

ITER Forum – News Log September – December 2009

1. CPRS not the only way to cut carbon
2. Call for 50 nuclear electricity stations
3. Hackers expose climate brawl
4. Study backs coal over renewables
5. Hot and bothered
6. Minds closed to cleanest and greenest energy of all
7. That Climate Change E-Mail
8. Thank heavens cap and trade is dead
9. Climate claims fail science test
10. Climate lost on a road to nowhere
11. More bluster than wind power from protectionism
12. Clean future in nuclear power
13. A clean and green way to fuel the nation
14. Scientists 'crying wolf' over coral

1. CPRS not the only way to cut carbon

http://blogs.theaustralian.news.com.au/currentaccount/index.php/theaustralian/comments/cprs_not_the_only_way_to_cut_carbon

Michael Sutchbury The Australian

THE politics are explosive and difficult to predict. But the stunning conservative revolt against the Rudd-Turnbull climate change deal means substantial changes to Australia's established emissions trading model could be possible.

The challenge is to draw the right lessons from the past few days and to come up with a way to reduce emissions that is politically sturdy enough to convince investors to bet billions of dollars that it will last.

First, the issue is still risk management. Even if they knock off Malcolm Turnbull, the conservatives cannot avoid the pressure on Australia to take action. While the science is inherently uncertain the scientific consensus cannot be dismissed. It is prudent to pay for insurance against the potential costs of global warming.

For geo-political reasons, Australia cannot stand out against rich-country efforts to cut global emissions. As a carbon-based economy, we are vulnerable to international retribution if we don't act.

But the apparent collapse of the Rudd-Turnbull consensus reveals the limits for a high-growth resource-based economy such as Australia appearing to get out in front of comparable or competitor economies. There remains no compelling policy reason for Kevin Rudd to demand that Australia write the entire edifice of an emissions reduction scheme into law before this month's Copenhagen summit. The polls suggest the voters agree.

Second, the details need to be sold, not just to those involved in the political horsetrading, but in the broader political debate. The polls suggest Australians want action on climate change but remain confused and wary about the emissions trading scheme even though, as Penny Wong says, the policy wonks have been at it for a decade. Rising electricity costs appear to be coming to the boil as a political issue.

Third, the ETS itself may be up for grabs. The idea of reducing the costs of cutting greenhouse gas emissions through the buying and selling of an increasingly limited pool of permits came out of the 1990s. The market-based model was embraced in the US by the Clintonites, who figured that a straight carbon tax would be read-my-lips political poison. A "cap and trade" system appeared sympathetic with Al Gore's reinventing government and the idea that "the era of big government is over".

After the Howard government picked up the same ETS formula, Australia did not have a serious debate about whether a carbon tax that would fund cuts to other inefficient taxes would be

superior.

Yet it is not clear that a cap-and-trade scheme will effectively scale up from localised pollution problems to the global level of climate change. By setting the quantity of emissions, the ETS provides environmental certainty. But this means the price of emission is potentially volatile, which could undermine investment confidence. A carbon tax would better control the price of emissions and would more clearly translate voluntary household emissions abatement into lower national emissions.

As well, the ETS has become more polluted by political deals that undermine its touted benefits. The ETS is budgeted to issue \$114 billion worth of emissions permits in the decade to 2019-20 to start turning Australia into a low-carbon economy. It then gives back, depending on how you cut it, nearly \$50bn in free permits and cash to shield high-emissions industries from a higher carbon price, another \$20bn to protect motorists at the petrol pump and \$48bn in cash to low-to-middle income households.

Some of the extra protection delivered through the ETS, such as for the electricity-hungry aluminium smelters, compensates for the costs imposed by another scheme that requires that 20 per cent of electricity generation to come from high-cost sources such as wind.

Sure, that still leaves a price signal at the margin to shift away from carbon-intensive production, such as coal-fired power stations. But it involves a hugely wasteful churn to produce an incentive that could be delivered more directly and efficiently.

As a result, the ETS does not have clear support from the policy establishment that helped drive Australia's economic policy reforms since the 1980s. And it remains unclear whether Barack Obama is that wedded to a cap-and-trade scheme. If he doesn't get it through Congress next year, the benefits for Australia of going down the same path weaken.

If climate change is the great moral challenge of our time, then Labor must include nuclear power among policy options. It is madness for a coal-dependent economy to rule out using its plentiful uranium in a world determined to put a price on the use of carbon. The Gordon Brown Labour government is pushing for deep global emissions cuts in part because Britain is building more nuclear power stations to fire its economy.

This should be just another form of risk management for Australia rather than a political taboo stuck in the Labor culture of the 1970s and 80s.

It leaves Australia exporting uranium to countries such as China to help produce climate change-friendly electricity but refusing to do the same ourselves. Instead, we are betting too much on the uncertain technology of carbon capture and storage to keep generating coal-fired electricity. It makes no sense to prohibit a form of energy that now accounts for 15 per cent of the world's electricity and then to mandate other forms of high-cost energy.

The Howard government's 2006 review headed by Ziggy Switkowski found nuclear power could be part of a suite of generating technologies that would reduce the costs of large-scale emissions cuts. By 2050, nuclear power could provide one-third of Australia's electricity and cut Australia's business-as-usual carbon emissions by up to 17 per cent.

That report got blown out of the water by a Labor scare campaign. Rather than using the ETS shell game to conceal the costs of reducing emissions, political leadership is required to pursue options that actually would reduce costs.

2. Call for 50 nuclear electricity stations

Jamie Walker From: *The Australian* November 12, 2009 12:00AM

<http://www.theaustralian.com.au/news/nation/call-for-50-nuclear-electricity-stations/story-e6frq6nf-1225798004340>

FORMER Telstra boss Ziggy Switkowski says Australia should build 50 nuclear power stations by the middle of the century, doubling the size of the sector he outlined to John Howard three years ago.

Dr Switkowski, chairman of the Australian Nuclear Science and Technology Organisation, will tell a conference today that his 2006 review of the nation's nuclear options was too conservative. Instead of the 25 civil reactors he called for in his report to the former Coalition government, to produce one-third of the electricity supply by 2050, Australia should build 50 nuclear plants generating up to 90 per cent of baseload power.

"While this is a particularly extreme scenario, the fact is that nuclear power ... contains within it the answer to our climate challenges," Dr Switkowski told The Australian last night.

"It gives us clean energy, it gives us baseload electricity, it will be the lowest cost option for Australia from the 2020s."

While he acknowledged that the nuclear option was opposed by Labor under Kevin Rudd, Dr Switkowski said the public was increasingly open to the idea as concern intensified over global warming.

He will tell a national symposium of the Australian Academy of Technological Sciences and Engineering in Brisbane that international experience suggested the first nuclear plant could be commissioned in Australia within a decade, not the 15-year timeframe he reported to Mr Howard. A national network of 50 reactors, to be built from 2020, would require 13 to 25 sites given that nuclear plants were typically clustered in configurations of two to four units.

