

# Fact Sheet #1 : Sustainability, climate change & energy

Climate change, resource depletion, ecological footprint: all these things are different but related. They all pose a threat to our continued existence on Planet Earth, and all are related to overuse of the resources that are available.

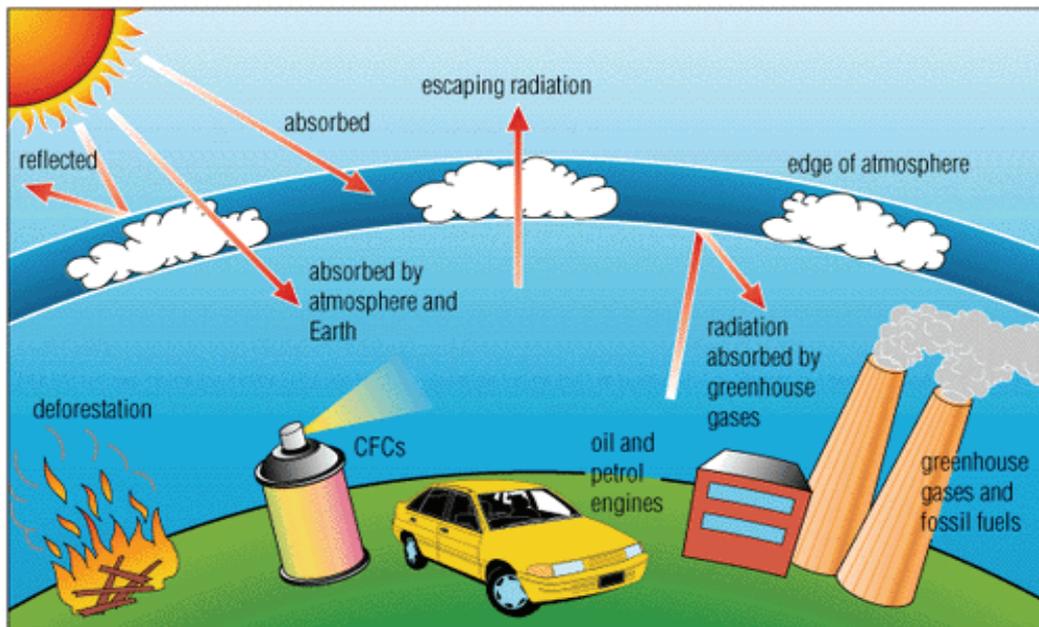
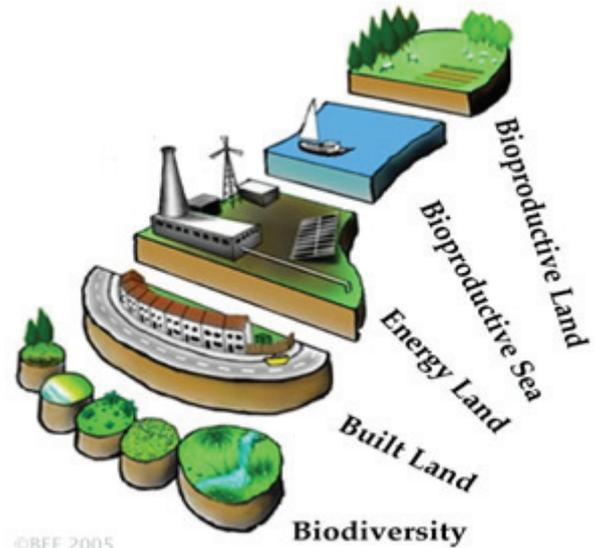
*"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*  
(World Commission on Environment and Development, 1987, p 43).

Australia's Ecological Footprint in the *Living Planet Report 2008* was 7.8 global hectares (gha) per person. This is 2.9 times the average global Footprint (2.7 gha), and well beyond the level of what the planet can actually regenerate on an annual basis - an equivalent of about 2.1 global hectares per person per year.<sup>1</sup>

Obviously this is not “sustainable” if things continue as they are.

