

High Risk – Low Return: The case against uranium mining in Queensland



**Australian
Conservation
Foundation**



**Australian
Manufacturing
Workers Union**



**Electrical Trades
Union**



**Friends of the
Earth**



**North
Queensland
Conservation
Council**



**Queensland
Conservation
Council**



**Queensland
Nuclear Free
Alliance**



**The Wilderness
Society**

Cover picture: Mine tailings dam failure at Merriespruit, South Africa gold mine. On the day of the failure 50mm of rain fell in 30 minutes, comparable to flooding rain quantities in Qld in recent summers (source: tailings.info)

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This report was prepared under the joint auspices of the unions and environmental and social justice groups listed on the cover. March 2013. Authors: R. Taubenfeld, D. Sweeney, J. Green

1. Overview

In October 2012 the LNP government broke its clear commitment not to allow uranium mining in Queensland. This commitment was the position of the LNP at the March 2012 state election and was reaffirmed after they took office. In the absence of open, inclusive and evidence based policy making, the Newman LNP government has set up the Uranium Implementation Committee. The Committee has not sought broad community input and has not been asked to assess the arguments for and against uranium mining in Queensland. The Committee's mandate is the far narrower task of recommending how uranium mining should be managed, not whether it should occur.

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Why should Queensland forego the economic benefits of uranium mining when some other states permit uranium mines? In a nutshell, it is because the economic benefits are grossly overstated and are outweighed by the wide-ranging environmental, public health and weapons proliferation problems and risks.

Uranium accounted for 0.19 per cent of Australia's export revenue in 2011/12 (the last available figures)¹. By the most generous estimate, uranium accounts for 0.015% of all jobs in Australia.² For Queensland, there is the additional limitation that the state has around just 2% of Australia's uranium resources. Clearly, the industry has no capacity to deliver significant economic or employment benefits.

Instead of acknowledging the extremely limited economic potential of uranium mining in Queensland, the LNP state government, the Australian Uranium Association and the Queensland

Resources Council have continued a pattern of extravagant and unsubstantiated claims regarding jobs, revenue and royalties. Enthusiasm is no substitute for evidence and limited sectoral self-interest is not the same as the public interest. The assumptions and analysis of those promoting the uranium sector in Queensland needs to be challenged and reviewed.



Left: Mary Kathleen, former Qld uranium mine – poorly rehabilitated

¹ http://dfat.gov.au/asno/annual_report_1112/pdf/DFAT_ASNO_AR_11_12.pdf & <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5368.0Nov%202012?OpenDocument>

² <http://www.world-nuclear.org/info/inf48.html> & <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6202.0>

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Most companies interested in uranium in Queensland are foreign companies, the profits of which would not remain in Queensland. The mining industry has a history of fly-in fly-out contract employment, which does not necessarily bring many or lasting jobs or significant prosperity to local economies. And once the ore is extracted, the company will leave the community to manage the radioactive tailings, effectively forever. Private profit would leave the region while increased public risk and legacy would remain.

Uranium mining poses a significant threat to Queensland's unique environment and way of life. It is implausible that the limited economic benefits associated with any future uranium operations in Queensland could outweigh the diverse problems and risks associated with uranium mining detailed in this paper.

The specific radioactive and fissionable characteristics of uranium make uranium mining fundamentally different from other types of mining. Uranium mining is associated with:

- radiological risks to workers and the public;
- direct and continuing contamination threats to ground and surface waters and the environment surrounding and downstream and downwind from mine sites
- risks to other industries such as agriculture and tourism due to environmental damage and contamination from tailings and mine wastes,
- the flow-on risks of the nuclear fuel chain and the risks inherent in nuclear power, including the fact that Australian uranium directly fuelled the continuing Fukushima nuclear crisis.
- the generation – at all stages of the industrial process – of large volumes of long-lived radioactive wastes, including intractable high-level nuclear waste created in nuclear reactors.
- the spread and legitimization of weapons of mass destruction (WMD) proliferation.



Right: Pollution at Rum Jungle, former NT uranium mine (source: www.mininglegacies.org)

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It is our considered view that the uranium mining sector fails key sustainability, safety and social benefit tests and should not be permitted or advanced. As a minimum credible response and prior to drawing any conclusions or making any recommendations, the LNP's Uranium Implementation Committee has an obligation to the people of both Queensland and Australia to consider and address (inter alia) the following issues:

- The long-term and sometimes irreversible impact of exploration or mining activities in ecosystems or habitat of high conservation value.
- The lifespan of the radioactive contamination of sites which calls for implementation of mandated tailings management times and criteria – as required for 10,000 years at the Ranger uranium in Kakadu.
- The full and detailed economic costs and benefits of the industry for the Australian community, including but not limited to the distribution of monetary and non-monetary impacts.
- The historic imposition of uranium mining on Aboriginal communities and the limitations of both consent procedures and community benefit.
- The broad health impacts of the industry and the adequacy of radiation protection regimes.
- Transportation of uranium on current freight networks that are routed through either regional population centres or the Great Barrier Reef. The impact of natural disasters and extreme weather events (e.g. tropical cyclones and flooding) on the containment of uranium and processing byproducts;
- The adequacy of existing nuclear safeguards and security arrangements involving Australian uranium
- The likelihood of the industry contributing to the proliferation of weapons of mass destruction (WMDs).

Note: Further areas of unresolved operational and regulatory concern that need explicit public debate and scrutiny are detailed later in this report.

Below: Tailings dam at BHP Olympic Dam uranium mine, South Australia



2. Overstated economic potential

“Barring major technological developments, nuclear power will continue to be a creature of politics not economics.”³

The following figures put Australia's uranium industry into perspective:

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

Uranium mining is not a large Australian or global industry. Its proponents can only claim otherwise by making unfounded growth projections and specious comparisons. The Australian Uranium Association claims that Australia "has enough reserves to be to uranium what Saudi Arabia is to oil". The comparison is absurd – using 2011 figures, Saudi oil generates 466 times more revenue than Australian uranium.

Export revenue could quadruple and uranium would still fall outside the top 20 list of export earners. Even in the implausible scenario of Australia supplying the entire world demand for uranium per annum, revenue would amount to around \$10 billion and thus would fall short of iron ore revenue by a factor of 6.5.

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A decade into the global nuclear power 'renaissance' and nuclear power has not increased at all. In Australia, only one new uranium mine has begun operation in the past decade – Honeymoon in South Australia. In 2011, soon after first production from the very small Honeymoon deposit, project partner Mitsui (49%) announced its decision to withdraw as it "could not foresee sufficient economic return from the project."⁴

Claims that growth in China and India will drive huge increases in uranium exports do not withstand scrutiny.