Countries with existing nuclear power industries, including Britain, France and Japan, had population densities greater than Australia's, and had identified sites for many more reactors than would ever be required here.

Generally, reactors needed to be built near the coast, but the sites in Australia would be no closer to major population centres than existing coal or gas-fired power stations.

"The task of finding suitable locations in Australia is simple, even if the political and social challenges may be difficult, at least for the first step," Dr Switkowski said.

3. Hackers expose climate brawl

Caroline Overington From: *The Australian* November 23, 2009 12:00AM

<http://www.theaustralian.com.au/news/nation/hackers-expose-climate-brawl/story-e6frg6nf-1225801879912>

COMPUTER hackers have broken into Britain's leading climate science research centre, making public thousands of private emails between top climate change scientists and, in the process, laying bare their bitter disagreements about the cause of climate change.

The emails -- more than 2000 of them, plus 3000 documents -- began appearing online late on Friday, and are widely available.

Some are malicious -- in one, the head of Britain's Climatic Research Unit, Phil Jones, says he is "cheered" by news of the sudden death of a prominent Australian climate sceptic, John L. Daly, who died of a heart attack at his Launceston home in 2004.

Others show scientists referring to sceptical colleagues as "prats", "charlatans" and "idiots". The emails also acknowledge the frustration of trying to find evidence to "prove" man-made climate change.

In one email, Kevin Trenberth, a climatologist at the US Centre for Atmospheric Research, who supports the theory of man-made climate change, says: "The fact is that we can't account for the lack of warming at the moment, and it is a travesty that we can't."

Dr Trenberth says data published last August "shows there should be even more warming . . . the data are surely wrong."

Sceptics say the emails are evidence of a conspiracy by climate scientists to bully into submission colleagues who challenge the theory of man-made climate change.

The authors of the emails, including many who contribute to the Intergovernmental Panel on Climate Change reports, say their words have been taken out of context.

The emails first appeared on an anonymous Russian server, after hackers apparently broke into the Climatic Research Unit's server at the University of East Anglia last Thursday.

They came with a note from the hacker, saying: "We feel that climate science is, in the current situation, too important to be kept under wraps. We hereby release a random selection of correspondence."

In a statement, the university acknowledged the security breach, saying hackers had stolen its data "to undermine the strong consensus that human activity is affecting the world's climate in ways that are potentially dangerous".

The emails were leaked just weeks before the Copenhagen climate talks and just days before federal parliament considers an emissions trading scheme for Australia.

Some of the emails directly refer to the debate in Australia. In 2003, for example, Professor Jones

says: "It's nice to know that our friends down under are doing their best to fight the misinformation. Is it true that the sceptics twist the truth clockwise rather than counterclockwise in the southern hemisphere?"

Another, dated July 1999, says the World Wildlife Federation Australia wants a particular section of a report on climate change "beefed up" because it is worried that section looks "conservative" when compared with the CSIRO's data.

Scientist Ben Santer is quoted as saying he would like to "talk to a few of these (sceptics) in a dark alley".

One email from Professor Jones to Michael E. Mann, director of the Earth System Science Centre at Pennsylvania State University, has as the subject line: "John L. Daly dead".

It is dated just hours after Daly collapsed from a heart attack in his home in Launceston, on January 29, 2004, shortly after doing an interview with the BBC.

The email says: "Mike, in an odd way, this is cheering news!" and it attaches the death notice placed by Daly's family. The family yesterday said they had no comment.

4. Study backs coal over renewables

From: The Australian November 23, 2009 12:00AM

<http://www.theaustralian.com.au/news/nation/study-backs-coal-over-renewables/story-e6frg6nf-1225801867522>

Imre Salusinskzy (NSW political reporter/

COAL will continue to squeeze out renewables as an efficient, cheap source of energy, even with a cost of carbon many times higher than currently envisaged in the Rudd government's emissions trading scheme.

According to a secret independent report commissioned by the NSW Labor government, the abundance and efficiency of coal, along with new technologies for cutting emissions, mean coal will undercut the price of electricity produced by wind or solar for "many years".

The report, prepared by energy consultant Richard Hunwick, was commissioned by the state's Department of Primary Industries but has been withheld from cabinet out of concerns that it would antagonise officials in the NSW Department of Climate Change, Environment and Water.

According to Mr Hunwick's report, even a carbon price of \$100 a tonne, about four times what is currently proposed, would leave coal well ahead of rivals such as wind, solar and gas.

RELATED COVERAGE

[Clean coal power plan gets OK: Waratah](#)

The Australian, 11 Sep 2009

[State to clean up coal power](#)

The Australian, 20 Aug 2009

[Could this man save the planet?](#)

Courier Mail, 18 Aug 2009

[China undermines Rudd's ETS](#)

Courier Mail, 27 Jul 2009

[Power to the people, whatever the source](#)

The Australian, 23 Jul 2009

His report urges the Rees government to proceed with a new coal-fired baseload power station or risk losing its aluminium smelting industry, which will move offshore unless a reliable power supply is guaranteed.

It says: "Far from being an environmental embarrassment, NSW's next coal-fired power station, well-conceived, located and realised, should be an asset, one that delivers electricity at costs low enough to allow the state to retain its position as a significant value-adder to raw materials, while also retaining its environmental credentials."

It is understood the report was never submitted to cabinet because it was considered a red rag to the Department of Environment in a context where the government is attempting to look increasingly green.

Sources have told The Australian there are influential voices inside the office of Premier Nathan Rees urging an announcement that the government will ban any new coal-fired power stations, and turn instead to the more expensive option of gas piped in from Queensland.

Mr Hunwick's report finds that in 2015, with a \$50 per tonne carbon tax, electricity produced from a state-of-the-art coal-fired power station in NSW would, at about \$80 per megawatt hour, still be cheaper than wind (\$115 per MWh) or solar (\$130 per MWh).

While a carbon tax of \$50 makes nuclear power competitive with other sources, this option has been ruled out by the NSW government.

The report says building enough wind turbines to replace a baseload coal-fired generator would incur an additional capital cost of \$6.6 billion.

It says new clean-coal technologies such as carbon capture and sequestration would reduce annual carbon dioxide emissions by about 14 million tonnes, or a 12th of the state's total current emissions.

"With the application of modern technology and with suitable encouragement, stick as well as carrot, coal can continue to maintain its competitive advantage as a fuel for power generation for several decades to come, and do so in an essentially sustainable manner," the report says.

"They may want to wave a magic wand and make coal go away, but they're not going to," Mr Hunwick said.

"The name of the game has to be to clean up existing coal-fired power stations and make the new ones cleaner.

"Even with a carbon price of \$50-\$100, coal still looks like being more than competitive with most of the alternative sources of electricity going forward, including gas and renewables."