## The Greenhouse Effect

A blanket of water vapour and carbon dioxide envelopes the earth creating a “greenhouse effect”. Without this blanket the sun’s radiation would be reflected back into space and our planet would be too cold to sustain life.



<sup>1</sup> It's important to remember that as the world's population increases, the sustainable area available to each of us decreases.

However, our contributions of carbon dioxide (from the burning of fossil fuels e.g. oil, gas, coal, especially in the creation of electricity and the running of motor vehicles) and methane (from vast increases in livestock numbers) are causing the concentration of CO<sub>2</sub> in the atmosphere to reach alarming proportions. At the same time, the ability of nature to absorb CO<sub>2</sub> is reduced by removal of woody trees (high absorbers of CO<sub>2</sub>) and their replacement with hard surfaces, grasslands for grazing or bio-fuel crops (which absorb less CO<sub>2</sub>).

As the blanket of CO<sub>2</sub> surrounding the earth becomes thicker, less of the sun's radiation is able to escape into space thus causing "global warming".

Global surface temperature increased  $0.74 \pm 0.18$  °C during the 100 years ending in 2005. While this may seem insignificant, it has been sufficient to bring about noticeable changes in the pattern of viable agricultural activities around the world, and changes in extreme weather events (bush fires, floods, cyclones, droughts).



Of particular concern is the evidence of melting of ice shelves at both North and South poles. The melting of the Greenland ice shelf could cause sea levels to rise by 7 metres; in the unthinkable event that the Antarctic ice shelf melted, sea levels would rise by about 61 metres.

Even just a one metre rise in sea level will be sufficient to displace 300 million people, people who would then be looking to find new homes often in foreign countries.

These increases in CO<sub>2</sub> concentrations, too, are not sustainable.

It is often claimed that Australia, in net terms, is only a small player in the climate change arena. But in this area we are "punching well above our weight".

Australia has 0.32 per cent of the world's population, yet produces 1.43 per cent of CO<sub>2</sub> emissions. This means that, per person, pollution levels are 4.5 times the global average, beaten only by the United States. On average, each person in Australia and the US now emits more than five tonnes of carbon a year, while in China the figure is only one tonne per year.

Australia's annual gaseous emissions of CO<sub>2</sub> amount to about 590 million tonnes. Our exports of coal are about 250 million tonnes. Almost all of that coal will later be burned and will produce CO<sub>2</sub> with a mass of about 740 million tonnes.

The emissions for which Australia can be held accountable, therefore, are a massive 3.1% of the world's CO<sub>2</sub> emissions, making Australia by far the largest per capita contributor to the climate change emergency.

## What can you do...

### At home?

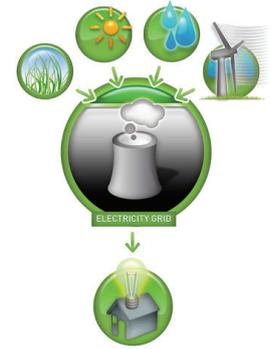
Purchasing 100% Accredited Green Electricity (while slightly more expensive) increases demand for power sourced from renewal sources (e.g. wind, solar, etc.).

<http://www.greenelectricitywatch.org.au/>

Companies generate electricity at a range of sites across Australia and supply the electricity to a central power grid. Our homes and businesses are connected to this grid so we can access electricity. Energy suppliers who sell accredited GreenPower products buy electricity generated from accredited renewable energy generators on your behalf and feed it into the National Electricity Grid.

GreenPower provides consumers with a way to influence how their electricity is being sourced beyond the government's mandatory target. As a result of the growing demand for renewable energy, more than 182 new GreenPower accredited generators have been installed in Australia. Growth of the renewable energy industry and the installation of new generators have made a positive contribution to employment and tourism in regional areas.

<http://www.greenpower.gov.au>



Because GreenPower is more expensive, you will also want to reduce your power consumption. There are a number of simple actions you can take.