Both countries are expanding nuclear power, but from a very low base – and at a much slower

³ *The Economist* March 10th 2012

⁴ <http://www.theaustralian.com.au/business/in-depth/mitsui-pulls-out-of-honeymoon-mine/story-fn8sc6jr-1226351407623>

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pace as a result of the 2011 Fukushima disaster. Plans to expand nuclear power are in trouble in the UK and the USA. Japan has been a major customer of Australian uranium, but the Japanese industry is in turmoil from the impacts of the Fukushima disaster, with only two reactors operating as of March 2013.

Many nations are reviewing, reducing or removing their commitment to nuclear energy in the post-Fukushima landscape. Renewable energy remains a bigger global electricity supplier and a far faster growing sector than nuclear power. Queensland's long term economic and environmental future would be far better served by state government support to this area rather than facilitating the under-performing and deeply divisive uranium sector.

The Australian uranium sector has been hard hit by the market fallout from Fukushima – a continuing nuclear crisis directly fuelled by Australian uranium. Development plans have been shelved at Yeelirrie and Kintyre, the two largest deposits in Western Australia; Kakadu uranium-miner Energy Resources of Australia has lost more than \$180 million and BHP Billiton has walked away from its long-held plan for a massive expansion of the Olympic Dam mine in South Australia (with less capital-intensive options to be explored). Cameco, the world's largest publicly listed uranium producer, has lost more than 48% of its market value since Fukushima, and Queensland hopeful Paladin Energy has fallen 72%.

If we add up all of Queensland's known deposits (including uncertain 'inferred' resources), and apply the price realised from Australia's exports in 2011/12, the value is around \$6.5 billion. That figure is barely one-third of the figure cited by the industry bodies.

The misrepresentation of the economic and employment benefits of the uranium sector by senior state political figures has been wildly inaccurate and not evidence based. In October 2012 Premier Newman claimed on ABC Radio that "uranium exports will earn Queensland tens of billions of dollars over the next two decades, providing thousands of jobs". When Mr. Newman was asked to release the economic and employment modeling underpinning such claims, he said "we don't have any".⁵

The Australian Uranium Association and the Queensland Resources Council both claim that the known uranium resource in Queensland, using projected prices and exchange rates, is valued at around \$18 billion. The Australian Uranium Association has ignored repeated requests to explain the basis for its magical \$18 billion figure. If we add up all of Queensland's known deposits (including uncertain 'inferred' resources), and apply the price realised from Australia's exports in 2011/12, the value is around \$6.5 billion. That figure is barely one-third of the figure cited by the industry bodies.

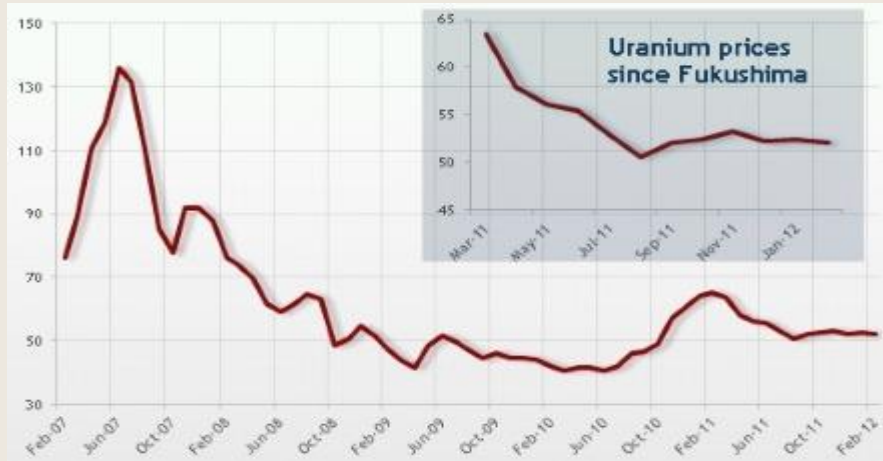
Moreover, the estimated *in situ* value is a poor indicator in the current context. Uranium prices have been too low in recent years for it to be profitable to mine. In WA, for example, there are around 10 potential uranium mines yet nearly all projects are in care and maintenance mode because of the low uranium price.

⁵ <http://www.abc.net.au/news/2012-10-25/no-evidence-jobs-flow-from-uranium-mining/4333390>

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These broader industry constraints are exacerbated in Queensland as most of the state's known uranium deposits are relatively low-grade and technically challenging. Escalating start-up costs, low product prices and infrastructure, transport and labour costs mean that many of the sites have a highly marginal and vulnerable economic base.

The Australian Uranium Association claims more than 2620 new jobs will be created by uranium mining in Queensland.⁶ Yet the Association commissioned research by Deloitte Insight Economics, which estimates an average increase of 155 jobs over the next 20 years – 17 times smaller than the Australian Uranium Association's figure.⁷



(source: tradingfloor.com)⁸

The World Nuclear Association estimates that Australia's uranium industry provides 1760 jobs, including exploration and regulation. That is the highest of all estimates yet it represents less than 0.02% of all jobs in Australia, 11.54 million full-time and part-time jobs as of December 2012.⁹

The Australian Uranium Association's claim of 2620 jobs in uranium mining in Queensland alone is inconsistent with industry experience, implausibly greater than the total number of jobs Australia-wide.

The Australian Uranium Association and the Queensland Resources Council claim that uranium mining has the potential to generate \$900 million in royalties for Queensland. Those claims have little basis in reality. They are based on hyper-inflated estimates of the value of the state's uranium resources; a doubling of the current royalty rate and the assumption that all potential mines are developed even though the current uranium price has constrained the industry nationally.

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The social impacts of mining, in particular uranium mining, are much broader than the limited job creation benefits. Mining communities must grapple with fluxes in population, fly-in fly-out labour arrangements, development of non-mining infrastructure that supports only the mining population, skewed income distribution and environmental impacts which may affect traditional lifestyles or recreation.