Greens MP Lee Rhiannon urged Mr Rees to release the report and rule out building a new coal-fired power plant.

She said if the Premier failed to do this he would only "be remembered as the very brown premier who failed on the eve of the Copenhagen climate change conference".

5. Hot and bothered

Brendan O'Keefe From: [The Australian](#) November 24, 2009 12:00AM

<http://www.theaustralian.com.au/news/features/hot-and-bothered/story-e6frg6z6-1225802504484>

CLIMATE change sceptics have pounced on the mass release by hackers of emails between climate scientists that appear to portray the scientists as fudgers and obfuscators of data and as plotters who would undermine their opponents' work.

The head of the Climatic Research Unit at the University of East Anglia in Britain, Phil Jones, has confirmed that the institution's database has been hacked but he cannot confirm which of the emails are authentic and which are fakes.

Opposition Senate leader and Australia's unofficial chief climate change sceptic Nick Minchin says the email scandal has strengthened a point he has long made.

"The leaked emails certainly substantiate the point I've been making that the scientific debate as to the small degree of global warming in the latter part of the 20th century is far from settled," he says.

"These emails reveal at least prima facie evidence that supporters of the theory of anthropogenic global warming are going to considerable lengths to doctor evidence and to suppress information and intimidate those who don't support that theory."

Start of sidebar. [Skip to end of sidebar.](#)

Minchin says the apparent fraud signifies a "rather disturbing culture, at least in the East Anglia CRU, which is one of most significant in the world in terms of determining outcomes of the Intergovernmental Panel on Climate Change".

"For those who don't think the IPCC should be taken as gospel, this does confirm that we shouldn't be unquestioning of the opinions of the UN committee."

Geologist and climate change denier Ian Plimer says he hinted in his recent book *Heaven and Earth* that there is fraud afoot among climate scientists.

"This substantiates what I hinted at," Plimer says.

"Here we have the Australian government underpinning the biggest economic decision this country has ever made and it's all based on fraud."

Climate Change Minister Penny Wong said in the Senate yesterday that the emails amounted to "a free exchange of views on climate change. We on this side are happy to have that debate."

US climate change scientist Kevin Trenberth, whose private emails are included in thousands of

documents stolen by hackers and posted online, says the leaks may have been aimed at undermining next month's global climate summit in Denmark.

Trenberth, of the US National Centre for Atmospheric Research, in Colorado, says he believes the hackers, who stole a decade's worth of correspondence from a British university's computer server, deliberately distributed only those documents that could help attempts by sceptics to undermine the scientific consensus on man-made climate change.

The University of East Anglia, in eastern England, on Sunday said hackers stole from its computer server about a decade's worth of data from its Climatic Research Unit, a leading global research centre on climate change.

About 1000 emails and 3000 documents have been posted on websites and seized on by climate change sceptics, who claim correspondence shows collusion between scientists to overstate the case for global warming, and evidence that some have manipulated evidence.

"It is right before the Copenhagen debate, I'm sure that is not a coincidence," Trenberth says.

Trenberth, a lead author on the 2001 and 2007 IPCC assessments, says he found 102 of his own emails posted online.

"I personally feel violated," he says. "I'm appalled at the very selective use of the emails and the fact they've been taken out of context."

(A US blogger retorted yesterday: "If the emails are out of context, CRU should release the rest to prove the point.

Another, Tom Nelson, crows: "If this crushes the whole climate (fraud) industry, there are going to be a whole lot of kids out there with degrees that are worthless. Not to mention all the little businesses that were set up to cash in on the scam.")

Opposition climate change spokesman Greg Hunt says fraud should be punished.

"If there are cases where people have fabricated scientific data then they should be dealt with by the relevant scientific authorities," Hunt says.

"But does this report change my view that climate change is real? No it doesn't."

In one of the stolen emails, Trenberth is quoted as saying "we can't account for the lack of warming at the moment and it is a travesty that we can't".

He says the comment is presented by sceptics as evidence that scientists can't explain some trends that appear to contradict their stance on climate change. Trenberth explains his phrase was contained in a paper he wrote about the need for better monitoring of global warming to explain the anomalies, in particular improved recording of rising sea surface temperatures.

In another email posted online, and unrelated to Trenberth, the British research centre's director, Jones, wrote that he had used a "trick" to "hide the decline" in a chart detailing recent global temperatures. Jones has denied manipulating evidence and insists his comment has been misunderstood. He said in a statement he had used the word trick "as in a clever thing to do". The picture that emerges of the scientists is one of professional backbiting and questionable scientific practices.

US blogger and sceptic John Hinderaker wrote on his site: "The emails I've reviewed so far do not suggest that these scientists are perpetrating a knowing and deliberate hoax. On the contrary, they are true believers.

"I don't doubt that they are sincerely convinced - in fact, fanatically so - that human activity is warming the Earth.

"But the emails are disturbing nonetheless. What they reveal, more than anything, is a bunker mentality. The emails show beyond any reasonable doubt that these individuals are engaged in politics, not science."

Australian climate change sceptic and science commentator Joanne Nova says on her website: "They are nothing less than startling. Leading researchers have been caught discussing how to 'hide the decline', how to refuse their scientific and legal obligations, and threatening to blackball professional journals to stop legitimate research being published. These same researchers have a long, persistent record of hiding data and, when faced with a series of legal requests, have claimed they've 'lost' the entire original global set of climate records. The whole set. Really?"

A partial review of the emails shows that, in many cases, climate scientists revealed that their own research wasn't always conclusive. In others, they discuss ways to paper over differences among themselves to present a unified view on climate change.

On at least one occasion, climate scientists were asked to beef up conclusions about climate

change and extreme weather events because environmental officials in one country were planning a "big public splash".

The release of the documents has given ammunition to many sceptics of man-made global warming, who for years have argued that the scientific consensus was less robust than the official IPCC summaries indicated and that climate researchers systematically ostracised other scientists who presented findings that differed from orthodox views.

Much of the internal discussion over scientific papers centres on how to pre-empt attacks from prominent sceptics, for example.

Fellow scientists who disagreed with orthodox views on climate change were variously referred to as prats and "utter prats".

In other exchanges, one climate researcher said he was "very tempted" to "beat the crap out of" a prominent, sceptical US climate scientist.

In several of the emails, climate researchers discuss how to arrange for favourable reviewers for papers they planned to publish in scientific journals.

Climate researchers at times appeared to pressure scientific journals not to publish research by other scientists whose findings they disagreed with.

One email from 1999, titled CENSORED!!!!, showed one US-based scientist uncomfortable with such tactics.

"As for thinking that it is 'Better that nothing appear, than something unacceptable to us' - as though we are the gatekeepers of all that is acceptable in the world of paleoclimatology - seems amazingly arrogant. Science moves forward whether we agree with individual articles or not," the email says.

