



# Nuclear power and climate change

*Climate change is happening now. As the world's highest per capita emitters of greenhouse gases, it is important for Australia to look seriously at measures we can take to improve the situation at home and globally. This has led to a renewed debate over the viability of nuclear power and its promotion as a solution to climate change. What are the facts?*

Scientists agree that we need to reduce greenhouse pollution by about 60 percent by 2050. The only way to do this is to lower greenhouse emissions.

According to the Australian Greenhouse Office, in Australia, electricity accounts for 35% of greenhouse emissions, with the remainder coming from transport, landfill, industrial process emissions, agricultural processes and land clearing.

To reverse or slow down man-made global warming, we need to address greenhouse emissions in all polluting sectors. While we urgently need to change the way we generate and consume energy, the real climate-friendly answer to the world's electricity question is renewable energy - like wind, solar power and geothermal energy - together with better energy efficiency. Nuclear power is not the answer.

## Why nuclear power is not a solution to climate change:

1. Nuclear power will not reduce greenhouse emissions
2. Nuclear power is not clean
3. Nuclear power is expensive and relies heavily on taxpayer subsidies
4. Nuclear power is slow to build
5. Uranium resources are limited
6. Renewable energy and energy efficiency can deliver the clean power we need

## 1. Nuclear power will not reduce greenhouse gas emissions

As a means of reducing global greenhouse emissions, nuclear energy has a limited capacity to make a significant difference. It is used almost exclusively for electricity generation, which is responsible for only 30% of global greenhouse emissions.

Even when tackling that 30%, nuclear power makes a dubious contribution. A doubling of nuclear power by the middle of the century

would reduce greenhouse emissions by only 5%, less than one-tenth of the reduction required to stabilise atmospheric concentrations of greenhouse gas emissions.

This would require the construction of 1,000 new nuclear reactors at enormous expense, for very little dividend. Entailed in the construction and use of these reactors are the greenhouse emissions of building the infrastructure and hundreds of thousands of years of radioactive waste from mining and reactor use.

On the other hand, an investment in efficiency and alternatives can bring an immediate reduction in CO2 emissions.

**Zero emissions?  
While CO2 emissions from nuclear power reactors are minimal, nuclear power reactors emit other toxic chemicals such as krypton and tritium**

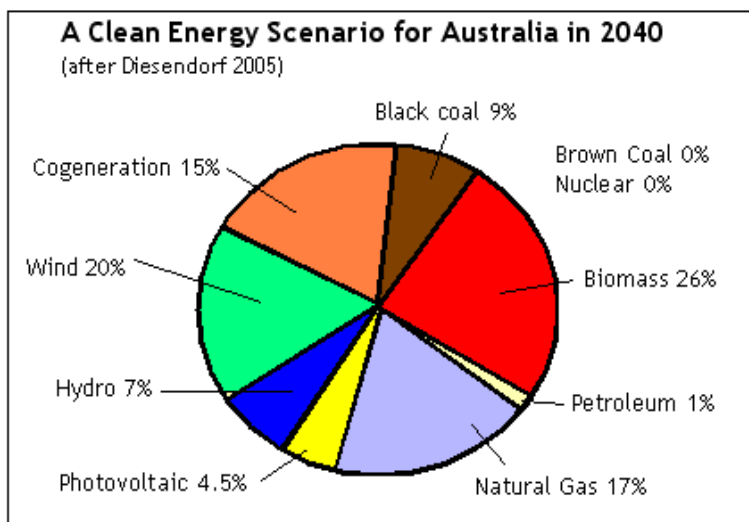
## 2. Nuclear power is not clean

Nuclear power is not 'greenhouse-free', most uranium ore is of a poor grade and requires considerable energy to extract, transport and refine. Significant amounts of fossil fuel energy are used to mine and process uranium ores, truck it around, enrich the fuel and build nuclear power stations.

Decommissioning sites is a complex and difficult process adding significantly to fuel and energy costs. As a result, nuclear energy emits more greenhouse pollution than most renewable energy sources.

There are currently over 250,000 tonnes of high level nuclear waste in unsafe stockpiles around the world today with no safe long-term disposal or storage in sight. The half-life of uranium is 4.5 billion years.

