Olympic Dam uranium/copper mine, South Australia – photo: Jessie Boylan

AUSTRALIAN CONSERVATION FOUNDATION

YELLOWCAKE FEVER

Exposing the Uranium Industry's Economic Myths

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The Australian uranium industry remains a contested and controversial sector that lacks a secure social license. The industry's economic and employment contribution is small in relation to its significant domestic and international risks and legacies and there is an urgent need for an independent cost-benefit analysis and a comprehensive and transparent assessment of Australia's uranium trade.

Uranium mining and export makes a very small contribution to Australian export revenue and employment. From 2002 to 2011 uranium sales averaged $627m annually – only 0.29% of all national export revenue.

The following figures put uranium exports into perspective:

Rank	Commodity	2011/12 (A$ billion)
1	Iron ore and concentrates	62.7
2	Coal	47.9
3	Gold	16.6
10	Aluminium	5.3
20	Wool and other animal hair (inc. tops)	2.7
-	Uranium	0.6

In the 2011/12 financial year, uranium revenue was 4.4 times lower than Australia's 20th biggest export earner, 8.7 times lower than Australia's 10th biggest export earner, and 103 times lower than the biggest earner, iron ore. Small industrial sectors can play an important economic role but the unique properties and risks of uranium mining relative to any benefits means its role requires particular scrutiny.

A major constraint is the size of the global market for uranium. The value of global uranium demand is around $9.6 billion annually (using generous assumptions). Even in the implausible scenario of Australia supplying entire global demand, uranium would be Australia's eighth biggest export earning industry and revenue would fall short of that from iron ore by a factor of 6.5.

The World Nuclear Association estimates 1,760 jobs in Australia's uranium industry. That is the highest of all estimates yet it represents just 0.015% of all jobs in Australia. The Australian Uranium Association claims the industry is a "significant employer of First Australians" but in fact it provides just one job for every 3,000 Indigenous Australians.

In the mid-2000s there was a speculative uranium price bubble. Since the bubble burst in 2007 the uranium industry has been battered as a result of a falling commodity price, the Global Financial Crisis (and associated credit crisis), increased production costs, the failure of the nuclear power 'renaissance' to materialise, the failure of new uranium mines to materialise (except for the very small Honeymoon mine) and serious problems and production shortfalls at the Olympic Dam and Ranger mines. Since March 2011 the industry has also had to deal with the market fallout from Fukushima.

THE NEED FOR A NATIONAL INQUIRY INTO AUSTRALIA'S URANIUM INDUSTRY

The Australian uranium sector remains a contested and controversial one. At most, the industry will remain a minor contributor to national economic activity yet it poses significant domestic and international risks and threats. The need to manage radioactive materials over extremely long periods and specific security and proliferation issues make uranium mining fundamentally different from other types of mining and requires a higher level of assessment, scrutiny and options for redress. There is a need to review the operations and impacts of this sector, particularly in the shadow of Fukushima - a continuing nuclear crisis directly fuelled by Australian uranium. A national inquiry into the domestic and international costs and benefits of Australia's uranium trade would be a mature and timely way to identify and address these important and unresolved issues.

FUTURE PROSPECTS

A number of factors will affect the future of Australia's uranium industry but in any plausible scenario uranium would, at most, be only a small contributor to export revenue and employment.

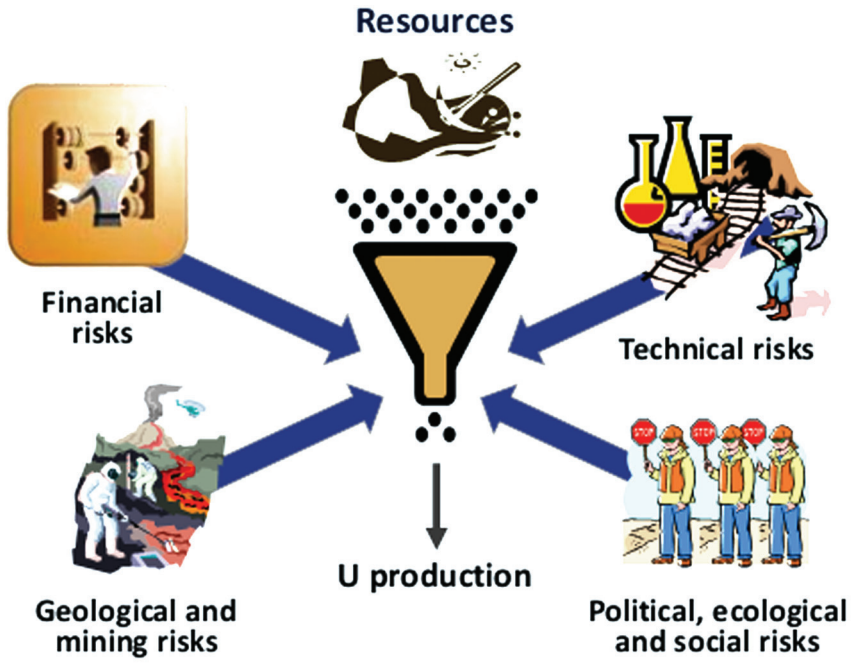
Drivers of growth include Australia's relatively large uranium resource (even though most of it is at Olympic Dam) and the relaxation of exploration or mining bans in some states.