Some exchanges centre on requests by independent climate researchers for access to data used by British scientists for some of their papers.

The hacked folder is labelled FOIA, a reference to the Freedom of Information Act requests made by other scientists for access to raw data used to reach conclusions about global temperatures.

Many of the email exchanges discuss ways to decline such requests for information, on the grounds that the data was confidential or was an individual's or institution's intellectual property.

In other email exchanges related to the FOIA requests, some British researchers ask foreign scientists to delete all emails related to their work for the upcoming IPCC summary.

The Washington Post yesterday said the emails gave a glimpse of the "behind-the-scenes battle to shape the public perception of global warming".

In one email, the CRU's Jones writes to Pennsylvania State University's Michael E. Mann and questions whether the work of academics that question the link between human activities and global warming deserve to make it into the IPCC report, the Washington Post reports.

"I can't see either of these papers being in the next IPCC report," Jones writes.

"Kevin and I will keep them out somehow - even if we have to redefine what the peer-review literature is!"

In another, Jones and Mann discuss how they can pressure an academic journal not to accept the work of climate sceptics with whom they disagree.

"I will be emailing the journal to tell them I'm having nothing more to do with it until they rid themselves of this troublesome editor," Jones replies.

Sceptic Tim Ball, on Australian blog Greenie Watch, wrote: "The argument that global warming is due to humans, known as the anthropogenic global warming theory, is a deliberate fraud.

"I can now make that statement without fear of contradiction because of a remarkable hacking of files that provided not just a smoking gun, but an entire battery of machineguns."

The CRU has bemoaned release of the emails, which it says "appear to have been illegally taken from the university".

"Elements (were) published selectively on a number of websites," the unit says.

"We took immediate action to remove the server in question from operation and have involved the police in what we consider to be a criminal investigation.

"The CRU . . . will continue to engage fully in reasoned debate on its findings with individuals and groups that are willing to have their research and theories subjected to scrutiny by the international scientific community.

"The selective publication of some stolen emails and other papers taken out of context is mischievous and cannot be considered a genuine attempt to engage with this issue in a

responsible way."

6. Minds closed to cleanest and greenest energy of all

Ziggy Switkowski From: The Australian November 26, 2008 12:00AM

<http://www.theaustralian.com.au/news/minds-closed-to-cleanest-and-greenest/story-e6frg73o-1111118139669>

MALCOLM Turnbull is correct in emphasising the need for bipartisan support if the nuclear journey is to proceed. The question is, why has it been so hard to build bipartisan support? There may be three reasons not to support nuclear power for Australia:

* You don't believe in climate change or the need for a sustainable economy, so business as usual is fine.

* You don't believe a small economy such as Australia's, with its 1.4 per cent contribution to global emissions, can make a difference, so why bother with clean energy?

* Your planning horizon stops at 2020; the first nuclear reactors would appear later than that in Australia.

Quite a few Australians subscribe to these views, which then exclude urgent consideration of nuclear, solar, geothermal energy and carbon capture and storage.

Among some who are concerned with global warming, there is another position that energy productivity and conservation, successful carbon capture and storage, and supersonic growth in renewables such as wind and solar will combine to produce the answer to Australia's emissions and environmental challenges. This is our Government's view and a popular one.

RELATED COVERAGE

[Clean future in nuclear power](#)

The Australian, 1 day ago

[Follow Britain's nuclear lead](#)

Adelaide Now, 10 Nov 2009

[Barry Brook - Follow Britain's lead on nuclear](#)

Adelaide Now, 10 Nov 2009

[France backs Aussie nuclear power industry](#)

Adelaide Now, 8 Nov 2009

[Making U-turns towards nuclear energy](#)

Herald Sun, 7 Sep 2009

I support this strategy and wish it well, but nevertheless find myself part of a growing international community that has concluded that nuclear power also must be in the mix. And I am concerned that its exclusion from our national conversation and energy debate represents a victory of political pragmatism over good policy.

Thirty-one countries representing two-thirds of humanity use nuclear power to produce some of their electricity.

Fifteen per cent of electricity worldwide is nuclear-generated, 23 per cent within the Organisation for Economic Co-operation and Development, and 31 per cent of the European Union. France, with 80 per cent nuclear electricity, is a country of vineyards, cathedrals and nuclear reactors. US president-elect Barack Obama has said: "It is unlikely that we can meet our aggressive climate goals if we eliminate nuclear power as an option." Intergovernmental Panel on Climate Change chairman Rajendra Pachauri agrees. When it comes to the generation of baseload electricity - the 80 per cent of electricity that must be available around the clock to power refrigerators, washing machines, plasma televisions, computers, traffic lights, air conditioners and so on - the options include coal, gas, oil, hydroelectricity and nuclear energy. If fossil fuels are excluded because they are dirty and the risks to hydroelectricity from water scarcity are considered, then the only available clean option for baseload electricity is nuclear power.

The deployment of nuclear power has special appeal:

* The technology is available, off the shelf, today. There is no dependence on future breakthroughs. There are 443 power reactors in operation across the world today and the number is expected to grow to 1000 by 2050.

* It is truly a baseload technology, optimised for 24/7 operation and connected to our national grid in the same way as gas and coal-fired infrastructure.

* It belongs to the group of near-zero greenhouse gas emitters even when the full life cycle, from uranium mining to reactor decommissioning, is included. There is little difference between nuclear, solar and wind on this scale, each of which is about one-tenth of the greenhouse gas footprint of coal.

* Generating costs will compare favourably with coal or gas in Australia at moderate carbon costs of about \$40 a tonne of carbon dioxide. In some European countries, nuclear is already the least expensive option (including allowing for waste management and reactor decommissioning) and countries that had paused their nuclear rollout (Britain, Germany, Sweden) are reviving their programs.

* Any domestic nuclear industry would build on our nearly 40 per cent of global uranium reserves. A decision to start a nuclear program requires answers to the questions of storage of spent fuel rods, costs and reactor locations, among others. Each country that has taken this path has implemented satisfactory solutions that communities have accepted along with the promise that nuclear power is the cleanest, safest and potentially cheapest source of electricity.

The nuclear network is expected to grow to 50 countries by 2020. From our region, these already include China, Taiwan, India, Pakistan, Japan and South Korea, and may extend to Indonesia, Vietnam and Thailand. Given the presence of nuclear-powered aircraft carriers, submarines and icebreakers, Australia's region is nuclear enabled today.

Our policy architects suggest there is no future scenario that will require nuclear power in Australia but:

* Deep greenhouse gas emission reductions will almost certainly prove beyond the capability of existing technologies and renewable energy platforms to deliver in the time allowed. The inclusion of nuclear power will be critical to our success.

* Our lights will start to go out as investment in clean baseload energy generation stalls in an uncertain regulatory environment and the nuclear alternative is not validated.

