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# NUCLEAR POWER

**NO**

**Ian Lowe**

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**WHY WE SHOULD  
SAY NO TO  
NUCLEAR POWER**

**BY IAN LOWE**

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# Why we should say **NO** to nuclear power

By **Ian Lowe**

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where you will find both authors' citations and sources.

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# WHY WE SHOULD SAY NO TO NUCLEAR POWER

**BY IAN LOWE**

To read the other side of this debate  
by Barry W. Brook  
please flip over the book



NO

# Introduction

Let's be clear: the only reason for rational people to take seriously the idea of nuclear power in Australia is the widespread recognition that climate change is a serious threat to the future of civilisation.

Ten years ago, nuclear power was seen almost universally as a failed technology. Originally touted as cheap, clean and safe, nuclear power had by then been recognised as expensive, dirty and dangerous.

Nuclear power's record of cost over-runs and technical problems had culminated in the 1986 explosion at the Chernobyl nuclear power plant in the former Soviet Union which scattered radioactive debris over a vast area of the western Soviet Union and Europe. Postponements and cancellations far exceeded orders for new power stations until it seemed the only reason any country would contemplate nuclear power was a secret wish to develop nuclear weapons. Indeed, the inextricable link between nuclear energy and nuclear weapons is a crucial political problem.

The idea of using nuclear fission to produce useful energy was a spin-off from the Manhattan Project, the scientific effort to develop the weapons that destroyed the Japanese cities of Hiroshima and Nagasaki in 1945, ending the Second World War.

When the United States declined to share the new weapons with its wartime allies, the United Kingdom immediately built the Calder Hall reactor to produce plutonium for its own bomb. The reactor delivered small amounts of electricity as a public relations exercise to distract attention from its real purpose. France, China and the then USSR followed, developing their own nuclear weapons with some electrical energy as a by-product.

At the time, it seemed nuclear energy had some advantages over coal-fired electricity. As I was growing up, I regularly heard of coal miners being killed or injured and I saw the air pollution associated with burning coal.

As a student of electrical engineering and physics, I thought nuclear power looked an attractive option, safer and more technically sophisticated. When I went to Britain more than 40 years ago to do research for a doctorate, I was happy to undertake a project funded by the United Kingdom Atomic Energy Authority looking at a problem affecting the useful life of fuel elements in nuclear power stations.

Later, however, lecturing in the Faculty of Technology at Britain's Open University, I found my academic colleagues questioning technical and economic aspects of the local nuclear power program.

The first generation of commercial British power stations, using Magnox reactors, had been quite reliable and generated electricity at a competitive price. The second-generation power stations, so-called advanced gas-cooled reactors (AGRs), were, in principle, based on a more sophisticated design. Those working



on the new reactors encouraged politicians and the public to expect cleaner, safer and more economical performance. Other enthusiasts were talking about developing a fast breeder reactor, cleaner still and able to produce more nuclear fuel than it used.

In practice, however, the advanced gas-cooled reactor program was a disaster, with serious technical problems causing massive delays and a huge blow-out in costs.

The fast breeder story is even more depressing; the technical problems are so intractable that most nuclear scientists doubt they will ever be safe and reliable enough for commercial use.

There is an important general lesson here. Enthusiasts have been saying for 40 years that there is a new generation of reactors on the drawing board, more technically sophisticated, safer and cheaper than those currently in use. Just because they have been consistently wrong for 40 years does not necessarily mean they will always be wrong, but it does mean their claims should be scrutinised with a very critical eye. They have consistent form.

I changed from being cautiously in favour of nuclear power to being solidly against it in 1977, when I read the "Fox report",<sup>1</sup> the result of a public inquiry into environmental aspects of the proposed Ranger uranium mine in the Northern Territory.

The three commissioners, Justice Russell Fox, Professor Charles Kerr and Dr Graeme Kelleher, broadened their inquiry to look at Australia's overall involvement in the nuclear industry. Their crucial conclusion was that nuclear power is inevitably associated with two intractable problems, radioactive waste and weapons proliferation.