Impediments include:

Low Prices: Significant, sustained price rises will be required to stimulate activity in Australia's near-dormant uranium industry.

Escalating Costs: Reuters reported in October 2012 that new uranium projects are being stalled or shelved indefinitely due to "sagging" prices and "soaring" costs.

Public Opinion and Concern: A 2008 poll found that 47% of Queenslanders oppose uranium mining compared to 45% support. A 2011 poll found that almost half the respondents opposed uranium mining in WA compared to 32% support. Polls indicate strong opposition to uranium sales to India (61:33), strong opposition to uranium sales to nuclear weapons states (62:31), and overwhelming opposition to uranium sales to countries that have not signed the Nuclear Non-Proliferation Treaty (88:12). The Australian uranium sector remains contested and lacks both community confidence and social licence



THE URANIUM INDUSTRY'S U-TURN

In July 2007, shortly after the peak of the speculative price bubble, *The Australian* reported that the market had "reacted savagely to uranium hopefuls". In the 12 months to December 2008, the market valuation of Australian uranium companies fell by 75%. In March 2009 *The Australian* reported that the "drastic decline in the price has really hit the local sector for six" while Far East Capital's Warwick Grigor said there "are many walking dead companies out there - zombie companies." In April 2010 *The Age* reported that uranium explorers "are generally showing falls of 50 per cent from their 52-week peaks". In late 2011 *The Australian* said the sector is doing a "passable imitation of Death Valley".

In June 2012 *The Age* said "there was evidence that the small end of the industry was close to conceding defeat". There has also been retreat by the major players. At Ranger, ERA has completed open-pit mining and abandoned plans for heap leach mining, but continues to push ahead with plans for underground mining. In July 2012, BHP Billiton cancelled the planned expansion of Olympic Dam, citing high capital costs and low uranium prices in the aftermath of Fukushima. Cheaper expansion options based on new technology will be explored in coming years. The following month, BHP Billiton disbanded its Uranium Division and sold the Yeelirrie uranium project in WA for around 11% of the nominal value of the uranium resource.

Also indicative of the state of the industry was Cameco's February 2013 announcement of a $162.5 million write-down on the Kintyre project in WA as a result of the weakening of the uranium market. If any new mines begin operation in the next few years, they would be few in number (Beverley Four Mile in SA has received state and federal approvals; Wiluna in WA has received conditional federal and state environmental approval).

Only one new mine began operation in the past decade. First production from the very small Honeymoon deposit in SA was in September 2011, but five months later project partner Mitsui (49%) announced its decision to withdraw as it "could not foresee sufficient economic return from the project."

FUTURE PREDICTIONS

The Australian Uranium Association estimates that uranium production in 2030 will be 21,600 tonnes of uranium oxide (2.4 times greater than average annual exports from 2002 to 2011). If we assume a sale price the same as that realised for Australia's 2011/12 exports, revenue would be $2.2 billion. Still uranium would not make into Australia's top 20 list of export earning industries, and revenue would be 28 times lower than 2011/12 revenue from iron ore exports.

There is every reason to be sceptical of the Association's long-term predictions given that its one-year predictions are consistently wrong - for example its September 2011 prediction of revenue in 2011/12 was 20% too high, and its February 2012 estimate of production in 2012 was 16% too high.

The industry hopes that agreements with China (2007) and Russia (2010), along with agreements currently being negotiated with India and the United Arab Emirates, will lead to export growth. Nuclear power growth is likely in those countries – albeit growth from a low base (excepting Russia) and of uncertain pace. Claims that growth in China and India will drive huge increases in uranium exports do not withstand cursory scrutiny.

There is nothing for the industry to cheer about in other export markets. Plans to expand nuclear power (or at least maintain current capacity) are in trouble in the UK, the USA and Canada. Germany and Belgium plan to abandon nuclear power. The restart of reactors in Japan promises to be a protracted, contentious affair and pre-Fukushima plans to expand nuclear to 50% of total electricity supply are now firmly in the past. South Korea's nuclear industry has been hit by a series of scandals and accidents and public support has plummeted. Even France plans to reduce its reliance on nuclear power. A 2011 survey across 24 countries found 31% support for the construction of new reactors in contrast with 69% opposition.

Most nuclear power growth is anticipated in economically and/or politically illiberal countries. *The Wall Street Journal* noted in February 2013 that "new nuclear works best in countries where consumers and financiers are shielded from its full costs - hardly the best basis for the industry's ever-elusive renaissance."

THE ELUSIVE NUCLEAR RENAISSIANCE

A decade into the nuclear 'renaissance' and global nuclear capacity has not increased. There may (or may not) be modest growth, but utilities would have to build several hundred reactors in the coming decades just to replace the current cohort of mostly middle-aged reactors.