⁶ <http://www.auran.org.au/Content/MediaReleaseQueenslandJobs.aspx>

⁷ Deloitte Insight Economics Outlook for the Uranium Industry: Evaluating the economic impact of the Australian uranium industry to 2030 April 2008 <http://www.auran.org.au/Content/DeloitteEconomicReport.aspx>

⁸ <http://www.tradingfloor.com/posts/post-fukushima-uranium-demand-much-the-same-miners-much-cheaper-167813822>

⁹ <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6202.0>

3. Environmental impacts

The uranium industry's rhetoric holds that 'modern' mining practices ensure environmental protection. That rhetoric is inconsistent with practices at all of Australia's operating uranium mines. When an Olympic Dam mineworker provided the media with photos of multiple leaks in the tailings dams in 2009¹⁰ BHP's response was to threaten "disciplinary action" against any workers caught taking photos of the mine site.¹¹ Due to a non-transparent state Indenture agreement Olympic Dam is exempt from numerous provisions of the SA Environmental Protection Act and the Natural Resources Act.¹²

A 2003 report by a federal Senate References and Legislation Committee found "a pattern of under-performance and non-compliance" in the uranium mining industry. It identified many gaps in knowledge and found an absence of reliable data on which to measure the extent of contamination from the uranium mining industry. The committee found that "short-term considerations have been given greater weight than the potential for permanent damage to the environment" and concluded that changes were necessary "in order to protect the environment and its inhabitants from serious or irreversible damage".¹³

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The Australian Nuclear Map project documents several cases of children being exposed to radioactive materials because of inadequate rehabilitation and monitoring practices by the uranium industry (including at Port Pirie, Rum Jungle, Kalgoorlie, Yeelirrie and Hunters Hill). The Australian Nuclear Map also documents numerous cases of contaminated sites that have not been properly rehabilitated many decades after operations ceased.¹⁴

The Australian Nuclear Map project also documents severe mismanagement of former uranium mining/exploration at Mary Kathleen and Ben Lomond in Queensland.¹⁵

¹⁰ <http://www.roxbydownssun.com.au/news/local/news/general/toxic-waste-leak-revealed/1469643.aspx>

¹¹ <http://issuu.com/themonitornewspaper/docs/apr01-09?viewMode=magazine&mode=embed>

¹² <http://www.foe.org.au/anti-nuclear/issues/oz/u/roxby/indenture>

¹³ http://www.aph.gov.au/Parliamentary_Business/Committees/Senate_Committees?url=ecita_ctte/completed_inquiries/2002-04/uranium

¹⁴ <http://australianmap.net/overview>

¹⁵ <http://australianmap.net>

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Uranium mine tailings are an inevitable and effectively permanent legacy of uranium mining. Tailings, radioactive and highly mobile mine wastes, pose a long-term human and environmental hazard. A previous inquiry by the Senate Select Committee into Uranium Mining and Milling viewed "tailings management as amongst the most serious challenges facing uranium miners and, indeed, the entire nuclear energy industry in the future. It will also continue to be a major preoccupation for regulators and scientists as well".¹⁶

Energy Resources of Australia's Ranger uranium mine in Kakadu in the Northern Territory is required under the terms of its operating license to ensure that:

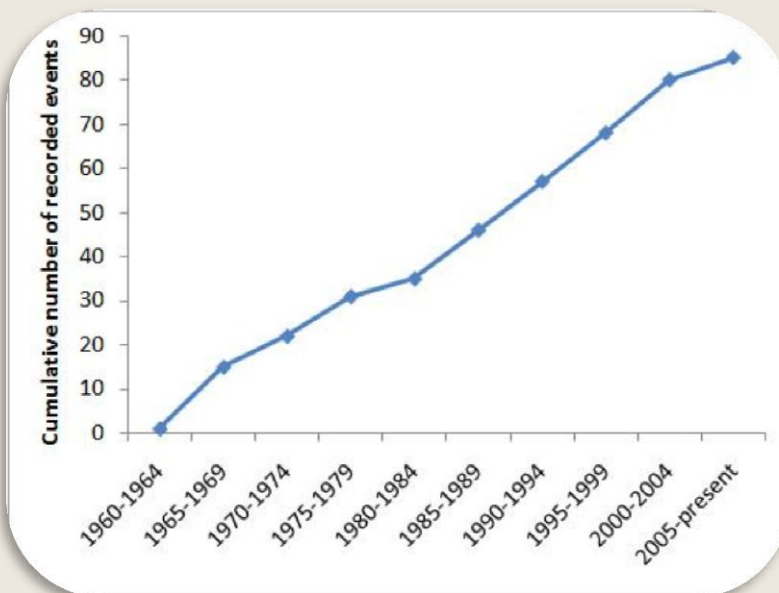
- (i) the tailings are physically isolated from the environment for at least 10,000 years;
- (ii) any contaminants arising from the tailings will not result in any detrimental environmental impacts for at least 10,000 years.

This 10,000-year standard should be a requirement for operations at all existing and any future uranium operations in any Australian jurisdiction. The current campaign against mandated mine

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waste management standards being run by the Australian Uranium Association lacks a credible rationale and is a clear case of an industry promotional body prioritizing self-interest at the expense of public interest.

Environmental problems don't end at the mine site. Australian uranium is converted into high-level nuclear waste in nuclear power reactors around the world. Despite nuclear power's 70 year history, there is still not one permanent repository anywhere in the world for the disposal of high-level nuclear waste.



Above: Tailings dam failures worldwide (source: WISE)¹⁷

¹⁶ http://www.aph.gov.au/Parliamentary_Business/Committees/Senate_Committees?url=uranium_ctte/report/c02-5.htm

¹⁷ <http://blogs.agu.org/landslideblog/2009/03/01/a-useful-tailings-dam-failure-resource/>

Water consumption and pollution

Unsustainable water extraction and/or pollution of water resources have been common features of uranium mining in Australia.¹⁸

*In 2009 scientists confirmed that the Ranger mine's tailings dam was leaking 100,000 litres of radioactive contaminants into the earth and rock fissures below Kakadu every day.*¹⁵

Uranium mining is a water-intensive industry that both consumes and contaminates precious surface and ground water resources. Water is needed for separating the uranium from the ore, for dust control and for covering the radioactive sludge. The mining practice creates tailings that maintain their radioactivity effectively forever. Rains, flooding and engineering problems have seen uranium mines regularly releasing contaminated water into the surrounding environment.

All uranium mines in Australia have track records of spills, of releases of contaminated water and of long-term radioactive contamination of sites and waterways.

Since it opened in 1980, over 200 spills, leaks and license breaches have been formally documented at Energy Resources of Australia's Ranger mine in Kakadu. In 2009 scientists confirmed that the mine's tailings dam was leaking 100,000 litres of radioactive contaminants into the earth and rock fissures below Kakadu every day.¹⁹ In December 2009 a poorly engineered dam collapsed, spilling six million litres of radioactive water into the Gulungul Creek, which flows into Kakadu.²⁰

Right: A tailings dam leaking at Lake Ontario, (Canada) killed vegetation in the area before remediation attempts.



