Energy Conservation Fact Sheet

November 2017

Energy Conservation

Climate change threatens to destroy the natural resources upon which humans depend, impacting human health, the economy and biodiversity. With coal the major source of energy in Australia [1], Australia's contribution to global warming is disproportionate to our population size [2].

The Problem

Energy and Climate change

71% of energy in Australia is produced by the burning of coal [1], which releases carbon dioxide: a greenhouse gas. Excessive accumulation of greenhouse gases enhances the natural warming effect whereby gases trap energy from the sun. Global warming disrupts natural processes on Earth. Some examples include: rises in sea levels caused by the melting of ice caps; coral bleaching from increased water temperature; increases in catastrophic weather events; and prolonged droughts jeopardising water security, agriculture and biodiversity.

The Coal Economy

Australia is the major exporter of coal contributing about 54 %(metallurgical coal) and 24 %(thermal coal) of global trade [1]. Whilst Australia's domestic consumption of coal contributes less than 0.5% of global emissions [1], this is significant given our small population. Our role as the world's leading coal exporter implicates us in global emissions.

Australian mineral industries including aluminium production are economically powerful and energy intensive. About 10% of Australia's electricity capacity is used for aluminium production [3]. Bauxite must also be extracted, with mining requiring the burning of large amounts of coal and other fossil fuels.

The recent trend towards providing water security for Australian cities from energy-intensive desalination plants also has a significant global warming impact [4].

Household Energy Consumption

Energy consumption in Australia has increased per person in recent years. Energy consumption is expected to rise further as more Australians live alone and householders are increasingly installing air conditioners to cool larger homes [5].

Energy Policy

Scientists have known about climate change for decades but in recent years, energy security and climate change have become global priorities.
After the Copenhagen Accord (2009) for countries to express their 'non-binding' commitments to reduce climate change, at the 'Paris 2015' climate conference, the aim was to get all countries to commit to keeping global temperature rise below $2^{o}C$ [6] (above pre-industrial levels or 1.4 °C above present levels) after year 2020.

The Australian Government commit was: "Australia will reduce its greenhouse gas (GHG) emissions by 25 per cent compared with 2000 levels by 2020 if the world agrees to an ambitious global deal capable of stabilizing levels of GHGs." For a full commitment text see reference[7].

Whilst they have deferred the emissions trading option, the Australian Government has committed to a Renewable Energy Target to increase the proportion of renewable energy to 23.5% of the energy market by 2020[8] .

Householders may be able to receive a benefit under the Small-scale Renewable Energy Scheme (SRES) to help with the purchase cost [9].

Did you know?

The coal export industry in Australia was worth 40 billion in 2013/2014.[1]

Japan remains the primary destination for Australia's thermal coal exports (120 Mt in 2014) [1].

Australia is the world's sixth largest producer of aluminium, about 4% of world's production in 2014.[3]

The Australian residential energy consumption is expected to rise by 56% of 1990 levels by 2020: an increase of almost 4 million households[5].

Under the Renewable Energy Target, about 23.5% of Australia's electricity generation in 2020 will be from renewable sources[8].

% of households using solar energy[10]
24% in SA 20% in QLD
16% in WA 10% in NSW, VIC
Summary: 14% in Australia

Only half the households consider the 'energy star rating' when choosing major household appliances. Only 40% consider 'water efficiency'[10].

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Energy Conservation

The Solution

Renewable Energy Sources

Renewable energy sources can be harnessed indefinitely whereas coal and other fossil fuels are finite resources. Australia's main renewable energy sources are: [11]

Hydro 42.3%
Electricity from dams

Wind 30.8%
Electricity from wind

Solar 16%
Electricity from sunlight (photovoltaic cells)

Bioenergy 8.6%
Energy from biological sources

How to Conserve Energy

If you own your own home, consider installing insulation or investing in a solar hot water heater.

If you need to use air conditioning, avoid turning the thermostat on to very cold settings. When the system works harder, it uses significantly more energy.

Buy green power. Most energy suppliers give you the option of sourcing a proportion of your energy from renewable sources.

Check the star ratings on appliances. You will save money as well as energy.

Simple Tips to Conserve Energy

- switch off fridges that are not in use
- turn off power points at the source
- use cold water in the washing machine
- turn off lights when not in use

Energy Sources		
Type	Advantages	Disadvantages
Coal	Currently cheap because environmental costs are not reflected in prices	Contributes to global warming and air pollution
		Requires mining of finite resources
Solar	No air pollution or contribution to global warming	High initial investment cost
	Energy source independent from markets	Energy available when sun shining only
	Ability to sell excess power back to grid	
Wind	No air pollution or contribution to global warming	Wind turbines can be unattractive
	Energy source independent from markets	Large tracts of land required for wind farms
		Noise
	Ability to sell excess power back to grid	Wind turbines represent a threat to birds

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