✓ **Solar hot water.** Up to 25% of a domestic electricity bill can be attributed to water heating. Install a solar hot water heater and get your hot water free (on all but the coldest winter days). Rebates are available from both federal and NSW state governments

<http://www.hotwaterrebate.com.au/>

✓ **Lighting.** Energy saving globes now exist for almost all types of lighting fixtures, including downlights, and can save 80% of electricity used.

✓ **Muscle power.** Before you reach for the electric toothbrush, remember that it is possible to do many things “by hand”. Sweep, rake, mop, carve, mix, beat cream. Doing these things by hand will not only save power and money, but also help to increase your fitness. Dry clothes and hair in the sun. (You can even generate “people powered” electricity! Check out the Green MicroGym

[http://www.youtube.com/watch?v=Uq\\_qNsMCxyc](http://www.youtube.com/watch?v=Uq_qNsMCxyc))

✓ **Insulation.** Will keep your house cooler in summer and warmer in winter. Seal doors to keep out drafts. Shade windows from the outside with trees or awnings. Wear clothing appropriate to the season.

<http://www.environment.gov.au/energyefficiency/insulation-homeowner.html>

✓ **Standby.** Anything that ticks or flashes is using power. If you're not using it turn it off at the plug! Televisions and other appliances on “standby” can contribute 10% of your electricity bill.



✓ **Solar (photovoltaic) panels.** You can produce your own, or some of your own, electricity by installation of solar panels on your roof. These panels are not cheap, but can greatly reduce the size of your electricity bills. In fact, during

summer, you may even find yourself generating excess power that can be sold back to your supplier.

<http://www.environment.gov.au/settlements/renewable/pv>

✓ **Smart Meters** (that record WHEN as well as HOW MUCH electricity is used) will allow you to minimise your bills even more, with shoulder and off-peaks rates only around 33% and 20% of the peak rate (for example, see <http://www.energy.com.au/energy/ea.nsf/Content/NSW+TOU+Res+Home>)



✓ **Transport.** Minimise car usage. Walk or cycle for short trips. Use public transport. Car pool. Shop locally, buy locally produced goods. Have large grocery orders home delivered or shop online. Minimise air travel, consider holidaying closer to home. <http://www.bikenorth.org.au/> , <http://www.131500.info/> ; <http://www.visitnsw.com/>

✓ **Food.** Eat less meat, especially beef and lamb. Kangaroo is a good alternative as these animals do not produce the same methane<sup>2</sup> emissions as cows and sheep. However, two or three meat free days each week will reduce your ecological footprint even further.

### ***At work and in the community?***

Of course everything that applies in the home, also applies at work: energy efficient lights/appliances, turning things off when they are not in use, especially overnight. Some other things that might apply at work are:

✓ **Air conditioning.** Can the temperature be turned up one degree? Some offices are cooled to the extent that workers need to wear extra clothes to feel comfortable. The CSIRO has developed a replacement for traditional air conditioning. <http://www.csiro.au/solutions/pps6a.html>

✓ **Purchasing departments.** Look at the energy efficiency of products you buy. <http://www.energystar.gov.au/>

✓ **Power suppliers.** A number of Accredited Green Power suppliers provide business accounts. <http://www.greenpower.gov.au/accredited-products.aspx>

✓ **Motion detectors.** If rooms are not in frequent use, motion detectors can control lights/air conditioning.

✓ **Elevators.** Use the stairs whenever possible.

✓ **Meetings.** Try to replace face-to-face meetings that involve car or air travel with meetings using phone or internet.

✓ **Live locally.** Employment, entertainment (musicals, concerts, movies) and other recreational activities can often be found locally and dramatically reduce the need for travel.

✓ **Lane Cove Council.** For more tips about what you can do to save energy and reduce your contribution to global warming, visit Council's website: <http://www.lanecove.nsw.gov.au>

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<sup>2</sup> Methane has 21 times the Global Warming Potential of carbon dioxide.