The International Atomic Energy Agency's 'low' estimates for nuclear power growth have sometimes been accurate and sometimes too high. The current 'low' estimate is growth of around 1.5% p.a., reaching 456 gigawatts capacity in 2030. Australia's uranium revenue needs to double to overtake revenue from milk and cream - and it will struggle to catch up with uranium demand growing at 1.5% p.a. The Australian Uranium Association's bullish claim that nuclear capacity will reach 960 gigawatts by 2030 "under conservative assumptions" is profoundly inconsistent with industry reality.

TOO CHEAP TO METER ... OR TOO EXPENSIVE TO MATTER?

Huge capital costs make nuclear power acutely vulnerable to interest rate rises, credit squeezes and construction delays. As the World Nuclear Association states, "long construction periods will push up financing costs, and in the past they have done so spectacularly." As an indication of the impact of financing costs, Georgia Power said in 2008 that two reactors would cost US$9.6 billion if they could be financed progressively by tax-payers or US$14 billion if not. An Exelon executive recently warned that new reactors "won't become economically viable for the foreseeable future" in the US while General Electric's CEO said "it's just hard to justify nuclear, really hard."

Fukushima Daiichi

Reviewing Risk: The case for a National Inquiry

Do the uranium industry's small economic benefits justify the problems and risks associated with the industry? Instead of relying on industry enthusiasm there is a clear need for an evidence based independent and transparent inquiry into the impacts and implications of Australia's uranium trade.

Other issues in need of investigation include:

PROLIFERATION RISKS AND SAFEGUARDS:

Government and industry claim that "strict" safeguards "ensure" peaceful use of Australian uranium. Yet the former Director-General of the International Atomic Energy Agency, Dr Mohamed El Baradei, has noted that the Agency's basic rights of inspection are "fairly limited", that the safeguards system suffers from "vulnerabilities" and "clearly needs reinforcement", that efforts to tighten the system have been "half hearted" and that the safeguards system runs on a "shoestring budget ... comparable to a local police department." What needs to be done to strengthen safeguards and why have the failings of the system been tolerated for so long?

NUCLEAR REACTOR RISKS:

What can be learnt from the Fukushima failure with respect to Australian uranium export policy? In both 2002 and 2007 details of inadequate practices, accidents and cover-ups were made public. The inadequacy of nuclear regulation in Japan was plain to see. Yet the Australian uranium industry took no action despite being a major supplier to Japan. In light of that unsatisfactory performance, would it not be wise to take a proactive stance towards inadequate regulation in some other countries using Australian uranium?

ENVIRONMENTAL CONTAMINATION:

A 2003 report by a Senate Environment Committee into the Australian uranium sector found "a pattern of under-performance and non-compliance" and concluded "that short-term considerations have been given greater weight than the potential for permanent damage to the environment". What legislative and other changes are required to establish adequate environmental practices? How do we best protect communities and the environment from the long term risks and legacy of uranium operations?

INDIGENOUS AUSTRALIANS:

Seventy per cent of the world's uranium is located on Indigenous land and Indigenous people continue to bear a disproportionate burden of the risks and impacts of the uranium sector. What is the justification for the uranium industry's exemptions from Aboriginal heritage laws in SA and NSW? Ought those exemptions be repealed? Ought Traditional Owners in other states/territories have a right of veto over mining, as is the case in much of the NT? What are the real costs and benefits of Australia's uranium sector for Indigenous people and country? Are uranium operations and practises consistent with Australia's international treaty obligations?

"None of the promises last, but the problems always do," Yvonne Margarula, the senior Traditional Owner of the Mirarr people. The Kakadu based Mirarr community has the longest Aboriginal experience of uranium mining in Australia – photo: Dominic O'Brien

TRANSPORTATION:

Are environmental and occupational health and safety standards adequate with regard to transportation of uranium and other radioactive materials? Are emergency services organisations adequately prepared, resourced and co-ordinated across different jurisdictions? Are all tiers of government adequately involved in planning and decision making?

AUSTRALIAN URANIUM COMPANIES OPERATING OVERSEAS:

Are Australian uranium companies operating overseas applying adequate standards with respect to occupational health and safety and environmental impacts? Ought those companies be required to meet Australian standards when operating overseas? How do we best ensure good environmental and social outcomes in regions of weak governance?

RADIATION AND HEALTH:

In 2010 a BHP Billiton whistleblower working at Olympic Dam said: "Assertions of safety of workers made by BHP are not credible because they rely on assumptions rather than, for example, blood sampling and, crucially, an assumption that all workers wear a respirator when exposed to highly radioactive polonium dust in the smelter." In 2012 over 45 medical doctors signed a statement calling on Toro Energy to stop promoting the view that low-level radiation exposure is beneficial to humans - a view at odds with mainstream scientific evidence and established safety and regulatory regimes. What are the health risks of uranium mining? Are current standards and practises adequately protecting workers and communities?

AUSTRALIAN URANIUM: HIGH RISK-LOW RETURN:

Industry enthusiasm is no substitute for analysis and evidence. A transparent review of the sustained gap between the performance and promise of the uranium sector is long overdue.