* In a carbon-constrained future, nuclear-powered economies will exploit their cost advantages for clean energy in competing with Australian products newly burdened by embedded carbon costs. An increasing number of countries are turning to nuclear power to meet growing demand for energy, reduce greenhouse gas emissions and diversify their energy mix from a single platform or dominant fuel supplier. For Australia to take the first step requires bipartisan support.

Ziggy Switkowski is chairman of the Australian Nuclear Science and Technology Organisation and a former chief executive of Telstra.

7. That Climate Change E-Mail

http://www.nytimes.com/2009/12/06/opinion/06sun3.html?_r=1&scp=4&sq=Climate%20Change&st=cse

New York Times Published: December 5, 2009

The theft of thousands of private e-mail messages and files from computer servers at a leading British climate research center has been a political windfall for skeptics who claim the documents prove that mainstream scientists have conspired to overstate the case for human influence on climate change.

They are using the e-mail to blast the Obama administration's climate policies. And they clearly hope that the e-mail will undermine negotiations for a new climate change treaty that begin in Copenhagen this week.

No one should be misled by all the noise. The e-mail messages represent years' worth of exchanges among prominent American and British climatologists. Some are mean-spirited, others intemperate. But they don't change the underlying scientific facts about climate change.

One describes climate skeptics as "idiots," another describes papers written by climate contrarians as "garbage" and "fraud." Still another suggests that the United Nations' Intergovernmental Panel on Climate Change, whose 2007 report concluded that humans were the dominant force behind global warming, should pay no attention to contrarian opinions.

Another quotes an exasperated Phil Jones — director of the climate center at the University of East Anglia, from which the e-mail was stolen — as expressing the hope that climate change would occur "regardless of the consequences" so "the science could be proved right."

However, most of the e-mail messages — judging by those that have seen the light of day —

appear to deal with the painstaking and difficult task of reconstructing historical temperatures, and the problems scientists encounter along the way. Despite what the skeptics say, they demonstrate just how rigorously scientists have worked to figure out whether global warming is real and the true role that human activities play.

The controversy isn't over. James Inhofe, the Senate's leading skeptic, has asked for an inquiry into what some are calling "Climategate." And on Friday, Rajendra Pachauri, chairman of the United Nations' intergovernmental panel, announced that he would conduct his own investigation. It is important that scientists behave professionally and openly. It is also important not to let one set of purloined e-mail messages undermine the science and the clear case for action, in Washington and in Copenhagen.

8. Thank heavens cap and trade is dead

Gary Johns From: The Australian December 10, 2009 12:00AM 72 comments

<http://www.theaustralian.com.au/news/opinion/thank-heavens-cap-and-trade-is-dead/story-e6frg6zo-1225808817696>

KEVIN Rudd never actually fought the 2007 election on an emissions trading scheme. After all, John Howard offered the same.

There was a consensus on an ETS; Rudd lassoed votes by offering to sign the Kyoto Protocol, just as it was coming to an end. It was a cheap gesture. Now comes the hard part, convincing the electorate that what once seemed like a good idea remains so despite the fact it will not achieve its objective, or at least will be costly and ineffectual in solving climate change, and that it will be positively harmful in distracting from other big world issues such as poverty. Remember the promises made to make world poverty history? What happened to that money?

In all this, the Prime Minister has been operating as an international bureaucrat. His involvement in multilateral matters is immense and mostly futile. The real action takes place in country to country deals, in gas, uranium, climate adaptation and technical co-operation. On these matters he has been largely absent. Labor opted out of the climate change debate years ago by following the consensus between climate change scientists and European economics. There was no political antenna telling them that this stuff really hurts. The consequence is that there is no plan B.

RELATED COVERAGE

[Thank heavens cap and trade is dead](#)

The Australian,

[Tough emissions curbs 'could hurt economy'](#)

Daily Telegraph, 5 days ago

[Taking heat over the cash](#)

The Australian, 27 Nov 2009

[PASS AN ETS BUT JUST DON'T USE IT YET](#)

The Australian, 11 Nov 2009

[The PM's address to the Lowy Institute](#)

The Australian, 6 Nov 2009

How did this happen? Climate change advocates have become the bullies of policy-making. They have pushed aside a score of important international issues. They are sucking up money and policy oxygen. They claim their demands supersede poverty, clean water, Third World health, international free trade, and that they will protect the poor from catastrophe.

But climate change measures to save the world will not solve world poverty, provide clean water or solve health problems. Indeed, developing a trade in a gas that is essential for life, difficult to measure and therefore easy to cheat to avoid complying with an international agreement will interfere with free trade.

Successive Australian governments fell for this bullying. Fortunately, now the faux consensus between the main parties on climate change response has collapsed, there is no chance the ETS will pass. More importantly, Rudd will not want to take a new version to an election for fear it will be treated like all referendums where there is disagreement among the main parties. They fail. The prospects for an ETS do not improve with the likely outcomes from Copenhagen. Three things will happen at Copenhagen. There will be no agreement that the world can move to a cap-

and-trade system for greenhouse gas mitigation. Politicians in developing countries, China and India in particular, will announce national targets for carbon intensity (the amount of carbon dioxide emitted for each unit of gross domestic product) but not lower carbon output. Politicians in poor countries will have their hands out for money to help them develop or adapt, which will look pretty much like the old foreign aid game. The agreement will begin to talk about adaptation because scientists are telling the community it is already too late to stop climate change.

Sooner or later we will have to accept that reducing carbon dioxide emissions is not like a crash diet, there is no lap-band surgery. And since modern societies cannot exist without cheap, non-renewable fuel, realistic substitutes such as nuclear energy are fast coming online everywhere except in places such as Australia, where coal and gas are cheap.

The implications for Australia are that the government's ETS is dead. In policy terms it is a rebuttal of the process whereby climate scientists, international diplomats and some economists came up against reality and failed to find the path they wanted. The politicians' job now is to find a way out of the mess.

How did this come about? Bullying. Environmentalists were given too much prominence because too many advocates for other causes stood aside. Even within the climate abatement debate there was bullying. The ETS has a premium on setting limits to greenhouse gases, but in so doing causes price to fluctuate. A carbon tax can make price more certain (at least that part which is the tax) but cannot guarantee certainty in greenhouse gas output.

Cap and trade won over carbon taxes because the environmental lobby was obsessed with setting an absolute limit of carbon output. It drove the economists to deliver a cap-and-trade mechanism. But it will not work without a full international market. And that will not happen, not even in the wildest dreams of the international bureaucracy's wildest fantasies. Cap and trade was road-tested in Europe. But Europe is not the rest of the world. Europe has been working on a common market for 50 years. In a sense the carbon cap and trade suited its greater cause of bedding down its internal market and, incidentally, building barriers to other trading blocs.

