



AUSTRALIAN
AUTOMOBILE
ASSOCIATION

ON THE ROAD TO greener motoring

COMMONLY ASKED QUESTIONS

What is Climate Change?

According to the United Nations Framework Convention on Climate Change (UNFCCC), *climate change* is a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability over comparable time periods.

The main concern at present is the accumulation of greenhouse gases from human activity. As greenhouse gases accumulate in the atmosphere, heat from the sun that warms the earth's surface is less able to escape back into space. Hence, an enhanced 'greenhouse effect' is created, whereby more heat is trapped and the earth's temperature increases.

What Will Be the Effect of Climate Change?

A great deal of uncertainty exists about exactly how weather patterns will be affected by climate change. However, the Intergovernmental Panel on Climate Change expects the consequences of even a small increase in global temperatures of just a few degrees to include longer heat waves, changes in rainfall patterns, more frequent and intense tropical cyclones, reductions in snow and ice cover, and an increase in sea levels.

What are Greenhouse Gases?

Greenhouse gases are those responsible for causing global warming and climate change. There are six major greenhouse gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆).

The level of CO₂ in the atmosphere is the one most affected by human activity, and therefore often the focus of general discussions on greenhouse gas emissions.

The other greenhouse gases are also often referred to as a 'CO₂ equivalent', which is determined by multiplying the amount of gas by its relative global warming potential.

The global warming potential of greenhouse gases is listed in the table below. It shows, for example, that methane (CH₄) has 21 times the global warming potential of CO₂.

Gas	Global Warming Potential
Carbon dioxide (CO ₂)	1
Methane (CH ₄)	21
Nitrous oxide (N ₂ O)	310
Hydrofluorocarbons (HFCs)	150 – 11,700
Perfluorocarbons (PFCs)	6,500 – 9,200
Sulphur hexafluoride (SF ₆)	23,900

It is normal to have a certain amount of greenhouse gases in the atmosphere. However, since the industrial revolution, so much fossil fuel has been burnt that the levels of atmospheric greenhouse gases are now higher than any other point in history.



What Are the Sources of Greenhouse Gas Emissions in Australia?

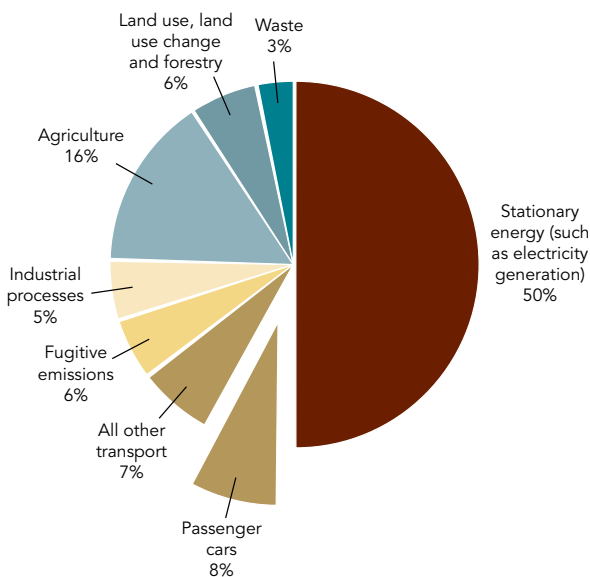
According to the Australian Greenhouse Office (AGO), Australia's annual greenhouse gas emissions are equivalent to around 559 million tonnes of CO₂, which is approximately 1.5% of global emissions.

The AGO's greenhouse gas inventory shows that in Australia, the largest source of emissions is from energy production, such as coal-fired power plants (50%).

The next biggest source is agriculture (16%). Key agricultural emissions include methane (CH₄) and nitrous oxide (N₂O), which are produced when living and dead biomass is consumed, decays or is burnt. These emissions are increased by human activities including cultivation, addition of fertilisers, deliberate burning, flooding, and by the introduction of ruminant animals.

Transport emissions account for nearly 15% of national emissions, about half of which (8%) is attributable to passenger cars. These are the "tailpipe" emissions from cars. Emissions that are generated by the refining of fuel and the manufacture, maintenance and disposal of cars are reflected in other sectors such as "fugitive emissions" and "industrial processes".

