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# WHERE WE CAN GET OUR ENERGY

A critical issue is to know where else we can get low and zero greenhouse energy, if we are to avoid climate catastrophe by reducing our emissions by 70% by 2050. To achieve this we need significant reductions commencing this year.

All forms of energy production have their problems. Coal has, as most people are aware, unsustainably high levels of greenhouse gas emissions, and geo-sequestration of CO<sub>2</sub> is an unproven (in fact – untested) theoretical method of removing these from the atmosphere. Even renewable energy requires the manufacture of equipment before a single watt is produced.

Nuclear energy is being promulgated as a “zero-greenhouse” solution (which it is not), which requires some discussion. Ten problems exist with nuclear power, any one of which is sufficient for a permanent veto:

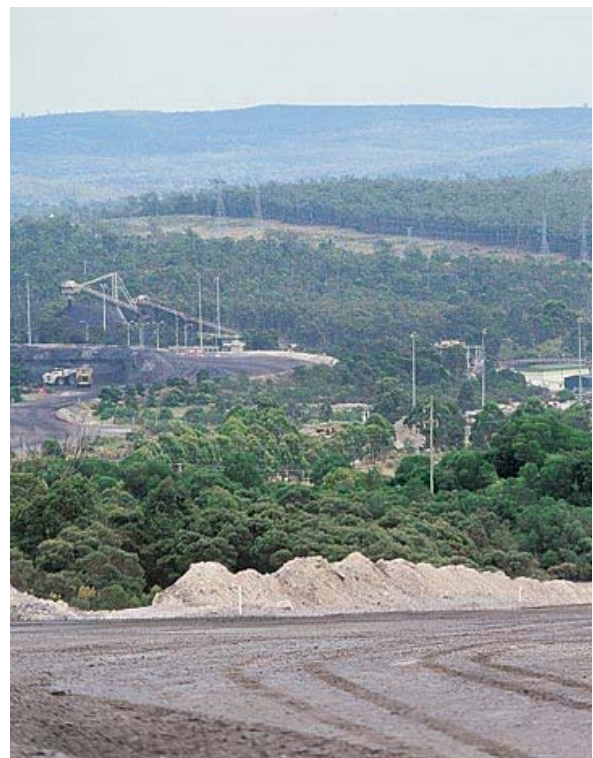
1. Power plant 10-15 year construction time is too long to assist climate change, and its energy and greenhouse cost is too high.
2. Nuclear power is not ‘greenhouse-free’.
3. No safe waste disposal method has been proved.
4. Reactor decommissioning has no reliable method, and costs approximately half a billion dollars.
5. Weapons proliferation depends on plutonium, most of which comes from spent fuel rods.
6. Risk of terrorists striking reactors cannot be discounted.
7. Risk of accidental melt-down is ever present, regardless of safety procedures.
8. ‘Limited liability’ legislation is likely to protect nuclear corporations.
9. Government subsidies are needed for commercial viability.
10. Commercial uranium is limited to about 40 years’ supply.

In a nation of 20 million, there are no cost benefit studies yet published showing nuclear power is viable for Australia. Given that no government ever sets up an enquiry without having already determined the answer it wants, what is the government’s real agenda?

In a rising oil market, there is also some panic to get the ore out of the ground while there’s still profit in it.

Some energy sources come more or less ready to use: gas, oil, coal and renewables.

Coal and nuclear need a lot more energy to get to their own energy to the user, because they use oil for mining and transportation. Uranium ore also needs significant enrichment, which takes even more oil and coal.



View of Rio Tinto Coal Australia’s open cut Tarong Mine in Queensland, Australia.

**This is the second article of two, and follows on from ENERGY DEMAND IN BUILDINGS, which discussed ways of reducing energy demand in the built environment.**

The world is on the brink of peak oil production, with the price likely to double within a few years. Investors in the uranium mining industry (including superannuation funds) know that once oil hits a certain price, the uranium may as well stay in the ground, making their investment worthless.



*Brunner Island nuclear power plant in south central Pennsylvania USA.*

- Natural gas 30%
- Bio-electricity 28%
- Wind power 20%
- Coal 9%
- Hydro-electricity 7%
- Solar 5%
- Oil 1%

The intervening 33 years till 2040 allow for the discovery and further development of technologies to take us to 2100.



This solar dish-engine system is an electric generator that "burns" sunlight instead of gas or coal to produce electricity.

The other end of the nuclear process is also being seriously entertained: storing the world's nuclear waste – the end product of the mining and enrichment business, often called 'resource leasing'. It means that as soon as we mine the uranium ore, we are responsible for its entire 240,000 year life.

Dr Mark Diesendorf is among the world's leading writers on energy issues, and is not alone in strongly supporting the expansion of renewable energy as the means to reduce our carbon emissions. It also holds the key to revitalising Australia's role as a technology leader, rather than as a nation that digs up and sells its dirt, Nauru style.

Diesendorf shows that a mix of reduced fossil fuel and increased existing renewable energy technologies are able to provide all our energy until 2040, with over 60% reduction in greenhouse emissions:

He notes that these renewables are currently cheaper than the Intergovernmental Panel on Climate Change's projected cost of coal-fired electricity with geosequestration. This untested procedure of burying liquefied CO<sub>2</sub> has the potential to remove greenhouse gas from the atmosphere, but uses huge amounts of energy in the process, thus being partially self-defeating, with no guarantee of the deadly gas staying underground. The government is giving the profit-rich coal industry large grants to research the process, at the same time as winding back grants and subsidies to renewable technologies.

Diesendorf's projection depends upon reductions in the demand side for power. It is possible and practicable to reduce energy demand in residential and commercial buildings by 40-80%, and other sectors can also make radical savings. Savings like that make the need for nuclear power vanish. That must be our global position of leadership for a sustainable future.

**"Dr Mark Diesendorf notes that renewable energies are cheaper than the Governments projections"**



Wind Energy wind turbines are part of an offshore wind project off the coast of Ireland.