

SOUTH AUSTRALIAN NUCLEAR FUEL CYCLE ROYAL COMMISSION

Media Briefing

Summary of issues raised in Joint Submission by Conservation SA, Australian Conservation Foundation, and Friends of the Earth, Australia.

August 2015

How important is uranium to our economy?

- Uranium mining makes up just 0.19% of Australia's export revenue (2013/14 data).
- The uranium industry accounts for <0.01% of jobs in Australia. If Australia supplied entire world uranium demand, the industry would account for <0.1% of jobs in Australia.

Prospects for growth?

- There is little or no scope for growth of the uranium industry because the global nuclear power 'renaissance' never materialised. New reactors are being built – but old reactors are being shut down at a faster rate. The International Energy Agency noted in its *World Energy Outlook 2014* report that "a wave of retirements of ageing nuclear reactors is approaching", and anticipates the closure of almost 200 reactors by 2040 (almost half of the world total).
- The number of nuclear power reactors operating globally decreased from 443 in January 2005 to 437 in January 2015.
- Global markets for uranium conversion, uranium enrichment and fuel fabrication are oversupplied and there is no prospect of Australian entry into these markets in the foreseeable future.

Current nuclear reactor technology

- In addition to the risk of accidents, nuclear power reactors are vulnerable to sabotage (for example a reactor in Belgium was shut down in 2014 because of sabotage), terrorism, or the use of conventional military forces to attack nuclear facilities.
- Radiation biologist Dr. Ian Fairlie: "[W]orld-wide, over 60 epidemiological studies have examined cancer incidences in children near nuclear power plants: most (>70%) indicate leukemia increases. ... I can think of no other area of toxicology (eg asbestos, lead, smoking) with so many studies, and with such clear associations as those between nuclear power plants and child leukemias."
- Considering all its shortcomings, nuclear power is too expensive, too inflexible, too dangerous, too slow and too big for SA's needs.

But what about Generation IV reactors?

- So-called Gen IV reactors are decades away, if they will ever be commercially available at all. The International Atomic Energy Agency states: "Experts expect that the first Generation IV fast reactor demonstration plants and prototypes will be in operation by 2030 to 2040."
- The purported benefits of Gen IV reactors are at best untested and do not stand up to serious scrutiny. The French government's Institute for Radiological Protection and Nuclear Safety (IRSN) recently reviewed Generation IV concepts and concluded that there is no evidence that Generation IV reactors are likely to offer a significantly improved level of safety.
- Global interest in Small Modular Reactors (SMRs) is on the wane and they are not commercially available.
- It would be speculative and irresponsible to pursue a plan to process spent fuel for use as fuel in Integral Fast Reactors (IFRs) given that no IFRs exist. Advocates of that plan claim that waste would be recycled until only relatively short-lived waste remains. Given that IFRs do not exist, a more likely outcome is that Australia would be left with stockpiles of high level nuclear waste requiring very long-term management and disposal.

Nuclear is prohibitively expensive, and getting more expensive over time

- 'Generation 3' reactor projects have proven to be subject to multi-year delays and multi-billion dollar cost blowouts. The estimated cost of the Flamanville EPR reactor in France has increased from A\$4.7b to at least A\$12.8 billion, and the project has been delayed by 5 years, with further delays certain. Since the contract was signed in 2003 for a new EPR in Finland, the estimated cost has risen from A\$4.6 billion to A\$12.1 billion, and the project is 9 years behind schedule.
- Construction cost estimates for two planned EPR reactors at Hinkley Point in the UK range from A\$30.6 billion to the European Commission's estimate of A\$46.8 billion. The UK government is guaranteeing payment of A\$173.30 for every megawatt-hour generated by the Hinkley Point reactors, fully indexed for inflation, for 35 years. For comparison, that guaranteed payment is 2.7 times greater than typical wholesale electricity purchase costs in Australia.

The renewable alternative

- SA is already one of the world leaders in renewable energy. In the past decade SA's % of renewable energy has gone from almost nothing to over 40% with no loss of reliability.
- According to a recent report by Dr Mark Diesendorf from UNSW, SA has a real opportunity to get to 100% renewable in just 15 years.

Discrimination

- The Joint Submission details persistent patterns of discrimination against Aboriginal people in order to promote uranium industry interests, including the effective exemption of the Olympic Dam mine from the SA Aboriginal Heritage Act.

It's all about a waste dump

- No country has ever accepted high level nuclear waste from other countries for disposal. Therefore, there is no way of meaningfully assessing the possible income stream.
- However, multi-billion dollar costs can be predicted with greater confidence. These include the huge costs associated with proposals for dedicated port and rail facilities, and repository costs. In Japan, the estimated cost for a high level nuclear waste repository is A\$38.2 billion.
- No country has a deep underground repository to dispose of high-level nuclear waste from nuclear power reactors.
- There is one deep underground repository for long-lived intermediate-level nuclear waste – the Waste Isolation Pilot Plant (WIPP) in the USA. WIPP is closed because of a chemical explosion in February 2014 which resulted in radiation leaks and the contamination of 22 workers. The US has a wealth of nuclear expertise at its disposal, and there is no logical reason to believe that a nuclear waste repository in Australia would be managed more responsibly than WIPP.
- Australia has a woeful history of mismanaging nuclear waste. In the late-1990s, the Australian government carried out a 'clean up' of the Maralinga nuclear test site on the cheap and many tonnes of plutonium-contaminated debris remain buried in shallow, unlined pits in totally unsuitable geology. The 'clean up' has been strongly criticised by at least four scientists.

Lessons from Fukushima

- The Fukushima nuclear disaster in Japan in 2011 involved nuclear reactor fuel meltdowns, explosions and fires. The 2012 report of Japan's Nuclear Accident Independent Investigation Commission concluded that the Fukushima disaster was "a profoundly man-made disaster that could and should have been foreseen and prevented" if not for "a multitude of errors and wilful negligence that left the Fukushima plant unprepared for the events of March 11".
- The total cost of the disaster will be at least US\$500 billion according to a study by the American Society of Mechanical Engineers.