

May 2005

Submission to the House Committee on Industry and Resources' inquiry into the development of non-fossil fuel energy industries in Australia

1.0 Thankyou!

Congratulations on taking the courageous and intelligent step of investigating the development of the non-fossil fuel energy industry in Australia. This is an important and welcome policy direction, for three significant reasons.

1.1 Peace and stability

First, the diminishing global stocks and accelerating international price of fossil fuels has been implicated in many recent military conflicts, particularly in Kuwait, Afghanistan and Iraq. Many political commentators and international observers warn that this trend will only continue. It must be recognised that disentangling ourselves and our neighbours from dependency upon these contentious resources can only make a positive contribution to world peace.

1.2 Development of emerging industries

Secondly, as it becomes increasingly clear that our once plentiful supply of fossil fuels is becoming a scarce, expensive liability, the incentives to develop alternative energy industries become imperatives. By acting now, Australia's wealthy economy may still seize the advantage of developing a leading technological and infrastructural investment in those alternative energy industries which will dominate the post-fossil future. Although currently other nations have the lead on us in both research and development of alternative energy industries and technologies, we have a foot in the door. Australia's wealth and unique geographical, social and political attributes may yet allow us to reposition our economy into a leading role in the global energy markets of the future.

1.3 Responding to global climate change

Thirdly, and perhaps most importantly, this committee's important inquiry may serve as an essential policy element of Australia's contribution in response to the global environmental threat posed by climate change due to the elevated greenhouse effect. Despite being long recognised as one of the greatest global environmental challenges, with particularly significant projected impacts for Australian communities and economies, the response from the Australian government so far has been uninspiring. While households, local communities, some private businesses and even state governments have taken steps to alleviate the impacts due to global climate change, the federal government's recent policies have counter-intuitively slashed support for emerging renewable industries and technologies, in favour of corporate welfare for the well-established, polluting fossil fuel industries. These policy failures have been reflected in the poor progress made by renewable energy over the last decade in the proportion of Australia's total energy consumption.

In this disturbing policy environment, the mandate of this committee's inquiry to look beyond fossil fuels is a welcome opportunity to bring the need to develop sustainable, renewable energy solutions back on the national agenda.

2.0 Nuclear shortcomings

Unfortunately, the terms of reference which require this committee to commence with a case study of uranium negates each of these important potential benefits of looking beyond fossil fuels.

2.1 Weapons proliferation

While divesting ourselves of our unhealthy addiction to fossil fuels may ease international tensions surrounding access to the fuels, it would be tragic to do so at the expense of exacerbating international tensions surrounding nuclear weapons.

Ever since the development of the first nuclear reactors in the 1950s, nuclear power has been inextricably linked to the spectre of nuclear weapons. The world's first reactors were built specifically to produce the materials required for weaponry, and the first export of Australian uranium was conditional upon its strict direction to military applications.

Even now that the global trade of uranium is decorated with bilateral agreements and international treaties intended to ensure that recipients only use the fuel for 'peaceful' purposes (such as power production and medical research), the link between nuclear power and nuclear weapons is as strong as ever. The emergence of new nuclear powers including Israel, Pakistan and India, who among others have developed nuclear weapons capabilities through supposedly 'peaceful' nuclear programs, has betrayed the international non-proliferation treaties as mechanisms which actually facilitate, rather than prevent, the transmission of nuclear weapons. This analysis is endorsed by world leaders such as U.S.(A.) president George Bush and UN Secretary General Kofi Annan, both of whom have recently made public pleas for new mechanisms to control the international proliferation of nuclear weapons.

Given this realisation, it is surprising to recognise that Australian and international regulations on nuclear weapons have actually weakened in recent decades. The U.S.(A.) have brazenly dismissed the Anti-Ballistic Missile Treaty, which was once a cornerstone of international non-proliferation efforts. The internationally agreed steps towards the eradication of nuclear weapons have not progressed, in a political climate dominated by the U.S.(A.)'s enthusiasm for 'new' nuclear weapons, including smaller nuclear warheads and a wide array of Depleted Uranium bombs, bullets and war machines. The dismantling of some stockpiles of the former Soviet Union has suspiciously coincided with the alarming appearance of previously uncategorised weapons grade materials elsewhere, and all the while, the

U.S.(A.) is re-fitting rather than decommissioning their aging nuclear warheads.

