

Waste Sector: Efficient waste management activities such as recovering landfill gases, specifically methane (CH₄), waste incineration with energy recovery, recycling and composting of organic waste as opposed to landfilling organic waste can considerably decrease the release of GHG emissions and improve air quality.

Economic Sector: Carbon taxing is one of the mitigation measures adopted by the South African government in order to maintain the economic health of the country while continuing to reduce criteria pollutants and GHG emissions.



WHAT CAN YOU DO TO REDUCE GREENHOUSE GASES WHILE AT THE SAME TIME IMPROVING AIR QUALITY?

Plant trees to balance carbon emissions and pollution. There are organizations that will help you offset your carbon footprint.

Switch off lights when not in use.

Changes in cultural patterns and consumer choice such as re-using shopping bags and using fluorescent light bulbs can reduce energy consumption.

Recycle all cans, bottles and plastic bags and support buy back facilities.

Put your computer on standby if unused. You will be able to restart it quickly, and it will take less energy than shutting it down and restarting it again.

Encourage others to **conserve by sharing information** about recycling and energy conservation with your friends, neighbours and co-workers.

Support government incentives for the development of renewable energy.

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Western Cape
Government
Environmental Affairs and
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BETTER TOGETHER.

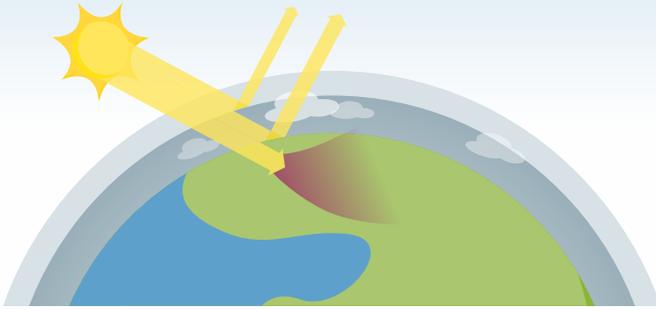


Understanding the effects of Climate
Change within the Western Cape
BETTER TOGETHER.

Climate Change

CLIMATE CHANGE

The United Nations Framework Convention on Climate Change states that “Climate change refers to a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.



WHAT CAUSES CLIMATE CHANGE?

Anthropogenic activities are increasing the amount of greenhouse gases in the atmosphere thereby causing the accelerated warming of the earth’s atmosphere. The trapping of heat in the lower lying layers of the atmosphere as a result of an excess of greenhouse gases (GHGs) such as Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (NO) and Ozone (O₃) is referred to as global warming. The naturally occurring gases are exacerbated due to the burning of fossil fuels for energy, cutting down of forest for timber, coal usage for electricity generation, heating our homes with oil or natural gas, use of vehicles, methane emissions from landfills, which forms a layer in the earth’s atmosphere preventing heat from escaping. While climate change is a natural phenomenon, the problem is that it is happening at an abnormally accelerated pace and natural systems are unable to cope with or respond to these changes.

WHAT ARE THE EFFECTS OF CLIMATE CHANGE?

An increase in the earth’s temperature by just a few degrees is predicted to cause reduced rainfall causing droughts and crop failures, ecosystem imbalances, as well as melting ice caps causing sea levels to rise. Two key ways to respond to climate change is through mitigation by employing cleaner production methods in industry, use of cleaner fuels, energy efficient measures and adaptation through behavioural changes aimed at the consumer.

AIR QUALITY AND CLIMATE CHANGE LINKAGE

Air Quality and Climate Change are closely related. As previously mentioned, the release of air pollutants from a variety of anthropogenic activities leads to poor air quality and climate change. Air Quality and Climate Change share common pollutants, some pollutants can affect both human health and climate change. Air quality is also strongly dependent on weather patterns and is therefore sensitive to Climate Change. Rising temperatures as a consequence of climate change are directly linked to poor air quality in the form of smog which forms ground level ozone. When temperature inversions occur (that is, when warm air stays near the ground instead of rising) and the wind is calm, smog may remain trapped over a city for days and may become worse as more pollutants are added.

WHAT ARE CO-BENEFITS?

The concept of co-benefits refers to multiple (two or more) benefits that result from the same control measure or set of measures. Thus, it strives to realise air quality benefits through improved transport and urban development planning. The control measures available to decision makers consist of:

- **Policy and legal measures**
Urban planning, industrial zoning, energy efficiency, non-motorised transport and environmental law.
- **Technological**
Cleaner technologies, cleaner production methods and fuel improvements.
- **Economic**
Taxes, tradable permits and fines for violations.
- **Institutional**
Emission standards, monitoring, compliance and enforcement and fuel standards.

The co-benefits approach therefore focuses on measures that simultaneously improve local air quality and reduce global greenhouse gas emissions. Decision makers need to take into consideration and analyze whether these options are environmental, economic, social and politically beneficial to society which are influencing factors for sustainable development.

WHAT MEASURES CAN DIFFERENT SECTORS INSTITUTE TO REDUCE GHG EMISSIONS AND IMPROVE AIR QUALITY?

A number of key technologies and practices are currently available that could contribute to Climate Change mitigation:



Transport Sector: Efficient transportation activities can reduce GHG emissions by promoting the use of public transport (road and rail). Effective traffic management can reduce GHG emissions e.g. stricter traffic emission reduction measures have a direct impact on vehicle emissions. Building and using of walkways and bikeways to promote non-motorized transport. Fuel substitution options for transport such as Liquid Petroleum Gas (LPG) or compacted natural gas, improving the quality of fuel by decreasing the sulphur content of diesel.

Industrial Sector: The industrial sector covers a broad and diverse range of small to large air pollution sources. The use of more efficient electrical equipment, production and usage of renewable/bio-energy in factories and energy recovery measures have proven to be successful in reducing GHG emissions from this sector.

Forestry Sector: Forest-related mitigation activities such as afforestation, reforestation, improved forest management, reduced deforestation, and use of forestry products to replace fossil fuels can considerably reduce greenhouse gas emissions and help capture carbon dioxide from the atmosphere.

Agricultural Sector: Energy alternatives and product substitution can make a difference in the agricultural sector. Agricultural biomass, which can include waste materials or dedicated energy crops, can be used to produce electricity, heat, liquid fuels and bio-based products (such as bio-plastics, bio-composite construction materials and foods), broadly referred to as bioenergy. Substituting biomass for fossil fuels in energy production has the potential to reduce GHG emissions.

Domestic Sector: The use of efficient lighting (e.g. fluorescent light bulbs), energy efficient appliances for cooking, air conditioning, and improved insulation for heating and cooling, could considerably reduce GHG emissions.

