

The Nuclear Power Debate

Mike Nahan on the politics of nuclear power

Alan Moran on the economics of nuclear power

Tom Quirk on the safe disposal of waste



Mike Nahan

When I was a young boy, nuclear power was widely seen as the energy of the future—clean, cheap, flexible and abundant. Even though it was at the height of the Cold War and memories of the destructive power of the Hiroshima and Nagasaki bombs remained fresh in people's minds, they were able to differentiate between the uses of the technology for war and peace. Indeed, the motto at the time was 'atoms for peace'.

As a result, hundreds of nuclear power plants were built around the world, starting in the 1950s into the late 1980s. At its peak, nuclear power

came to account for about 17 per cent of world electricity production. (It is now down to 16 per cent.)

Although no nuclear power plants were built in Australia, they were on the drawing board. As Premier of South Australia, Don Dunstan promoted nuclear power as a saviour of his State and the means of creating millions of jobs. At the other end of the political and cultural spectrum, Sir Charles Court purchased and zoned land just north of Perth for a nuclear power plant in WA.

Support for nuclear power began to unravel in the mid-to-late 1970s with the rise of the environmental move-

ment. During that decade, the peace movement merged with a radicalized conservation movement, symbolized best perhaps by the rise of Greenpeace. Nuclear power represented everything that these groups feared and loathed—unrestrained growth; large corporations; large scale, centralized production; sophisticated technology and waste. Moreover, nuclear power proved to be a powerful fundraising and campaign tool. As a result, the environmental movement, virtually from its inception, has been virulently opposed to nuclear power and has waged an unrelenting campaign against it. ►

The environmental movement was eventually successful at stopping the growth in the nuclear power industry in the developed world, with the exception of France, Belgium and Japan. It was also successful at seeding fear and concern about the technology in the public's mind and increased the cost of construction to the point of making it uneconomic.

The accidents at nuclear power plants at Three Mile Island in the US and at Chernobyl in the Ukraine have been elevated as proof of the inherent fallibility of and excessive risk associated with nuclear power.

While both accidents highlight the risks of the technology, the facts about both of them diverge sharply from the received wisdom.

In March 1979, a cooling malfunction caused part of the core to melt in the No. 2 reactor at the Three Mile Island nuclear power plant (TMI) in Pennsylvania, USA.

Contrary to the green propaganda, however, there was no 'China Syndrome'. The meltdown was stopped and the containment building worked as designed. Despite the melting of about

one-third of the fuel core, the reactor vessel itself maintained its integrity and contained the damaged fuel.

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There were no injuries or detectable health impacts from the accident. While radiation was released from the plant, the releases were not serious and were not health hazards.

Indeed, from its restart in 1985, TMI No. 1 has operated at very high levels of safety and reliability. The No. 2 TMI reactor has been successfully decommissioned and the site reclaimed and made safe for other uses.

Moreover, the accident resulted in large improvements in operator training and safety standards. Nuclear plants have become significantly more efficient, reliable and safer since the TMI event.

The facts about TMI, however, did not win over the minds of the public. The Green propaganda did. By the late 1980s, the construction of new nuclear power plants came to a halt in the US.

The Chernobyl accident was different both in cause and effect from the TMI accident. It was a nuclear accident of maximum severity in which the reactor was totally destroyed within a few seconds, with significant amounts of highly radioactive material being released into the environment across a wide area.

Claims by anti-nuclear groups that more than 10,000 people died as a result of the accident are grossly wrong. The World Health Organization estimates that, to date, the accident has caused about 40 deaths—30 from direct exposure at the time of the accident and 10 fatal cases from radiation-induced thyroid cancer. There are also indications that radiation-induced thyroid cancer resulting from the accident has increased and will do so into the future.

The cause of the Chernobyl disaster was a combination of faulty design, poor safety standards, poor training and a collapsing Soviet economy. While the disaster does illustrate the potential magnitude of risk associated with nuclear power if undertaken in a totally incompetent manner, it is absurd to use a project built during the twilight of the Soviet era as a benchmark for plants in the West. This would be like judging coal-fired power stations in the West by the standards of the polluting monsters that operated in East Germany during the Soviet era. Chernobyl could not be built anywhere in the West and therefore is not relevant to the issue of building power stations in the West, including Australia.

Despite this, the Chernobyl disaster has come to symbolize ►

Green groups on nuclear power generation

GREENPEACE

☪ The history of the Nuclear Age is a history of accidents. Many people in different parts of the world suffer from health problems caused by accidents, which happened years or decades ago...