It is not only the conventional nuclear powers who continue to threaten world peace with the horrors of nuclear weapons. The rising prominence of international terrorism has forced world leaders to recognise the potential for the deployment of nuclear material in a low-intensity terrorist attack. A small amount of plutonium (an inevitable, toxic and radioactive byproduct of nuclear power generation) could be dispersed in an urban or city environment by a conventional explosion. The resulting toxic, radioactive plutonium dust would be deadly if inhaled or ingested. Terrorists intent on creating such a 'dirty-bomb' need look no further, however, than the world's growing unwanted stockpiles of Depleted Uranium. Even low-grade Uranium is sufficiently toxic and radioactive to more than meet a terrorist's objectives.

Nuclear power is inextricably tied to the production of plutonium. Our future energy supply cannot depend upon systems which unavoidably produce this highly toxic and radioactive substance which is the raw material for nuclear bombs.

2.2 No solution to Climate Change

Nuclear power is not greenhouse neutral – there are significant emissions due to mining, plant construction and all other phases of the nuclear cycle. Nonetheless, current emissions per unit energy for nuclear currently sit at about a third of that for fossil fuels. Contrary to the implications of the Terms of Reference, nuclear power cannot be seen as a solution to climate change.

Electricity production is responsible for only about a tenth of global greenhouse gas emissions, so clearly nuclear power cannot readily be applied to resolve the remaining 90%. Perhaps through innovations with power storage technologies, nuclear power could be used to charge up fuel cells, however before considering other applications for nuclear power, let's consider how far our resources can stretch.

At the current rate of consumption, low cost uranium reserves will be exhausted in around 50 years. To maintain nuclear's share of the energy market, these reserves would be exhausted faster, as global energy demand is continuing to grow. If nuclear is actually meant to displace future fossil fuel use, then these reserves will be exhausted faster still. If nuclear is also intended to displace current fossil fuel use, then these reserves clearly won't stretch far into the future.

Sooner or later, when these low-cost, readily exploitable uranium reserves have been exhausted, we'd have to invest heavily in further exploration, and almost certainly in new mining and milling practices, to attempt to derive an appropriate fuel from lower-grade ores. If we followed this path, the substantial greenhouse gas emissions generated across the nuclear cycle would increase, up to a point where emissions per unit area become comparable with fossil fuels.

At this stage, or sooner, if the remaining resource becomes recognised as either uneconomic, or technologically unfeasible, we'll be back where we are today; only with a whole lot more radioactive waste.

2.3 Distraction from future long-term energy industries

Although nuclear fuel and associated operating costs are currently cheaper per unit energy than for fossil fuels, nuclear power plants represent significant capital costs. For Australia, where we have domestic supplies of both fossil and nuclear fuels, more of the equipment for a nuclear power plant would have to be imported than for fossil fuel power plants. Currently, we even send Australian uranium overseas for enrichment, an essential stage between milling and power applications.

So the inadvisable option of pursuing a nuclear power industry in Australia would demand not only amending the obstacles to nuclear power in the Howard government's own 1998 Australian Radiation Protection And Nuclear Safety Act, but also significant capital investment in power plants and fuel-cycle facilities. Such investment would only serve to drain the precious time, energy and funds available for repositioning our economies and industries towards the inevitable sustainable alternative energy technologies of the future.

Domestically, this mistake could rob us of what opportunity remains to reorientate Australia's economy in a favourable position with respect to those sustainable energy industries and technologies which are already emerging. Globally, an erroneous attempt to advance nuclear power as a viable solution to the global environmental threat of climate change due to the elevated greenhouse effect could further detract from collective efforts to manage this threat.