In April 2010 a spike in contaminated water flowing from the mine into Kakadu's Magela Creek showed "up to five times the warning level of electrical conductivity, which is a measure of contaminants including uranium, sulphate and radium."²¹

Queensland uranium sites in the Mt Isa region sit upon the Great Artesian Basin (GAB). GAB water sustains life and agriculture across much of Australia and its maximum protection should be a primary concern. Westmoreland, near the NT border, sits on the catchment to Settlement Creek – a protected river. Ben Lomond, near Townsville, also sits on important waterways and is in the Burdekin River catchment.

¹⁸ <http://www.foe.org.au/anti-nuclear/issues/oz/water-nuclear/>

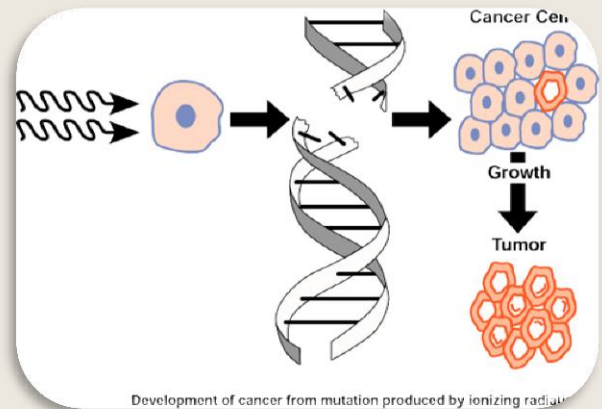
¹⁹ <http://www.theage.com.au/national/polluted-water-leaking-into-kakadu-from-uranium-mine-20090312-8whw.html>

²⁰ <http://www.smh.com.au/national/kakadu-being-poisoned-by-rio-tinto-mine-group-warns-20100523-w42y.html>
Kakadu being poisoned by Rio Tinto mine, group warns May 24, 2010 Lindsay Murdoch

²¹ <http://www.smh.com.au/national/kakadu-being-poisoned-by-rio-tinto-mine-group-warns-20100523-w42y.html>

4. Radiation and health

The overwhelming weight of scientific opinion holds that there is no threshold below which ionising radiation poses no risk of inducing fatal cancers. For example, the Committee on the Biological Effects of Ionising Radiation of the US National Academy of Sciences comprehensively reviewed available data and concluded in its 2006 report that "the risk of cancer proceeds in a linear fashion at lower doses without a threshold and ... the smallest dose has the potential to cause a small increase in risk to humans."²²



Radiation protection agencies establish dose limits for radiation exposure from nuclear facilities but there is no pretence (from radiation protection agencies, at least) that radiation doses below these levels are without risk.

Moreover, as the scientific understanding of the effects of ionising radiation has advanced, permitted dose or exposure limits have been dramatically reduced. For workers, the permitted dose has decreased by a factor of 25, falling from 500 millisieverts (mSv) p.a. in 1934 to 150 mSv in 1950, 50 mSv in 1956 and 20 mSv (averaged over five years) in 1991.

In 2009, the International Commission on Radiological Protection concluded that radon gas delivers almost twice the radiation dose to humans as originally thought – an issue of particular concern to uranium miners. Previous dose estimates to miners need to be approximately doubled to accurately reflect the lung cancer hazard.

A worker claimed ... that BHP uses manipulated averages and distorted sampling to ensure its official figures of worker radiation exposure slip under the maximum exposure levels set by government²⁰

Uranium mine workers are exposed to radiation from the ore itself and from the inhalation of radon gas. The waste ore and tailings from uranium mining pose a public health hazard well into the future. There is a well-established link between uranium mining and lung cancer. The US National Academy of Sciences reviewed eleven studies of 60,000 underground uranium miners. It found an increased frequency of lung cancer directly proportional to the cumulative amount of radon the miners had been exposed to.²³

In addition to exposure to radon gas, uranium miners are

²² www.nap.edu/catalog.php?record_id=11340
www.nap.edu/catalog.php?record_id=11340

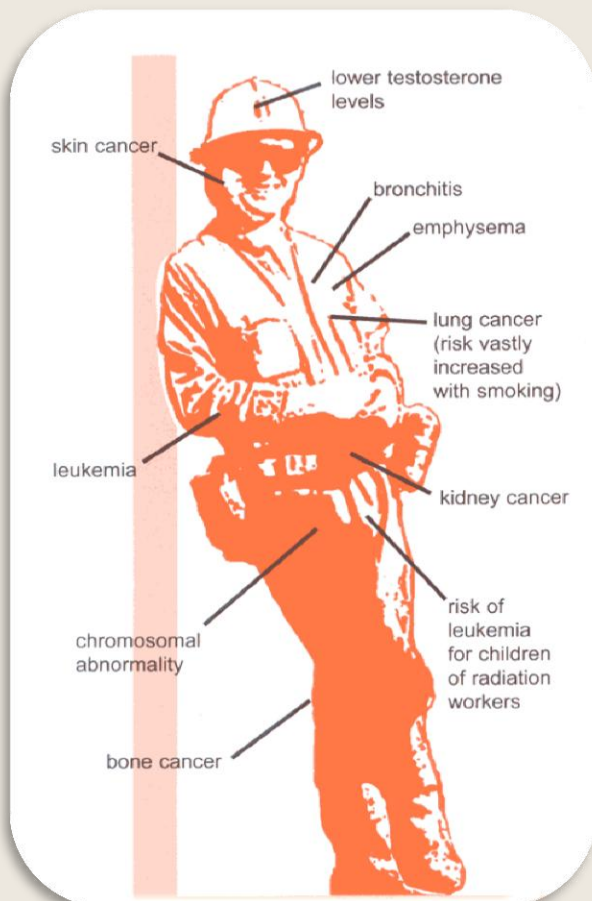
²³ National Research Council. Committee on health risks of exposure to radon (BEIR VI). Health effects of exposure to radon. Washington, DC: National Academy Press, 1999.

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also directly exposed to gamma radiation from the radioactive ore. At the Olympic Dam underground uranium and copper mine, the total annual dose per miner is approximately 6 mSv, of which 2–4 mSv are due to radon gas (allowing for the new ICRP risk estimate for radon) and the balance due to gamma radiation. Workers at the smelter at the Olympic Dam mine receive annual doses that may exceed 12mSv.