This led logically to the report's view that it is morally questionable to expand nuclear power until there are proven solutions to these problems, or at least a reasonable expectation that they might be solved in the foreseeable future.

Yet they haven't been solved and there isn't any reasonable expectation of solutions. More than 30 years after the report was published, we do not appear any nearer to solving the problem of managing radioactive waste for the extremely long periods involved, while the proliferation issue has worsened.

Thirty years ago there was hope that the Nuclear Non-Proliferation Treaty would persuade nations with nuclear weapons to disarm, while those without them would refrain from joining the arms race. That hope has not been fulfilled. The failure of the weapons states to disarm has led other nations - India, Pakistan, Israel, and perhaps North Korea - to develop nuclear weapons.

So it remains true that even if nuclear energy is cleaner in the short term than burning coal to generate electricity, it exposes future generations to serious risks.

Let me summarise where I stand on the issue of climate change and nuclear energy. I believe the science has been clear for 25 years: human activity, mainly burning fossil fuels and clearing vegetation, is increasing the atmosphere's capacity to trap heat and so changing the global climate.

We are now seeing all of the changes climate science was predicting 20 years ago:

- higher average temperatures
- rising sea levels
- retreating glaciers
- shrinking Arctic sea-ice
- changes in rainfall patterns
- the spread of vector-borne diseases (such as malaria and dengue fever)
- more frequent extreme events, like cyclones, floods, droughts, heat waves and consequent disastrous bushfires.

Both the rate of burning fossil fuels and the rate of change in climate are at the high end of the range projected by the science.

There is no longer any serious doubt in the relevant scientific community that we risk catastrophic interference in the climate system. We urgently need a concerted global effort to reduce our production of greenhouse gases, especially carbon dioxide and methane.

If, as some claim, nuclear power were the only effective way of slowing climate change, I might support going down the nuclear path. I would add the proviso that we would have to put a huge effort into managing nuclear waste, a problem that is, at least in principle, capable of a technical solution. I would also remain desperately worried about the proliferation of nuclear weapons, a social and political problem apparently without any prospect of solution. However, the need to respond to climate change is now so urgent that it would still be tempting to overlook the proliferation issue.

Fortunately, we do not face that terrible dilemma. There are other, much better ways of slowing our assault on the Earth's climate system. I see the nuclear argument as a dangerous distraction, which could direct resources and technical capacity away from more sensible responses.

Let me qualify that general conclusion. No two countries have the same history and the same energy mix, so there are no universal truths. Norway, Iceland and New Zealand have plentiful renewable resources and now get all or almost all their electricity from those technologies, mainly hydro and geothermal. Clearly, there is no case for nuclear power in those countries.

At the other end of the spectrum, France replaced its coal-fired power stations with oil-burning installations in the 1960s and ran down its coal industry. When the oil price jumped in the 1970s, France responded with a massive investment in nuclear power. It

now gets about 80 per cent of its electricity from nuclear and could not do without it in the short-to-medium term.

Most countries lie somewhere between those extremes. Thirty countries make some use of nuclear power, but more than 160 don't. It is much harder to justify using nuclear power in countries which do not have an existing industry. For Australia, like the other countries that do not have nuclear power stations at the moment, it is very hard to see a convincing argument for embracing the nuclear option.

Advocating nuclear power as the response to climate change is like promoting smoking as a cure for obesity. As they used to say in the 1970s, if nuclear power is the answer, it must be a very silly question!

**In summary, the 7 reasons why we should say “No” to nuclear power are:**

- 1 Because it is not a fast enough response to climate change**
- 2 Because it is too expensive**
- 3 Because the need for baseload electricity is exaggerated**
- 4 Because the problem of waste remains unresolved**
- 5 Because it will increase the risk of nuclear war**
- 6 Because there are safety concerns**
- 7 Because there are better alternatives**

