicates commitment from Africa's leaders to meet the multifaceted challenges of climate change.

Part of this commitment is to make climate change response a focus area of local government, and to include climate change in all local planning, development and operations as well as financial systems and human resource allocations, while increasing resilience to climate change, and addressing energy security.

Future plans

Looking ahead, ICLEI will be coordinating the Local Government Climate Lounge at COP-15. This will give local governments and

their associations a unique meeting place for dialogue and interaction with their own and other national governments, and with a range of development agencies, non-governmental organisations and the international press.

Also, ICLEI Africa, in partnership with various global UN agencies, is busy developing two new climate mitigation tools. The first is Sustainable Urban Energy Planning: A Handbook for Cities and Towns in Developing Countries. The second tool provides local governments with guidelines to develop and implement Clean Development Mechanism (CDM) projects.

On the climate change adaptation front, ICLEI Africa is currently launching a project entitled Sub-Saharan Cities: A Five-city Network to Pioneer Climate Adaptation through Participation Research and Local Action. This project works closely with various global partners, such as the UN's Human Settlements Programme, UN-HABITAT, and includes the City of Cape Town as one of the initial five urban centres to increase African local governments and communities' climate change resilience and preparedness. □

*CLIMATE CHANGE FACT

Scientists predict that a temperature rise of as little as **2°C** could see a **50% decrease in African crop yields by 2020.**

The ICLEI Africa Secretariat (www.iclei.org/africa) is hosted by the City of Cape Town's Environmental Resource Management Department. For more information on the ICLEI Local Government Climate Roadmap, visit www.iclei.org/climate-roadmap.

The project that pays

An innovative electrification project is not only alleviating poverty, but will also earn Cape Town valuable income.

The City of Cape Town is particularly concerned with poverty alleviation amongst its residents, for example by supplying electricity to areas that previously did not have access to fixed power lines. While this improves the lives of the residents of these areas, it also further contributes to the city's energy-use and carbon footprint.

However, as part of its Energy Poverty Action, the City is working to reduce its additional greenhouse gas emissions through projects such as the Kuyasa energy upgrade in Khayelitsha, which is recognised as one of the most impoverished areas in the country.

This project is installing solar water heaters, insulated ceilings and compact fluorescent light bulbs in approximately 2 300 houses by April 2010. This will improve the thermal and energy efficiency of the houses, so not only alleviating poverty, but also reducing carbon emissions.

This project boasts a world-first, as the Clean Development Mechanism (CDM) of the Kyoto Protocol credits the carbon emission reductions (CERs) against the basic amount of energy these houses would normally use. The credits that the City will earn in this way, will realise about R750 000 per year over a potential 21-year period. □



The Kuyasa energy upgrade project is earning the City of Cape Town money.

Switch to eco-friendly water heating

As electricity prices continue to rise, it makes economic and environmental sense to install energy-efficient water heaters.



A solar water heating system could cut an average household energy bill by up to 40%.

With traditional electrical geysers using between 40% and 50% of power consumed in the average home, one of the best ways to reduce a household's carbon footprint, while also saving money, is to install an energy-efficient water heater. A solar water heater is the best option, given South Africa's plentiful supply of free sunshine. However, heat pumps or dielectric heaters, which are 60% more efficient than conventional geysers, can also be used.

Each solar water heater installed will reduce greenhouse gas emissions by preventing some 2 400 kg of CO₂ from entering the atmosphere annually. One kilowatt-hour of electricity from a coal-fired power station emits approximately 1kg of carbon.

This is why Cape Town is the first city in South Africa to draft an Energy-efficient Water Heating Bylaw, which will require all new buildings and extensions to be equipped with energy-efficient systems. In addition, the City is inviting proposals to facilitate the existing 200 000 to 300 000 electrical geysers across the city being replaced with solar geysers.

These initiatives form part of the City's Energy and Climate Change Strategy, which aims to reduce electricity consumption by 10% by 2014 (on 2007 levels) and have 10% of energy supplied from renewable sources by 2020. □

You can make a difference

It is vital – and so easy – for every resident of Cape Town to help combat climate change.



There are many simple ways to cut your energy use, and so fight climate change.

Every single person consumes energy, such as electricity or petrol, which is produced by burning or processing fossil fuels. We therefore all contribute to the emission of greenhouse gases, which in turn results in climate change.

That means it is up to every one of us to do something to save energy. There are many simple and cost-free changes that you can make. In fact, saving energy can save you money, as you will spend less on your electricity and fuel bills each month. Here are a few great tips to get started.

At home

- **Appliances:** Switch appliances off at the wall when they are not

in use. Leaving an appliance on standby mode is equivalent to leaving on a 75 W light bulb. Many appliances even continue to draw power when switched off.

- **Geyser:** Turn the temperature down to 55 °C. Switch it on only when you need hot water. It will not damage the thermostat, nor use more electricity.
- **Kettle:** Use the kettle to boil water for cooking, as it costs less than using the stove or the microwave – and only boil the water you need.
- **Fridge:** Cover liquids and wrap foods, as uncovered foods release moisture, and make the compressor work harder. Open the door as few times as possible,

and put bottles of water in the fridge, as fuller fridges use less energy.

- **Washing machine:** Short, cold-water cycles are far more economical than longer, hot-water washes, as 90% of the energy is used to heat the water.

In your car

- **Service regularly:** Properly maintained cars with correctly inflated tyres use less fuel.
- **Lighten and streamline:** The heavier the car, the more fuel it consumes. Also, wind resistance increases fuel consumption by up to 10%, so close windows and remove empty roof racks to streamline your vehicle.
- **Slow down:** Travelling at 90 km/h gives you up to 21% better fuel efficiency than 110 km/h.
- **Don't drive:** Walk, cycle, car-pool or take public transport – fewer cars on the road mean less congestion, consumption and emissions.

We cannot sit back and wait for somebody else to fix the problem. We will all be affected by climate change, and there is no escaping it. Therefore, every bit we do to reduce our carbon footprint counts. □

*CLIMATE CHANGE FACT

Geysers, heaters, cookers and ovens are the heaviest on energy and your pocket, so use them carefully and sparingly.

For more great energy-saving tips, download the City of Cape Town's Smart Living Handbook on www.capetown.gov.za/environment. Also try out the carbon footprint calculator at www.cap.org.za.