In 2004, Kakadu uranium miner Energy Resources of Australia pleaded guilty to three counts of breaching the NT Mining Management Act following a series of severe radiation safety failures that saw workers exposed to contaminated drinking water and 'hot' mine vehicles. Workers drank and washed in water with uranium levels 400 times greater than the Australian safety standards, while dirty mine vehicles posed risks to workers and the surrounding community.²⁴

In 2010 a worker was sufficiently concerned about occupational health and safety issues at Olympic Dam that he leaked information to the media.²⁵ The worker claimed on ABC TV that BHP uses manipulated averages and distorted sampling to ensure its official figures of worker radiation exposure slip under the maximum exposure levels set by government. He 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". BHP Billiton claimed it complies with radiation protection limits, but both BHP Billiton and the Australian Uranium Association refused interview requests from the ABC.²⁶



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Many Queensland trade unions have long advocated a position against uranium mining. The effects on workers' health from exposure to radiation are analogous to the effects on workers' health to the exposure to asbestos. Electrical Trades Union (ETU) (Queensland/NT) Secretary Peter Simpson, commenting in May 2010 on the union's ban on members working in uranium mines, said: "We are sending a clear message to the industry and the wider community that vested interests in the uranium and nuclear industries are trying to hoodwink us about this dangerous product and industry."

More information:

- Dr. Peter Karamoskos, 2010, 'Nuclear power & public health', choosenuclearfree.net/health
- Medical Association for Prevention of War: mapw.org.au/nuclear-chain/radiation

²⁴ <http://news.bbc.co.uk/2/hi/asia-pacific/4520931.stm>

²⁵ <http://www.indaily.com.au/?iid=36944&startpage=8#folio=008>

²⁶ <http://www.abc.net.au/pm/content/2010/s2918818.htm>

5. Uranium and indigenous communities

The uranium industry has a poor track record in its dealings with Indigenous Australians. Energy Resources of Australia's Ranger mine was imposed on an unwilling community and a determination was made that the clear opposition of the area's Mirarr Aboriginal people should 'not prevail'. Legislation was passed specifically to exempt the Ranger mine from the Aboriginal Land Rights Act.²⁷ In the late 1990s, ERA attempted to develop the Jabiluka uranium mine despite the unanimous opposition of the Mirarr Traditional Owners. A Mirarr-led international protest campaign saw development of Jabiluka halted.

In March 2012, the NSW government passed legislation that excluded uranium from provisions of the NSW Aboriginal Land Rights Act 1983, thus stripping Aboriginal Land Councils of a say in any future uranium mining proposals.²⁸

The SA Roxby Downs Indenture Act 1982 – legislation that governs operations at Olympic Dam – provides a raft of exemptions from the SA Aboriginal Heritage Act. No attempt has ever been made to defend those exemptions; they are indefensible. The legislation was amended in 2011 and the exemptions were retained. A government spokesperson said in state Parliament: "BHP were satisfied with the current arrangements and insisted on the continuation of these arrangements, and the government did not consult further than that."²⁹

The treatment of Adnyamathanha Traditional Owners in relation to the Beverley uranium mine in South Australia has been deeply divisive. Elder Enice Marsh said in 2009: "We have no decision making power under Native Title, we have been forced into signing a Native Title Mining Agreement that gives us royalty compensation. If we refused to sign it, the proponent has the

Adnyamathanha ... Elder Enice Marsh said in 2009: "We have no decision making power under Native Title, we have been forced into signing a Native Title Mining Agreement that gives us royalty compensation. If we refused to sign it the proponent has the right to take the matter to the ERD (Environment, Resources and Development) Court and cut us out of the process altogether."²⁶

right to take the matter to the ERD (Environment, Resources and Development) Court and cut us out of the process altogether. Aboriginal people have no rights under Native Title to protect our heritage. Look at what's already happened and how people have just given in to the pressures."³⁰

In response to the Fukushima nuclear disaster, Mirarr senior Traditional Owner Yvonne Margarula wrote to UN Secretary-General Ban-Ki Moon:

Ranger has operated since 1980 and has brought much hardship to local Aboriginal people and environmental damage to our country ...

²⁷ <http://mirarr.net/duress1.htm>

²⁸ <http://www.parliament.nsw.gov.au/prod/parlment/nswbills.nsf/131a07fa4b8a041cca256e610012de17/f82a7f63ed98b020ca2579a500209b70?OpenDocument>

²⁹ http://hansard.parliament.sa.gov.au/pages/loaddoc.aspx?e=2&eD=2011_11_24&c=26

³⁰ <http://yurabila.wordpress.com/media-releases/>

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I am writing to you to convey our solidarity and support with all those people across the world who see in the events at Fukushima a dire warning of the risks posed by the nuclear industry. This is an industry that we have never supported in the past and that we want no part of into the future. We are all diminished by the awful events now unfolding at Fukushima."



Left: Yvonne Margarula meets survivors of the Fukushima nuclear disaster, March 2013.

Indigenous peoples' ability to exercise full, free, prior and informed consent and effective input into the activities of mining operations on their traditional lands is compromised by severe capacity and procedural constraints. Indigenous communities should have the right of free, prior and informed consent and an effective right of veto over uranium mining.

Communities should enjoy a

clear and balanced consultation process for any uranium exploration or mining application and any consent to exploration should not be taken as automatic approval to subsequent mining. Importantly, there should be no disadvantage or reduced service provision to communities that reject any proposed mining agreements.

Systemic Aboriginal disadvantage has not been addressed by mining operations. Most mining agreements are non-transparent and have failed to deliver lasting benefits to Indigenous communities. Mining agreements and resource developments are not a substitute for the effective provision of fundamental citizenship entitlements.

6. Inadequate Regulation

In other states the uranium industry benefits from a raft of legislative exemptions that remove it from robust scrutiny and provide an unreasonable level of legal privilege. For example in South Australia, the Roxby Downs (Indenture Ratification) Act 1982 provides BHP Billiton with exemptions from the Aboriginal Heritage Act 1988; Environmental Protection Act 1993; Freedom of Information Act 1991; Natural Resources Act 2004 (incorporating water management issues); Development Act 1993 and the Mining Act 1971.