3.0 Other issues

While nuclear fails to pay off on these three identified potential benefits of developing other non-fossil fuel energy industries, there remain further features of the nuclear cycle which lead to the same conclusion : that nuclear is not an option.

3.1 Catastrophic failure

Perhaps the best recognised dangers of the nuclear cycle are those involving damage to or malfunction of the reactor core of a nuclear power plant, as occurred at (among others) Windscale, Three Mile Island and (most famously) Chernobyl. Even the Australian nuclear industry's professional 'independent scientist', Ian Hore-Lacy, acknowledges that '*estimates of 10-20,000 extra*

cancer deaths over the next fifty years for the whole of Europe seem well supported¹.

The risk of catastrophic radioactive release is an unavoidable feature of nuclear power generation. The more reactors, the greater the likelihood of another accident.

3.2 Routine emissions

This real risk of catastrophic radioactive release aside, it must be recognised that nuclear power stations represent an unsustainable burden on both public health and the immediate environment due to the deliberate release of radiation into the skies and surrounding waters.

In attempting to promote itself as the 'carbon free alternative', the nuclear industry has occasionally been careless with the claim that nuclear power plants have 'zero emissions'. Well, zero greenhouse gas emissions maybe (although water vapour is a mild greenhouse gas, but that's splitting hairs). Despite the fact that there is no known safe level at which radiation will not damage DNA and initiate cancer, all nuclear power plants are responsible for emissions of radiation and some waste materials. Liquid waste may be discharged into seas; gaseous waste is released into the atmosphere.

3.3 Mining impacts

In addition to the discharges (deliberate and accidental) from nuclear power plants, local experience has demonstrated that uranium mining presents a suite of further unacceptable impacts upon the environment and human health. Here in the NT, uranium miner ERA recently admitted culpability over three breaches of their environmental guidelines. In one instance, ten workers drank more than 2 litres each of contaminated process water. In another, leachate was carried offsite inside minesite equipment sent for repairs. When dislodged, the radioactive dirt went unnoticed for weeks, during which time it came into the contact of local children.

These cases are extreme only in that they have come to the attention of the courts. The miner has treated the Ranger minesite, within the boundaries of World Heritage listed Kakadu National Park, as if it were a national sacrifice zone. Although the original lease agreement specifies that the minesite shall be rehabilitated to a condition fit for reincorporation into Kakadu, both the miner and the regulators shrug at unexpectedly extreme contamination levels on site. In fact, the level of monitoring and compliance measures on site is vastly unsatisfactory.

The company is getting away with murder at Ranger (I refer the committee to the embarrassing details of this historic court case, and the 2002 senate inquiry) yet this is the most carefully scrutinised uranium mine Australia has

¹ 1989, **Ian Hore-Lacy** and Ron Hubery

Nuclear electricity – An Australian Perspective, Third 'greenhouse' Edition

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suffered. Certainly, South Australia's uranium mines, which do not happen to be situated within the politically sensitive locale of a World Heritage National Park, are inarguably far more poorly regulated. If Ranger Mine in Kakadu represents the best environmental management we are capable of guaranteeing a uranium mine, then it can safely be underscored that uranium mining represents a set of environmental threats and impacts which we are just not capable of managing to a level that ensures public confidence.

3.4 What a waste

Every stage of the nuclear cycle, from initial mining through to the final reprocessing of spent fuel, produces long-lived radioactive wastes. Nuclear power production currently produces radioactive waste at a global rate of 10,000 tonnes a year. To protect the environment, and the health of future generations, these dangerous wastes will require isolation from the biosphere for hundreds of thousands of years. This is a timescale which extends beyond the foreseeable future : beyond humankind's experience.

Yet after decades of political effort and scientific research, no permanent repository has been established anywhere in the world, and no acceptable disposal method has been found, for the high-level radioactive waste produced in every nuclear power plant. A variety of disposal options have been proposed over the last twenty years, however there is still no convincingly demonstrated means of isolating long-lived radioactive wastes from the environment. These wastes cannot be simply disposed of underground, out of sight and out of mind, without risking leaks back into the environment. This unsolved problem has simply been left as our deadly radioactive legacy for future generations.