The advocates of cap and trade lost their way because the process has been so drawn out. Copenhagen is the 15th UN Climate Change Conference. The game changed beneath the players. Cap and trade seemed a sensible goal when participants aspired to a global response, but without a global response cap and trade falls in a hole.

China and India signed a joint agreement on climate change in October, in which both rejected legally binding caps on their CO₂ output and gave equal priority to adaptation and mitigation. So cap and trade is dead; what to do now? The Coalition at least had a debate; at no time has Labor debated climate change or mitigation strategies or countenanced adaptation as a strategy. Labor simply chased one mitigation non-solution. The Rudd ETS was a giant washing machine churning taxes. Labor looks vulnerable to an attack that its politicians are dreamers, willing to chase far off threats while forgetting to care about more immediate matters closer to home.

Gary Johns was a minister in the Hawke Labor government.

9. Climate claims fail science test

Michael Asten From: [The Australian](#) December 09, 2009 12:00AM 24 com

THE UN Climate Change Summit started this week in Copenhagen with far more dissent than its organisers hoped for from two extremes of the climate change debate

<http://www.theaustralian.com.au/news/opinion/climate-claims-fail-science-test/story-e6frg6zo-1225808398627>

. We had the "grandfather of climate change", James Hansen, describing the proceedings as counter-productive and "a farce", while the chief Saudi Arabian negotiator to the summit, Mohammed al-Sabban, doubts the current science and suggests there is no longer any point in seeking agreement to reduce emissions.

It is therefore certain that the global political debate on managing carbon emissions and climate change will continue well beyond the Copenhagen summit. It is to be hoped that the scientific debate is also permitted to continue.

Results released this year suggest that the degree of scientific certainty falls short of that desirable before we set binding targets and dollar values on carbon emissions. Indeed, Tim Flannery, chairman of the Copenhagen Climate Council admitted that: "We can't pretend we have

perfect knowledge: we don't."

RELATED COVERAGE

[Climate sceptics have their say](#)

Daily Telegraph, 1 day ago

[Scientists have their say](#)

Daily Telegraph, 3 days ago

[Climate pledges potentially catastrophic](#)

Adelaide Now, 3 days ago

[Catastrophic climates 'inevitable'](#)

Adelaide Now, 19 Nov 2009

[Little point in postponing a greener economy](#)

The Australian,

This is a refreshingly honest comment when contrasted with some of the statements in the hacked emails of the Climatic Research Unit, UK, made by leading British and US climate scientists, who were caught with their fingers on the "delete button" when faced with climate data that failed to agree with their computer models.

Meanwhile two recent results published by top scientists cast doubt on the Intergovernmental Panel on Climate Change's theory about the link between atmospheric carbon dioxide and global warming. These are of significance because whereas the climate models used by the IPCC rely on software to represent a large number of highly complex Earth processes, these results are equivalent to experimental observations on the Earth itself.

Paul Pearson of Cardiff University and his international team achieved a breakthrough recently, published four weeks ago in arguably the world's top scientific journal, Nature.

They unravelled records of atmosphere, temperature and ice-cap formation 33.6 million years ago, when the Earth cooled from a greenhouse without ice caps, into something quite similar to our present day.

These results from "Laboratory Earth" have a particular advantage: we can see what happened after the event for two million years.

With today's records we see changes in atmospheric CO₂ and temperature over 50 years and seek to project what will happen in the future.

Pearson's work contains a couple of remarkable results.

First the greenhouse atmosphere pre-cooling contained a CO₂ concentration of 900 parts per million by volume, or more than three times that of the Earth in pre-industrial days.

We can't be sure what triggered the Earth to cool despite, or because of, its changing greenhouse atmospheric blanket, but once it did, cycles of ice cap formation and glaciation commenced, apparently governed by the same variations in the Earth's orbit that govern the ice ages of the past million years.

Second, while the cooling of the Earth took place over a time-span of around 200,000 years, the atmospheric CO₂ first dropped in association with the cooling, then rose to around 1100ppmv and remained high for 200,000 years while the Earth cooled further and remained in its new ice ages cycle.

We can compare these huge swings (both up and down) in atmospheric CO₂ with current computer-modelled estimates of climate sensitivity by the IPCC which suggest that a doubling of CO₂ relative to pre-industrial

times will produce a temperature increase of 2.5C to 4C.

If the Earth started a cycle of ice ages 33.6 million years ago while having its very carbon-rich atmosphere, and if the Earth showed cycles of ice-age activity when atmospheric CO₂ was four times the level that it was in humankind's pre-industrial times, what new information must we incorporate into our present climate models?

Another key parameter in climate modelling is the warming amplification associated with increasing CO₂ in our atmosphere.

This amplification factor is generally believed to be greater than one, giving rise to an understanding that increases in atmospheric CO₂ amplify warming (a positive feedback in the physical process), and the IPCC has quantified this to deliver the finding that most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in man-made greenhouse gas concentrations.

However since the IPCC's fourth report, our Laboratory Earth has also delivered new data on this CO2-induced amplification factor.

The tool for the study in this instance is recent satellite-based temperature data now extending over 30 years.

Building on a methodology published 15 years ago in Nature, climatologist and NASA medallist John Christy and colleague David Douglass studied global temperature impacts of volcanic activity and ocean-atmospheric oscillations (the "El Nino" effect) and separated these from global temperature trends over the past 28 years.

The result of their analysis is a CO2-induced amplification factor close to one, which has implications clearly at odds with the earlier IPCC position.

The result was published this year in the peer-reviewed journal Energy and Environment and the paper has not yet been challenged in the scientific literature.

What this means is that the IPCC model for climate sensitivity is not supported by experimental observation on ancient ice ages and recent satellite data.

So are we justified in concluding that the concentration of atmospheric CO2 is not the only or major driver of current climate change? And if so, how should we re-shape our ETS legislation? I don't know the answer to these questions, but as Nobel prize winning physicist Richard Feynman observed: "It doesn't matter how beautiful your theory is, it doesn't matter how smart you are. If it doesn't agree with experiment, it's wrong."

Michael Asten is a professorial fellow in the school of geosciences at Monash University, Melbourne.

10. Climate lost on a road to nowhere

Bjorn Lomborg *The Australian* December 05, 2009 12:00AM

<http://www.theaustralian.com.au/news/climate-lost-on-a-road-to-nowhere/story-e6frg6n6-1225807108234>

AS we count down the days to the global climate summit in Copenhagen it's becoming clear that, notwithstanding the likely presence of US President Barack Obama and other world leaders, the meeting is not going to produce a comprehensive agreement to limit greenhouse gas emissions.

This has led to much gnashing of teeth among millions of well-meaning people who worry about global warming.

But they should take heart. Copenhagen's failure may be a blessing in disguise.

It may even bring us closer to a real solution to climate change.

To a large segment of the environmental community, it is an article of faith that the only way to stop global warming is to cut carbon emissions quickly and heavily. To suggest otherwise is to risk being labelled a crackpot, a traitor to mankind or (perhaps worst of all) a stooge of Big Oil.