Australia's greenhouse gas emissions by sector (2005)¹

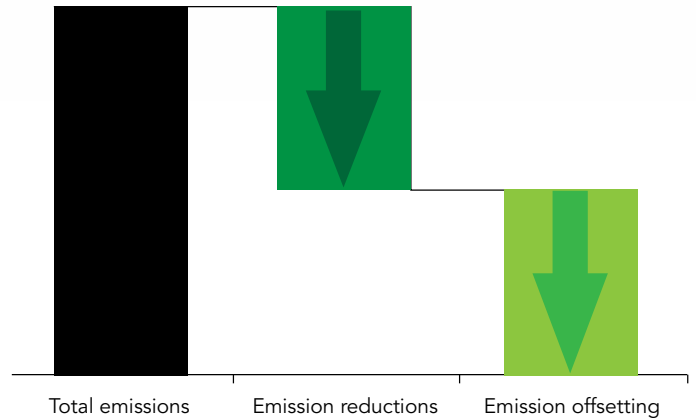


¹Australian Greenhouse Office (AGO), National Greenhouse Gas Inventory, 2005.

How Can Emissions be Cut?

There are two key ways that greenhouse gas emissions can be 'abated' or cut – through reduction and offsetting.

Total greenhouse emissions can be abated through reductions and offsetting



Reductions can come about by changing behaviour or employing new technologies to generate fewer emissions. For example, motorists might consider walking to the shop instead of driving. Electricity generators might swap from coal power to wind power.

It is also possible for those remaining emissions that cannot be reduced to be offset by investing in emission reduction projects that prevent or remove an equivalent amount of greenhouse emissions elsewhere.



What is Carbon Offsetting?

Carbon offsetting involves calculating the greenhouse gas emissions generated by activities such as driving, heating homes or flying, and then paying for those emissions by funding a project that reduces carbon dioxide in the atmosphere by an equivalent amount.

For example, an average car generates around 4.6 tonnes of CO₂ in a year.

The types of offsetting projects include energy saving schemes such as installing efficient light globes in houses, renewable energy schemes such as wind farms, or tree-planting schemes that can take carbon dioxide out of the atmosphere.

Tree planting is a popular way of offsetting in Australia because trees are not only able to absorb – or sequester – carbon emissions, but they also help tackle salinity, improve water quality and provide essential habitat for native species.

Science shows that over their lifetime, the greenhouse gases absorbed by 17 large native trees can be about equivalent to the amount of emissions generated by a year's worth of driving. A number of providers offer this service in Australia. For more information, visit www.carbonoffsetguide.com.au

Why is Carbon Offsetting Controversial?

Some people say that carbon offsetting sends out the wrong message, namely that you can buy your way out of the problem of rising carbon emissions. It is often argued that offsetting discourages individuals and companies from cutting greenhouse gases generated from their own behaviour and actions.

The position of the AAA clubs is that while the priority for motorists should be on reducing emissions, offsetting provides a meaningful way of accounting for those remaining emissions that cannot be eliminated.



What is Emissions Trading?

Emissions trading is a market-based approach to reducing emissions. For example, today a factory that releases large amounts of CO₂ is not obliged to restrict its emissions. It is free to pollute without limit, so to speak. Under a 'cap-and-trade' emissions scheme, large emitters such as producers of energy, steel, cement and paper, would have the right to emit only a certain volume of CO₂ every year.

Each industrial installation would receive an allowance or emissions permit from the government – that is, emissions would be 'capped'. An installation that expects to exceed its emissions cap would have a choice to make. Either it could invest in reducing its CO₂ emissions while maintaining and developing production or, for example, if it needs time before making investments, it could buy emissions rights from any other site that has managed to reduce its emissions below its capped amount.

The Federal Government has announced that this cap and trade emissions scheme between entities releasing CO₂ into the atmosphere will be in place in Australia by no later than 2010. The specific details of the system are yet to be finalised.

What is Emissions Taxing?

An alternative model for reducing greenhouse gas emissions is by taxation. This would involve Government setting a carbon tax in legislation. Unlike the cap –and trade system where the carbon price would be dynamic, moving up and down as markets ebb and flow, the carbon tax might be fixed for long periods and could only be changed by Government.

A common argument against carbon taxing is that Government would need to find a balance between a tax rate that is too high or low in terms of achieving a desirable reduction in emissions. It is argued that Government is unlikely to get this rate correct most of the time, and so the rate would need to be adjusted regularly to ensure abatement is achieved. The process of readjustment could become a perennial source of conflict between Government, the consumer and business interests.