4.0 Regulatory environment

The final clause of the terms of reference for this inquiry direct the committee to examine the current regulatory environment enjoyed by Australia's uranium miners.

4.1 Previous Inquiries

This committee cannot ignore the good work of the 2002 Senate Inquiry into the monitoring and reporting of environmental impacts of Australia's uranium mines. Despite significant community participation, revelatory evidence from whistleblowers and independent scientists, and the growing legacy of regular regrettable environmental incidents caused by Uranium mining (particularly the seasonal scandals of the Ranger Uranium mine in World Heritage Listed Kakadu National Park), little action has been taken on the sensible recommendations of the senate inquiry. While the miner has committed to improved procedures, and ERISA (the regulating authority) has made some effort to increase off-site monitoring, neither the NT nor the federal governments have taken any responsibility for acting upon the work of the senate inquiry. This committee should redirect the federal government to these sensible, achievable and necessary recommendations.

4.2 Shortcomings of regulation

Ultimately, this committee must accept the lessons of Australia's history : there can be no satisfactory regulatory regime for uranium mining. Certainly, the current regimes are inherently inadequate and ultimately ineffective. The regulating authorities work to demonstrate the absence of significant pollution instead of ensuring measures to prevent it.

Reliance upon monitoring is a vastly inadequate way of caring for environmental integrity. For example, the insidious creeping of radioactive and toxic contaminants from the Ranger operation both on the mine site and into the surrounding Kakadu National Park is in no way abated by measuring them and reporting them. Periodic monitoring of dispersed pollution levels off-site only demonstrates the past effectiveness of the systems managing the mines' pollutants, and gives no assurance of their ongoing integrity. Neither does environmental monitoring in anyway defend the biological world from the real threat of catastrophic failure of environmental management systems. Monitoring cannot proactively protect the environment from the pollutants being monitored.

5.0 Where to?

I trust that this committee will not need to dally long with the irrelevant proposal of a non-renewable alternative to fossil fuels, and will move in a timely manner to the more pertinent task of investigating how best to develop ecologically sustainable energy industries.

It must be recognised that the most significant, most cost-effective and immediate opportunities to reduce the carbon intensity of our economies are to be found in the increased efficiency of our 'end-use' of energy. Dollars invested in energy efficiency would prove to be many times more immediately effective than investment in nuclear power.

Whereas nuclear power depends upon a fuel which is in limited supply at appropriate quality and viability, energy resources such as photovoltaics, bio-fuels, wind, geothermal and tidal power all derive from the sun. Expert scientists promise that the sun should continue shining for millions of years, so we comfortably label these energy sources as renewable, and recognise their use as being ecologically sustainable. These non-polluting, renewable alternative energy resources represent the real solution to the global challenge of climate change due to the elevated greenhouse effect.

Of the renewable energy options already on the policy landscape, investment in wind power is already a more cost effective way to reduce the greenhouse burden of power generation than would be investment in nuclear power. Other renewables, such as solar power, demand further investment and subsidy to ensure the timely development of domestic industries ahead of their inevitable maturity. Continued subsidy of non-renewable energy resources, both fossil

and nuclear fuels, compete with necessary investment in the inevitable sustainable energy industries of the future.

5.1 Recommendations

I recommend that this Inquiry reports that :

- Nuclear power is not a viable option for tackling climate change;
- Further global spread of nuclear power necessitates further global spread of inadequately managed nuclear waste, and risks further international proliferation of nuclear weapons;
- The existing legislation banning the development of nuclear power in Australia must stand;
- The minister must implement the recommendations of the 2002 senate inquiry into the environmental regulation of uranium mining;
- This Committee must immediately investigate the development of ecologically sustainable industries around renewable energy technologies

Thankyou for the chance to participate in your inquiry. I welcome any opportunity to further contribute to your exploration of these issues.

Good luck!

Justin Tutty,