Nonetheless, as John Adams famously noted, facts are stubborn things, and the fact is what we may call the Kyoto approach to solving global warming is likely to do more harm than good.

Start of sidebar. [Skip to end of sidebar.](#)

Now don't get me wrong. I believe that global warming is real, that it is caused by man-made carbon dioxide emissions and that we need to do something about it. But what we need is action that does good, as opposed to empty agreements and moral posturing that merely make us feel good.

In other words, we need to be realistic.

To begin with, we need to acknowledge that nearly 20 years after the so-called Earth Summit in Rio de Janeiro (which produced the first international agreement to limit greenhouse gas emissions) and 12 years after the Kyoto summit (whose equally lofty goals have gone almost entirely unmet), it's clear that no leading industrialised power has the political will to impose the draconian carbon taxes or order the substantial carbon cuts it would take to markedly lower carbon emissions.

And that's probably just as well. Because even if we were willing to do whatever was necessary to meet the Kyoto goals, it wouldn't have much effect on climate change any time soon. As I have written elsewhere, even if the Kyoto Protocol were fully implemented, it would still take the rest of this century to reduce temperatures by less than one-third of one degree Fahrenheit.

What cutting carbon dioxide emissions to Kyoto levels would do is cost us hundreds of billions -- if not trillions -- of dollars in lost economic growth because, as promising as many of them are, alternative energy technologies are not ready to take up the slack.

Half the world's electricity still comes from coal. For emerging economies such as those of China and India, the proportion is closer to 80 per cent. Indeed, burning carbon-emitting fuels is the only way for developing countries to rise out of poverty.

The idea that we should combat global warming by discouraging use of carbon-emitting fuels -- say, by slapping hefty taxes on them -- ignores this reality. To put it bluntly, it's like saying that the way to cure obesity is to sew your mouth shut. Sure, you'd lose weight, but you'd probably also die in the process.

The solution is not to stop eating; it's to learn to eat sensibly.

Certainly, the way to get developing nations to reduce their greenhouse gas emissions is not to handicap them by denying them the use of affordable energy. Rather, it's to help them develop faster.

History teaches us that despite their greater output, advanced economies pollute less than developing ones. In other words, the solution is not to make fossil fuels more expensive; the solution is to make alternative energy cheaper.

We spend a paltry \$US2 billion (\$2.15bn) a year on research and development for clean energy technologies. Increasing this to \$US100bn a year could be a game-changer. Not only would it be almost twice as cheap as the \$US180bn a year cost of fully implementing Kyoto, but the effect of this kind of spending would be hundreds of times greater.

Our work at the Copenhagen Consensus Centre has shown that we are likely to avoid just 2c of climate damage for every dollar we spend cutting carbon emissions. By contrast, every dollar we spend on green energy R&D would avoid \$11 of damage.

For 20 years now, from Rio to Kyoto to Copenhagen, we've been spinning our wheels, trying to prop up the failed strategy of cutting carbon dioxide emissions. Do we really want to be the generation that wastes another decade, making grand promises in Copenhagen, only to realise in 2020 that once again we have failed to make any real progress?

It's time we recognised that the Rio-Kyoto-Copenhagen road is leading us nowhere.

When it comes to global warming, we need a smarter and more realistic strategy that, instead of starving us, will accelerate the breakthrough technologies we need to power the green, affordable future we all want.

Bjorn Lomborg is director of Copenhagen Consensus Centre and author of Cool It: The Sceptical Environmentalist's Guide to Global Warming.

11. More bluster than wind power from protectionism

Alvaro Vargos Llosa From: The Australian December 07, 2009 12:00AM

<http://www.theaustralian.com.au/news/opinion/more-bluster-than-wind-power-from-protectionism/story-e6frg6zo-1225807505389>

TOP-down green policy has damaged Spain's economy.

Driving through Don Quixote country in Spain's Castille-La Mancha region, you are dazzled by the spectacle of wind farms churning out the energy that will save Iberia and the planet and, once you cross into Andalusia, by solar farms and the green jobs of the future.

Except that if things continue as they are in Spain, the world's poster child for renewable fuel, wind and solar energy may not save us after all.

Spain is the third-largest producer of alternative energy, after the US and Germany; if the relative sizes of its economy and population are taken into account, it is the largest.

Next year wind and solar energy will account for 30 per cent of Spain's energy matrix. Its wind turbines are a technological wonder: the US imports many of them.

But this achievement is not the result of the healthy interplay of producers and consumers. Rather, it is a political scheme combining protectionism, mandates and subsidies.

A few months ago, a study by Gabriel Calzada of King Juan Carlos University caused an international uproar when it disclosed that each green job was costing Spanish taxpayers between E540,000 and E1 million (\$875,000 and \$1.6m), and entailed 2.2 jobs lost or not created because of the misallocation of capital.

Despite E43 billion in subsidies, solar energy is still not a major component of the energy matrix, and Spain has not complied with the Kyoto Protocol on climate change.

Fiscal spending on green energy has created a financial deficit in the power industry as a whole, forcing the government to cut back 30 per cent of handouts to the solar energy producers.

Thousands of jobs have been lost, part of the country's painful 19 per cent unemployment rate.

Because of the politically induced concentration on renewable fuel, other priorities, such as setting up new and better electrical grid connections with France, have been neglected. Red Electrica de Espana, the government-owned company that runs the national power grid, has just put out a report admitting there is excess capacity in the wind power industry: 5 per cent of Spain's wind energy will be wasted in 2014 because of insufficient demand. Things are expected to get a lot worse in 2016, even allowing for the 3 million electric cars that Spanish authorities (optimistically) project for that year.

This is the result of politics displacing market forces. Starting in the 1990s, the authorities geared a significant part of the nation's resources towards goals that were political in nature, even if motivated by lofty sentiments. The result has been a bubble of sorts. Spanish utilities are forced to buy all the wind energy available, while wind-farm operators receive a set price or sell at market prices and obtain a big premium. Renewable power operators have had to set up control centres connected to the national grid, the largest being Iberdrola's, in Toledo, an impressive affair.

Spain's alternative energy industries amount, in essence, to a command economy.

The consequences of the government establishing a command economy for electricity could not have been different than those of other command economies elsewhere.

There was indeed something quixotic about the 300 per cent growth experienced by Spain's solar energy sector since 2005 and in the fact that about 500 companies got involved in wind farming, attracted by the siren song of captive markets and government largesse (now these companies are shedding jobs too.) Reality was bound to set in sooner or later.

Of course, the government-led rush to alternative energy has imposed heavy costs on competitors. The operators of combined cycle power plants, which run on natural gas, the cleanest fossil fuel, also find themselves with excess capacity due to plants they had built in anticipation of a demand that has been channelled by Madrid's authorities towards wind. They are fighting back, asking the government to assume responsibility. It could get ugly.