There is little attempt by industry or government to justify these wide-ranging exemptions and this

...in South Australia, the Roxby Downs (Indenture Ratification) Act 1982 provides BHP Billiton with exemptions from the Aboriginal Heritage Act 1988; Environmental Protection Act 1993; Freedom of Information Act 1991; Natural Resources Act 2004 (incorporating water management issues); Development Act 1993 and the Mining Act 1971.

poor situation continues. In 2012, the SA government provided a four-year extension to the Indenture Act while BHP Billiton reconfigures its proposed open-cut mine plans. The revised plans would involve fundamentally different processes and parameters, yet the SA government has preemptively approved those unspecified plans. The situation marks a low-point in environmental assessment and contrasts sharply with industry and government rhetoric about 'modern' mine management, 'rigorous' scrutiny and 'world's best practice' standards.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is responsible for regulation of Commonwealth facilities and it has uranium-related functions such as to "promote uniformity of radiation protection and nuclear safety policy and practices across the Commonwealth, States and Territories". ARPANSA was established in the late-1990s after decades of public pressure for a genuine and independent regulator. There was discussion about an independent board with overall responsibility for ARPANSA. The Howard Coalition government watered that idea down – and put in its place, an all-powerful ARPANSA CEO with the Australian Nuclear Science and technology Organisation (ANSTO) in a position which allowed it to participate in the interview panel for the ARPANSA CEO job. ANSTO's then Communications Manager John Mulcair acknowledged that this was indefensible.

There is a revolving door between ANSTO and ARPANSA - at times ARPANSA has employed as many as six ex-ANSTO employees. This high level of industry/regulator transfer has undermined ARPANSA's independence and community confidence in the adequacy of the regulatory regime and given rise to concerns over regulatory capture.

The 2001 Report of the Senate Select Committee for an Inquiry into the Contract for a New Reactor stated that "provisions for public consultation in the ARPANS Act leave many questions

unanswered." A 2005 Australian National Audit Office (ANAO) report was highly critical of ARPANSA.³¹ It said:

- The Regulatory Branch's operational objectives and activities are numerous, vary considerably in scope, are not prioritised, and are insufficiently specific to be clear or assessable.
- [O]verall management of conflict of interest is not sufficient to meet the requirements of the ARPANS Act and Regulations. ... Potential areas of conflict of interest are not explicitly addressed or transparently managed.
- The bulk of license assessments – some 75 per cent – were made without the support of robust, documented procedures.
- ARPANSA does not monitor or assess the extent to which licensees meet reporting requirements. The ANAO found that there had been under-reporting by licence holders.
- ARPANSA has reported only one designated breach to Parliament. This is notwithstanding that there have been a number of instances where ARPANSA has detected non-compliance by licensees.

Problems identified by ANAO in 2005 are still in evidence. More recently the adequacy of ARPANSA's regulatory performance, and ARPANSA's independence, has been called into question in relation to a number of contamination accidents at ANSTO's Lucas Heights facility.³²

At a state level, the Queensland State Government has embarked upon a significant agenda of deregulating environmental protections. For example, coastal protection policies have been significantly redrawn due to the government's oft stated agenda to slash 'green tape'. This has resulted in the reduction and loss of more than 90 pages of detailed policies and guidelines controlling coastal development. Under the new coastal policy, a uranium operation within a coastal area could be progressed and approved as an activity for "extraction purposes within a key resource area."³³

6.1 Unresolved regulatory and operational issues

Despite assurances of "best practice" mining regimes the unique, long-lasting and intergenerational impacts of radiation exposure and materials means that uranium industry impacts are extremely difficult to manage.

The LNP Uranium Implementation Committee and the state government need to show how they intend to address a range of issues directly related to plans for uranium mining in Queensland, including:

Environmental:

- Ensuring that any uranium proposal triggers the highest level of joint state-federal environmental assessment

³¹ <http://www.foe.org.au/sites/default/files/Audit%20Office%20-%20ARPANSA.pdf>

³² <http://www.foe.org.au/ansto-whistleblower-saga-2007-ongoing>

³³ Draft Coastal Protection State Planning Regulatory Provision October 2012 pg. 11

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- The need for enhanced assessment and monitoring of uranium projects impact on sub and surface water resources and quality
- The need for pre-mining baseline studies to benchmark subsequent environment impacts and inform rehabilitation studies
- A framework for Independent and transparent, environmental monitoring and reporting
- Assurances of prior commitment and demonstrated capacity to undertake full rehabilitation and remediation, including closure plans at the start of any operations and dedicated and independently assessed rehabilitation bonds covering the full cost of rehabilitation
- Detailed examination of all transport modes and routes involving the movement of radioactive materials and ores
- How to address proven and hard to manage contamination exposure and migration pathways including in-situ leach mining and acid heap leach mineral processing
- Dedicated assessment of any proposed transport of radioactive materials or ores through the Great Barrier Reef region
- How best to advance actions consistent with Australia's commitments to the G20 to remove subsidies and incentives for environmentally damaging activities including fossil fuel and other subsidies to the mining industry
- Full and transparent annual reporting of all greenhouse gas (GHG) emissions and other environmental and social impacts of mining
- The need for mandated mine waste management regimes, consistent with that at the Ranger uranium mine in Kakadu
- How best to ensure corporate capacity to deliver on environmental, radiation protection and other commitments

Social & Economic:

- The need for clear, effective and independent review, dispute and grievance mechanisms for parties affected by any activity, prior to approval of any such activity
- The establishment of formal uranium advisory and accountability committees that include a broad range of state and national agencies and stakeholders – including environmental and public health representatives and affected Aboriginal people;
- How best to develop a framework to engage all local community stakeholders on key operational decisions and monitoring results
- Creation of an industry responsibility fund to ensure full cost recovery and compensation for damages and expenses incurred as a result of any uranium related incident or contamination.

Right: Community monitoring sign erected by the Navajo nation in response to inadequate government intervention into U contamination of their water.

WATER NOT SAFE TO DRINK

The following unregulated wells were tested by the U.S. Environmental Protection Agency (EPA), Navajo Nation EPA (NN EPA), or the Centers for Disease Control (CDC) and found to contain unsafe levels of Uranium

People **should not drink** water from these wells


Well ID	Chapter	Well ID	Chapter
16B-38 (CCC-E-9)	Baca, NM	8K-433 – Old Number 8A-299	Kayenta, AZ
16T-521 – Platero Well	Baca, NM	5M-74 – Box Springs (Black Falls)	Leupp, AZ
Badger Spring (Black Falls)	Cameron, AZ	17T-559 Lower Greasewood	Lower Greasewood, AZ
Paddock Well (Black Falls)	Cameron, AZ	10T-241A	Many Farms, AZ
3A-155–Tohatchi Spring (Black Falls)	Cameron, AZ	Monument Pass Well	Oljato, UT
16-4-10–Lime Ridge/Pine Tree Well	Church Rock, NM	9Y-12	Red Mesa, AZ
17M-99 (ID not on well)	Comfields, AZ	9Y-32	Red Mesa, AZ
12-7-12 – Ellison Dug Well	Cove, AZ	16T-519 – Largo Corral Well	Smith Lake, NM
8A-179	Dennehotso, AZ	9T-550	Sweetwater, AZ
08A_180	Dennehotso, AZ	9T-586	Sweetwater, AZ
17M – 66 (Ganado)	Ganado, AZ	10R-51 B	Tselami, AZ

Other contaminants that are harmful to humans have been frequently found in livestock wells. Navajo Nation policy is that livestock-use-only wells are not to be used for human drinking water.