## 3. Nuclear power is expensive and relies heavily on taxpayer subsidies



In the US, nuclear power received US\$115 billion in direct subsidies and a further US\$145 billion in indirect subsidies, compared to less than \$10 billion for wind and solar combined. The pattern is repeated in Europe. According to The Economist: "More than half of the subsidies (in real terms) ever lavished on energy by OECD governments have gone to the nuclear industry."

An AMP paper has concluded “nuclear power and the uranium industry are neither financially or environmentally sustainable...the argument of cost competitiveness is flawed as it does not consider an adequate return on capital.” (*The Nuclear Fuel Cycle Position Paper* Sept 2003 AMP)

#### 4. Nuclear power is slow to build

Climate change is happening now and we need an immediate response. It would take an estimated 15-25 years before a reactor could deliver electricity in Australia. Wind turbines could be delivering power within a year and energy efficiency measures can cut down on pollution tomorrow.

#### 5. Uranium resources are limited

Uranium is not a renewable resource: at current rates high grade, low- cost ore will be exhausted in 50 years. Expanding production will exhaust that supply even earlier. Furthermore, nuclear power is not viable as an interim solution. Most countries heavily reliant on nuclear power are phasing out their programs and switching to renewables. Therefore new reactors built in China or other developing nations will not significantly increase the amount of world use of nuclear power. Establishing and promoting a new nuclear industry is a short-sighted diversion from investing in necessary long term solutions.

#### 6. Renewable energy and energy efficiency can deliver the power we need

##### The local picture

Australia can ‘go renewable’ and reap the benefits of more jobs, clean air, and reduced emissions. If we started now, by 2020 we could generate at least 20% of our electricity from renewables. We could put in place energy saving measures equivalent to five nuclear power stations which would pay for themselves before a nuclear reactor left the drawing board.

There are already clean energy models for Australia using currently available energy sources and infrastructure.

#### The global picture

Renewable energy (mostly hydro) already supplies 19% of world electricity, compared to nuclear’s 16%. Renewable energy could meet most of the world’s energy demand by 2100 according to the UN Intergovernmental Panel on Climate Change.

Nuclear power capacity in Europe is already falling, and is expected to drop 25% over the next 15 years. The International Atomic Energy Agency (IAEA) predicts that nuclear will only contribute to 12% of world electricity by 2030, despite the projected growth in China and India. This growth is dwarfed by renewable energy projections.

In fact, China’s renewable energy target is three times greater than its nuclear target (5%) In China is now planning to supply 15% of electricity from new renewables (excluding hydro) by 2020, compared with only 4-6% from nuclear.

Wind power and solar power are growing by 20-30% each year, compared to minimal growth in nuclear. In 2004, renewable energy generation added nearly more than three times as much net generating capacity as nuclear power. By 2010, renewable energy is expected to add more than 100 times nuclear’s capacity per year. (*Rocky Mountain Institute 2005*)

##### The big picture

As the number one per capita emitter of greenhouse gases, and a global citizen, Australia must start its campaign to address global warming by reducing greenhouse gas emissions at home. Australia has the means to do this with existing Australian infrastructure and renewable energy technology.

***Nuclear power is not safe, clean, or green. It has no role to play in a long-term program to reduce greenhouse emissions in Australia or overseas.***

***Nuclear power is no solution to climate change.***

#### ***Energy Solutions for Queensland***

In 2005 the QLD government commissioned Dr Mark Diesendorf to formulate a plan for renewables for the state to replace a potential new power station. His recommendations included:

- energy performance standards for all buildings
- substantial expansion of the use of solar hot water
- ‘smart’ meters and peak-load pricing to make users pay the full cost of air conditioning
- low-cost packages of energy efficiency measures for householders
- supply-side mix of bioenergy, combined cycle and cogeneration fuelled with coal seam methane, and wind power
- tradeable emissions or a carbon levy
- research and development support for bioenergy.

The alternative system would reduce CO2 emissions by about 3.5 million tonnes per year, corresponding to the removal of 78% of the CO2 emissions from the coal-fired power station, and create many more local job-years, especially in rural areas.



**Friends of the Earth**

*Nuclear Free Queensland is an initiative of  
The Queensland Nuclear Free Alliance  
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