

Air Quality Facts 1:

Air Quality and Climate Change

Managing air quality is important for preventing adverse health and environment impacts associated with air pollution. In some circumstances, the adverse impacts of air pollutants can occur within minutes of exposure, but generally may be more obvious after several hours. These impacts are normally seen at a local or regional level, with humans often being perceived as the most sensitive receptors.

Air pollution has been an environmental and health issue afflicting humans for centuries. In the city of London in the United Kingdom, a law was passed in the 1300s to manage the large amount of air pollution caused by sea coal combustion in lime kilns. Smog events in London (and in the United States of America) have contributed to the deaths of thousands of people in the past 300 years. For example, in 1953 a four-day air pollution fog in London killed approximately 4,000 people.

Today in urban areas around the world, emissions from key sources (e.g. industry, land management activities, motor vehicles, domestic heating) continue to contribute to elevated levels of local air pollution that can be hazardous to human health.

Increasing research and knowledge of air pollution and climate change now indicates major air pollution sources are also significant greenhouse gas sources, creating opportunities for co-management of both atmospheric issues.



In 2008, Western Australia produced approximately 12.7 per cent of Australia's greenhouse gas emissions with 72.8 million tonnes (Mt) of CO₂ in 2007. In 2004, Australia's emissions were approximately 1.4 per cent of global CO₂ emissions.

Currently 23 per cent of greenhouse gas emissions worldwide are originating from the transport sector. Transport is also a large source of air pollution emissions.

With increasing scientific knowledge of the relationship between greenhouse gas levels and global warming, the Government of Western Australia is focused on managing greenhouse gas emissions in the State. The adverse impacts of greenhouse gases are likely to occur at both a regional and global scale, directly effecting environmental systems which will then in turn effect humans.

Over the last 150 years, carbon dioxide levels in the earth's atmosphere have risen to unprecedented levels not seen for thousands of years. In addition, research has reported 11 of the 12 years between 1995-2006 as being the warmest years recorded since 1850¹. This temperature increase is linked to the changing concentrations of greenhouses gases in the atmosphere, and their warming influence on global climate. The projected impacts of climate change in south-western Australia are predicted to include:

- By 2030 the annual average number of days over 35°C in Perth could grow from the current 27 to 29–38 days.
- Increased stress on water supply is possible due to increased demand and climate-driven changes.
- More frequent and severe droughts will occur due to changing climate patterns.
- Warmer temperatures and population growth are likely to cause a rise in heat-related illness and death for those over 65; increasing in Perth from the current 294 annually to 657–689 by 2020 and 1,254–1,548 by 2050.

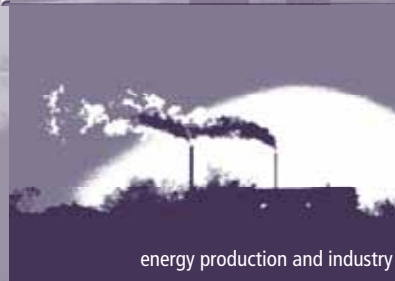
Major Sources of Air Pollution and Greenhouse Gas Emissions

Greenhouse Gases

Sulphur hexafluoride (SF₆)
Carbon dioxide (CO₂)
Methane (CH₄)
Halocarbons
(chlorofluorocarbons,
hydro fluorocarbons)
Nitrous oxide (N₂O)
Aerosols (sulphates, black carbon)
Ozone (O₃)
Perfluorocarbons (PFCs)

Air Pollutants

Sulfur dioxide (SO₂)
Nitrogen oxides (NO_x)
Carbon monoxide (CO)
Particulate matter (PM)
Air toxic (eg volatile organic compounds)
Ozone (O₃)



The above sources are all producers of air pollution emissions and greenhouse gases. By managing emissions at the source, there are opportunities for reducing emissions of air pollution and greenhouse gases with the identification of co-benefit approaches.

For further information on air quality and climate change, please see the following resources:

- Air Quality Facts: Vehicles and Climate Change at <http://www.dec.wa.gov.au/airquality>
- Office of Climate Change <http://www.dec.wa.gov.au/our-environment/climate-change/index.html>
- Australian Government's Department of Climate Change: <http://www.climatechange.gov.au/>

The Air Quality Management Branch can be contacted on 9333 7436 or airquality@dec.wa.gov.au; and the Office of Climate Change can be contacted at greenhouse@dec.wa.gov.au

References:

1. Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental panel on Climate Change.* Geneva, Switzerland: IPCC



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