For more information about livestock well sampling results and regulated sources of safe drinking water, please contact:
Navajo Public Water System Supervision Program
 (928) 871-7715
www.navajopublicwater.org

LOOK FOR THESE SIGNS TO IDENTIFY URANIUM CONTAMINATED WATER SOURCES:





At the Well:



In the Chapter House:



This message brought to you by:

Indigenous rights:

- Assurance of the imperative of, and realisation of the pre-conditions for Free, Prior and Informed consent from Traditional Owners prior to any uranium activity on their land;
- The crucial nature of legislative changes to the *Native Title Act 1993* in order to enhance informed Indigenous decision-making, including the provision of Traditional Owner veto rights, prior to the consideration of any activity on their land;
- Periodic review of the adequacy and deliverability of lasting community benefit from any mining agreement with Traditional Owners or their representative bodies;

Health Impacts:

- The establishment and operation of an effective and comprehensive national radiation dose register for all designated radiation workers and people engaged on high radiation worksites; Development of a framework to provide credible and independent community and personal health monitoring.

Regulatory rigour and capacity:

- Development of a framework for effective interaction between federal and state regulatory and advisory agencies and enhanced mechanisms to deliver environmental and community protection
- The need for a robust, independent and transparent state and federal regulatory regime, including enhanced capacity for on-site, real time and event based monitoring and intervention associated with any activity capable of causing long-term degradation;
- Analysis of preparedness and capacity of emergency services and other related combat agencies to deal with a uranium mining, processing, transport or handling accident or incident
- Routine audits of environmental and operational performance and the maintenance of a public state incidents list
- Implications of skills and expertise shortages in the areas of radiation protection and regulation
- Strategies to address the high level of industry/regulator transfer and the reality and perception of regulatory capture
- Detailed overview of the process, including points of public engagement, in relation to any future licensing of a Queensland port to handle uranium shipments

7. Beyond Mining

7.1 Transportation

Australia's uranium is mined for export. After being processed to uranium oxide on or near the mine site, it is then transported to a licensed port and shipped. Adelaide and Darwin are currently Australia's only licensed ports however, as part of Queensland industry development plans, Townsville and other Queensland ports are being considered as potential uranium export ports.

Right: Derailed train dumped 1200 tonnes of toxic copper concentrate into the Edith River, NT 2011 - the result of flooding.³⁴



Any Queensland uranium mined near the NT border, as in at the Westmoreland site, or near Mt Isa, as the Valhalla and Skal sites, would most likely be trucked to the NT and then railed to Darwin. Any uranium mined in eastern parts of Queensland would likely be trucked or transported by rail across the state to the NT or else shipped through Townsville or another port for transport through or near the Great Barrier Reef.

Whether by truck, rail or sea the transportation of radioactive material over long distances is risky business.

Recent mine flooding has highlighted the extensive impact that inclement or extreme weather can have on mining operations in Queensland. Hundreds of road closures were in effect, mines were flooded and operations and trucks at a standstill. These impacts and contamination threats would be further exacerbated in the case of uranium mining.

Remote operations increase the risk of incidents, even under normal circumstances.

- In January 2011, a truck carrying uranium oxide was bogged on the side of a road in Kakadu National Park, after pulling over to give way to another truck. The highway had to be shut down for several hours while the radioactive materials were transferred to another truck.³⁵
- In Dec 2011, a freight train carrying toxic copper concentrate derailed after flash flooding damaged the railway tracks north of Katherine, putting the local Edith River environment at risk and raising questions about the safety of transporting uranium along that line.³⁶

³⁴ <http://www.abc.net.au/news/2011-12-30/20111230-derail-copper-spill-water-tests/3752884>

³⁵ <http://www.abc.net.au/news/2011-01-06/uranium-truck-bogged-in-kakadu/1896354>

Transportation of large amounts of toxic and radioactive through urban centres is both a security and environmental risk. Cairns, Townsville and other centres are significant tourist destinations and gateways to the Reef. Any future uranium transportation could significantly impact on the tourism industry and the both the perception and reality of ecological value of the regions.

Furthermore, while Queensland ports may be willing to permit uranium export, transporting uranium through Townsville or other ports would entail transportation through some of Queensland's most populated regional centres, productive agricultural land and the Great Barrier Reef – a cause for considerable community concern and opposition.

UNESCO, the United Nation's educational, scientific and cultural body responsible for international heritage protection, has criticized Australian management of the Great Barrier Reef identifying shipping, coastal development and ports as the "most pressing threats". Failure to protect the Reef to date has lead UNESCO to consider listing the Great Barrier Reef as World Heritage in danger.³⁷

Upgrading ports to facilitate uranium export through the Reef would add insult to injury to one of Queensland's most precious environments. Any incident involving release of radioactive materials on or near the Reef would leave that unique environment contaminated and degraded.

7.2 The myth of the Peaceful Atom: Weapons Proliferation

"In the eight years I served in the White House, every weapons proliferation issue we faced was linked with a civilian reactor program."(Al Gore, Guardian Weekly 9-15 June 2006)

Uranium is a dual-use fuel and can be used in both nuclear reactors and nuclear weapons. Despite pro-industry assurances, there is no way to absolutely guarantee that Australian uranium is only used for "peaceful" purposes.

Safeguards to ensure that Australian uranium is used for "peaceful" purposes are flawed, limited and impossible to verify. They are based on paper accounting exercises rather than physical inspection regimes.

Dr. Mohamed El Baradei, the former Director-General of the International Atomic Energy Agency - the so called 'nuclear watchdog' – is frank about the limitations of safeguards. He noted in various articles and speeches that the IAEA'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 "halfhearted" and that the IAEA safeguards system runs on a "shoestring budget ... comparable to a local police department."

³⁶ <http://www.abc.net.au/news/2011-12-28/20111228-train-derail-chemical-spill-react/3749716>

³⁷ <http://www.theage.com.au/national/queensland-uranium-could-be-exported-through-reef-20121031-28k91.html>

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Many nuclear weapons states including the USA, China, Russia, and India have domestic uranium reserves. Despite claims that Australian uranium is used only for peaceful purposes, sales to such nuclear weapons states helps free up their domestic reserves for use in their weapons programs.

