
Editorial

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The nuclear debate is hot right now. It has been a topic for decades, but recent developments have put it back on our front pages.

The release of the Prime Minister's nuclear energy review (p.45) looks set to see the debate rolling for quite a while longer. The draft version of the review, released in November, concluded that nuclear power would be 20–50% more expensive to produce than coal or gas-fired power. Despite this, the report said that nuclear energy was the cheapest low-greenhouse emission energy source, and taxes on greenhouse gas emissions might make it viable in 15 years time. The final report will be released this month, but is more likely to inflame the debate than settle it.

However, much of the discussion generates more heat than light. One point of confusion is that there really isn't one nuclear debate, there are several.

There is the question of whether Australia should develop nuclear power. There's the controversy over exporting uranium to those countries who already generate power this way, and discussion over whether we should "value-add" by enriching the uranium before export or by taking back used fuel rods.

Beyond this there are other issues, like alternative forms of nuclear power that don't rely on uranium. Dr Matthew Hole and colleagues (p.45) discuss progress in fusion power, which has long been considered a clean nuclear technology – minimal waste, no risk of meltdowns and possibly no link to nuclear weapons production. Unfortunately, fusion power has proved trickier than expected, and confident predictions it would be commercially viable by now have proved wildly optimistic.

It is often taken for granted that when it comes to the hot nuclear debates people will be consistently on the same side – either you

support a local nuclear power program, more uranium exports and various additional features, or you support none of these.

But this is naive. It is perfectly possible to argue that in a country blessed with vast amounts of sunlight, wind and waves, nuclear power would be a massive white elephant (even if we make the switch away from coal), and at the same time to argue that we should export uranium to countries that lack these resources.

On the other hand, some people point out that a stable middle-sized democracy such as Australia offers little risk of nuclear weapons proliferation, so there are no major concerns if we do decide to develop a home-grown nuclear industry. Some of these same people are deeply alarmed, however, at the possibility that some of the uranium we export may eventually be turned into bombs.

There are people who would like to see us stop exporting uranium, but think that if we continue to do so it is our responsibility to take back the waste afterwards. These positions seem contradictory in the context of sometimes simplistic public debates, but they deserve consideration.

In this edition of *Issues* we've tried to cover several of these nuclear debates, but there is plenty more to consider. For one thing, we've spent relatively little space on the question of waste disposal because we covered it in some depth in *Issues 70* (pp.14–22), with space given both to those who consider it a major problem and those who think it's easily solved.

Another perspective on nuclear energy that doesn't get a lot of coverage is the idea of using thorium for fuel rather than uranium. Reza Hashemi-Nezhad of the University of Sydney (p.37) argues that thorium-powered reactors will produce far less waste, remove the risk of really major accidents, and will not be a stepping-stone to nuclear weapons.



Even with these aspects left out there is plenty to consider. Nuclear power produces a lot of emotion that sometimes leads people, on both sides of the debate, to create claims to back up their position, even if they're not true. Spend a few hours on the internet reading blogsites about nuclear issues and you are almost certain to come across some false information.

Even in *Issues*, where we've done our best to keep things accurate, there appear to be some contradictory claims. Read closer and you'll find that sometimes the statements are not quite what they seem. Even when advocates in the nuclear debate are telling the truth, they're not always telling the whole truth.

For example, Ian Hore-Lacy of the Uranium Information Centre (p.18) says: "There has never been an accident resulting in loss of life due to failure of any nuclear power reactor that you could get a licence to build and operate in the west". But Louise Clifton of Greenpeace (p.15) claims: "Japan has also had a number of serious accidents, some with fatalities, at nuclear reactors and other nuclear facilities in the past 15 years".

Who's right? Actually, they both are. Deaths have occurred at Japanese nuclear power

plants. However, this has not been caused by the reactors themselves failing. Instead, other things have gone wrong, such as when an explosion at a reprocessing plant exposed workers to fatal doses of radiation.

Given our vast reserves of uranium, Australia's biggest role in the global nuclear debate will always be about mining. Yanis Miezitis and Aden McKay of GeoScience Australia (p.22) explain how new mines are found.

On the other hand, Louise Morris of Friends of the Earth (p.27) argues that all uranium mining is destructive to the local environment and indigenous populations.

Dr Martin Sevier of the University of Melbourne (p.4) makes the case for why nuclear power makes sense, at least in some places. "Since 1987 the cost of producing electricity from nuclear plants has decreased from 3.63 ¢/kWh to 1.68¢/kWh in 2004," he writes.

However, Mark Diesendorf (p.8) counters that nuclear power stations are only used where governments are willing to provide massive subsidies. "The history of the nuclear industry's predictions shows that it has always been over-optimistic about future costs," he writes.

Diesendorf's claim raises the question of why governments have been so willing to hand over vast sums of money to support an industry he says simply isn't viable on its own. The reason can't be concern about global warming or shortages of fossil fuels – otherwise similar amounts would have been invested in renewable technologies.

Tilman Ruff (p.30) describes civilian nuclear programs and atomic bombs as "inseparable twins", claiming: "The potential use of nuclear weapons remains the greatest immediate threat to global health and survival". He argues that not only do nuclear power programs make it easier for nations to get the bomb, getting nuclear weapons are often the only reason the civilian programs are funded at all.

This, ultimately, is the core of all the nuclear debates. If people were not worried that particular activities could lead to weapons proliferation then concerns about waste, mining damage or even accidents would be barely louder for nuclear power than natural gas.

Sevier claims: "Light-water reactors are called proliferation-resistant. Normal operations preclude the production of militarily useful plutonium. Abnormal operations are easy to detect."

The most important nuclear debate is whether he is right.