Neither the nuclear industry nor the governments accept responsibility for the daily disasters caused by deliberate radiation releases to the environment from the operation of nuclear installations. Every day, large amounts of radioactive effluents and gases are discharged, legally and illegally, into rivers and coastal waters or into the air. ☪

WWF

☪ The entire commercial chain of the processing of nuclear raw materials from nuclear mining; operating nuclear power stations; handling nuclear waste and finally re-processing, is full of leaks and contamination and produces a highly toxic legacy for thousands of years to come...

Replacing fossil fuel fired power stations with nuclear energy simply replaces one fundamental environmental problem by another. It is clear that nuclear power remains particularly dangerous and difficult to control. This has been demonstrated by the accidents at Chernobyl, Russia, in 1986 and at Tokaimura, Japan, in 1999. ☪

the risk of nuclear power in the West and has contributed to the decline of nuclear power plant construction.

The anti-nuclear campaigns have not just focused on the generation of nuclear power but also on uranium mining and waste disposal.

Since the 1970s, anti-nuclear groups have campaigned strongly against the mining of uranium in Australia on the grounds that mining is destructive, that uranium is particularly so, and that it contributes to the nuclear cycle.

These campaigns were not motivated, or otherwise supported, by the evidence. Indeed, in part because of the campaigns, uranium mining has been the most closely regulated and monitored of all mining activity. The sector has an enviable environmental record.

So, despite the absence of evidence and the weakness of their arguments, the anti-nuclear campaigners have been successful in limiting mining of uranium in Australia. Although Australia has about 30 per cent of the world's low-cost uranium resources, it currently only accounts for 19 per cent of world production. Up until 1996, the number of mines was restricted to three by the Federal Labor Government. Since that time, a new mine has secured clearances. However, some State Governments, including the Gallop Government in Western Australia, continue to ban the development of additional uranium mines.

The disposal of radioactive waste from nuclear power plants, research reactors, dismantled nuclear weapons and nuclear medicine is a significant issue. The waste has a long half-life and, unless suitably contained, poses a hazard to humans and the environment. Indeed, in many ways, disposal is the greatest challenge to the expansion of a clean, green nuclear industry.

The anti-nuclear industry has been part of the problem. They have waged vigorous campaign against all waste disposal—claiming that there is no satisfactory storage technology, creating fear in the community about potential storage areas, and manufacturing stories of

conspiracy, secrecy, danger, death and environmental leakage.

As a result, much of the world's stock of nuclear waste remains unsatisfactorily stored in situ—largely because the anti-nuclear industry has stopped it from being moved. Australia which, as Tom Quirk argues in this issue, has the best sites for long-term storage of nuclear waste, currently exports its waste

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from its sole nuclear reactor to the US for disposal.

In summary, the nuclear power sector in Australia has been stopped by a long-standing, concerted propaganda campaign.

Enter climate change. Starting in the 1980s, concern about climate change led to the development of the Kyoto Protocol and a raft of other actions designed to reduce emissions of greenhouse gases, the most important of which is CO₂. The Green lobby, to a person, has become an ardent advocate of the need for drastic action to address climate change.

Indeed, climate change is currently the main campaign of the movement. The demand, almost without exception, is that greenhouse gas emissions should be reduced by at least 60 per cent by 2050 and that the use of fossil fuels should be phased out. Given that fossil fuels currently provide over 80 per cent of Australia's electricity and transport fuel, this would require that no new coal- or gas-fired power plants be built and that all retiring plants be

replaced with non-fossil-fuel generating plants.

But how is this to be achieved? There are three possibilities—exotic renewables, nuclear power or turning off the lights. In reality, the first and the last are not options. It will either have to be nuclear or fossil fuel.

No government will turn off the lights. People may wish to be clean and Green, but only as long as it's painless. The drastic reduction in energy consumption envisaged by the Green lobby would result in a drastic reduction in quality of life, and be rejected.

As for exotic energy, such as wind, solar and biomass, these would require a 100 per cent increase in energy costs and, in any case, are technically limited to supplying only about 15 per cent of the electricity demand.

The Green Lobby has become trapped its own 'doublethink'.

They believe that the world is on the precipice of an environmental disaster caused by human production of greenhouse gases and that the only solution is to phase out the use of fossil fuel within 45 years. At the same time, they wish to ban nuclear power—the only fuel source that can possibly replace fossil fuel and meet the demand for electricity. That is, they hold two contradictory beliefs in their minds simultaneously and accept both of them!

The campaigns associated with this doublethink have been effective in terms of capturing the mind-set of the public and of policy makers in Australia and in most Western countries. Such double think is increasingly the dominant driver of energy policy.

If we are to address the vital issue of energy choice and climate change, there is an overriding need to stop the doublethink. This means countering the Green lobby and getting back to science, evidence and rational debate.

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