In 2008 the Department of Foreign Affairs Trade (DFAT) and the Australian Safeguards and Non-Proliferation Office (ASNO) assured Parliament's Joint Standing Committee on Treaties that "strict" safeguards would "ensure" peaceful use of Australian uranium in Russia. However they failed to tell the Committee that there had not been a single IAEA safeguards inspection in Russia since 2001.

Australia has uranium export agreements with:

- all of the 'declared' nuclear weapons states – the USA, UK, China, France and Russia. Not one of these nations is in compliance with its disarmament obligations under the Nuclear Non-Proliferation Treaty (NPT).
- countries with a history of weapons-related research based on their civil nuclear programs (such as India, South Korea and Taiwan).
- countries that have not ratified the Comprehensive Test Ban Treaty (China, USA, India).
- countries blocking progress on the proposed Fissile Material Cut-Off Treaty (e.g. USA).

As recent developments in North Korea and Iran and the subsequent international responses show, the nuclear arms race is not a vestige from the past, it is an ongoing reality. As long as we fuel the nuclear industry, we can expect nuclear proliferation and insecurity to continue.

7.3 The myth of clean energy from nuclear power

Climate change is real. There is now general agreement that we need to reduce global greenhouse pollution by about 60 per cent by 2050. Nuclear power is not the answer to this pressing challenge: it is expensive, slow, dangerous and it won't halt climate change.

Nuclear power is a high cost, low speed response to an urgent problem. It would take an estimated 15-25 years before a nuclear reactor could deliver a net electricity gain in Australia and years to replace old or build new reactors overseas. We can't afford to wait decades.

Wind turbines could be delivering power within a year and energy efficiency measures can cut pollution

tomorrow. The same goes for solar thermal. Clean energy frameworks have been developed for Australia that transition away from coal without any need for domestic nuclear power.

Nuclear power production is not carbon-free. Significant amounts of fossil fuel energy are used to mine, process and transport uranium ores, enrich the fuel and build nuclear power stations.

Furthermore, nuclear power is a polluting industry: nuclear power reactors emit radiation, release

Nuclear power reactors emit radiation, release radioactive water into their local environments, produce intractable long-lived radioactive waste and ultimately end up as radioactive waste themselves when they are decommissioned.

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radioactive water into their local environments, produce intractable long-lived radioactive waste and ultimately end up as radioactive waste themselves when they are decommissioned.

Nuclear power is too dangerous. The risk of accidents like Chernobyl and Fukushima remains. And this environmental risk brings with it a direct public cost with enormous government subsidies needed to underwrite the financial, operational and insurance costs of nuclear utilities.

Nuclear accidents can be on a catastrophic scale. While major nuclear power reactor accidents may be infrequent, their repercussions are long lasting and far-reaching. For example, sheep farmers in the UK were only given the green light for unrestricted sheep sales and movements in 2012, a full 26 years after their land was contaminated by fallout from the Chernobyl nuclear disaster in Ukraine.

Statistics on the number of people directly affected by the 1986 explosion and meltdown at Chernobyl vary significantly however the disaster has had an impact on millions of lives. The long term health and environmental impacts of the Fukushima meltdown are yet to be understood but we know that the intergenerational impacts are profound and continuing.

7.4 A positive way forward for Queensland: Clean energy & local economies

“A new analysis from research firm Bloomberg New Energy Finance has concluded that electricity from unsubsidised renewable energy is already cheaper than electricity from new-build coal and gas-fired power stations in Australia.”²⁷

Globally solar, wind and other energy industries are growing steadily. Queensland already has the capacity to generate its own electricity through geothermal, wind, biomass and solar generation. “Clean Energy” models have long-since been developed for each state which involve a phasing out of dependence on coal and a speedy transition to renewables, without nuclear power. The technical capacity for a clean energy future exists - what is lacking is the political will to implement this transition.

Since its election in 2012 the Queensland government has dramatically cut funding for renewable energy projects, dashing hopes of being a frontrunner in this industry and cutting hundreds of actual and potential long-term jobs.

By developing its sustainable industries for domestic use, Queensland could tap in to one of the world’s fastest growing sectors, the renewable energy market. This would see the creation of real and lasting jobs – mainly in regional centres, provide reliable cost-effective electricity to Queensland households and assist in the global transition away from polluting energy options.

The development of a uranium industry detracts resources from and may seriously impact on agriculture and tourism in Queensland, both of which have potential to provide long-term, sustainable economic opportunity for this state. The Great Barrier Reef alone provides an

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estimated 60,000 jobs.³⁸ Putting its social, economic and heritage value under even greater threat from uranium mining infrastructure and contamination is simply irresponsible.

Investment in renewable energy, local agriculture and tourism would create opportunities for local economies to flourish and develop sustainably in to the future.

It is economically and socially irresponsible for the Queensland government to invest our resources in short-term uranium ventures at the expense of long-term solutions to our energy needs and infrastructure that would create positive growth for our community.



³⁸ <http://www.barrierreef.org/who-we-are>

8. Conclusions

- The uranium sector fails key sustainability and inter-generational equity criteria, is unsustainable and would provide limited or no net benefit to Queensland.
- Uranium is a dual use fuel and can be used in both nuclear reactors and nuclear weapons. It is a mineral unlike any other and poses unique and diverse risks, including the creation of high level radioactive wastes: the uranium sector remains controversial and contested.
- The sector is characterised by under-performance and regulatory non-compliance and is in urgent need of regulatory reform as existing regulatory structures and approaches are inadequate.
- The economic and employment benefits of the uranium sector are routinely inflated, inconsistent with industry experience and unsupported by independent economic modelling or analysis.
- Australian uranium fuelled Fukushima and uranium sales fuel nuclear risk and uncertainty.
- Introducing uranium mining would increase future environmental and mine legacy issues, especially in relation to the generation of large volumes of long-lived radioactive wastes.
- Indigenous communities in Australia continue to bear the greatest share of the adverse environmental and social impacts of uranium mining operations. There is little evidence of lasting Aboriginal community benefit coming from mining agreements.
- There is a growing international medical and scientific consensus of the risks of radiation exposure and a consistent and continuing downward trend in permissible exposure levels.
- There is a history of sub-standard mine rehabilitation in the Australian uranium sector and cost shifting from mining companies to the public purse.
- There is a clear need for a dedicated and comprehensive public inquiry into the impacts and implications of uranium mining and this should occur prior to any moves to facilitate the development of the uranium sector in Queensland.