The lessons of Spain's renewable energy program ought to be taken into account at the Copenhagen summit on climate change. In recent years, many countries, including the US, have touted the Spanish model as an inspiration. They really need to look again.

Alvaro Vargas Llosa is a senior fellow at the Independent Institute and the editor of Lessons from the Poor

Washington Post Writers Group

12. Clean future in nuclear power

Barry Brook and Martin Nicholson

From: The Australian December 04, 2009 12:00AM 65 comments

<http://www.theaustralian.com.au/news/opinion/clean-future-in-nuclear-power/story-e6frg6zo-1225806766579>

WE may not be getting an emissions trading scheme any time soon but the climate and energy crises still need fixing with real urgency.

For climate, the issue is excess greenhouse gases from burning fossil fuels. For energy, the crisis is dwindling supplies of those fuels and air pollution from coal combustion.

Replacement energy sources need to be reliable, plentiful and economic to deploy. They need to be low-carbon to minimise global warming. Business-as-usual or half measures risks saddling future generations with a climatically hostile planet and energy scarcity.

Nuclear power is one obvious replacement source, but typically raises five objections.

First, readily available uranium supplies are limited. If the world was wholly powered by present-style nuclear reactors there would be at most a few decades of energy before cheap uranium was exhausted.

Second, nuclear accidents have happened in the past, suggesting this technology is dangerous.

Third, expansion of nuclear power would risk the proliferation of nuclear weapons.

Fourth, we would leave future generations with the legacy of long-lived nuclear waste.

Fifth, large amounts of energy (and possibly greenhouse gases) would be required to mine, mill and enrich uranium and to build and later decommission nuclear power stations.

All the above points have merit, although their relative importance compared with climate change and critical energy shortages is debatable. But there is little point in debating these objections because none will apply to future nuclear energy generation.

Almost all today's nuclear power stations are thermal reactors. These use water to slow the neutrons that cause uranium atoms to split (fission) and to carry the heat generated in this reaction to a steam turbine to generate electricity.

Because of the gradual build-up of fission products (neutron poisons) through time, we end up getting less than 1 per cent of the useable energy out of the uranium. The rest is thrown out as that long-lived waste.

In contrast, newer fast reactors are able to use almost all of the energy in uranium. There is enough energy in already mined uranium and stored plutonium from existing stockpiles to supply all the world's power needs for more than three centuries before we need to mine any more uranium.

Fast reactors can be used to burn all existing reserves of plutonium and the nuclear waste from the past and present generation of thermal reactors. With additional uranium mining, there is enough energy in proven deposits to supply the entire world for many thousands of years. This deals with the first objection.

As to the second objection, modern reactors use passive safety systems requiring no operator intervention to shut down the reaction. This makes them safe. So safe that a certification assessment for Westinghouse's AP-1000 reactor put the risk of a core meltdown such as the one that occurred at in the US in 1979 at Three Mile Island at once every 24 million reactor years. Comparing the flawed Chernobyl design to today's reactors is like saying modern aviation is too dangerous because the Hindenburg airship exploded in 1937.

On the third objection, proliferation, the nuclear fuel used by fast reactors is initially very radioactive, making it impossible to divert to a nuclear weapons program without an expensive, heavily shielded, off-site reprocessing facility that would be readily detected.

In fact, the only nuclear waste materials that will ever leave an Integral Fast Reactor complex (which has on-site recycling) are fission products, which decay to background levels of radiation within a few hundred years.

Unlike conventional nuclear waste, which can last for hundreds of thousands of years (the fourth objection), the waste from IFRs can be more readily stored because of its small volume (150 times less than used nuclear fuel from thermal reactors) and short storage times.

The fifth objection, concerning greenhouse gases generated in building nuclear power plants, has never stood up to detailed life-cycle analysis.

Renewable energy sources (such as wind and solar) use significantly more raw materials per unit of energy generated than even present-generation nuclear power stations and the full life-cycle emissions, including nuclear fuel production, are similar from both sources. When energy storage and fossil-fuel back-up are included, wind and solar emissions are much higher.

A possible sixth objection could be that we don't need nuclear power when we can use renewable energy. This is a valid objection for countries with abundant hydropower, conventional geothermal power or biomass, the only three renewable sources of proven reliable power that can deliver energy 24 hours a day at an acceptable cost. Solar and wind sources, however, still rely heavily on fossil fuels to deliver reliable, continuous energy.

At today's pace of commercial development we won't see many fast nuclear reactors delivering power to the grid before 2020. This will seem too late for some, but at the present pace, non-hydro renewables will only meet 2 per cent of global energy use.

Either option, therefore, requires radically accelerated research, development and deployment if it is to make a difference to climate change and energy supply. What's required is a project of Manhattan-style proportions or the audacity of the moon-shot vision.

Let's be clear. We have the means to fix the climate and energy crises, or at least avert the worst consequences. New generation nuclear power, supported by an expansion of the thermal reactor fleet, is one possible path to success and one that all nations should support. Rationally

considering energy planning requires letting go of old-school thinking about exciting new technologies.

Martin Nicholson is the author of Energy in a Changing Climate. Barry Brook is professor of climate change at the University of Adelaide's Environment Institute.

13. A clean and green way to fuel the nation

Ziggy Switkowski From: The Australian December 18, 2009 12:00AM

<http://www.theaustralian.com.au/news/opinion/a-clean-and-green-way-to-fuel-the-nation/story-e6frg6zo-1225811526701>

CRITICS point to a long list of unresolved concerns with nuclear power and do so with sufficient zeal to unsettle people who are trying to reach an informed conclusion about its place in Australia's energy future.

Here are answers to the most important concerns.

- Management of toxic radioactive waste. Spent fuel is usually kept onsite until the end of the reactor life, typically 60 years. A reactor providing electricity for one million people produces a volume of radioactive waste roughly the size of a family car a year. This is judged to be a small amount. Eventually spent fuel is transported to a national repository, a well-engineered deep hole in the ground, probably in central Australia. We would need a single repository by about 2070 when there will be many in place globally and a best-in-class design could be built. Still critics are correct in noting that no such repository is in place, though several will open in the next decade.
- Location. Criteria include proximity to the electricity grid and access to water. Co-location with existing gas or coal-fired power stations is likely for the first installations. Countries such as Japan (55 reactors), South Korea (20) and Britain (19) have surface areas no bigger than Victoria but accommodate substantial nuclear networks. Italy plans to build 10 by 2030, a target also relevant to Australia, and has established a process to identify five sites within six months. "Reactors in your back yard" is an easy scare campaign but it's silly and insults the community's intelligence.
- Cost. Nuclear energy has the highest capital cost, up to \$4 billion to 6bn for our first 1000MWe reactor, but low running costs largely independent of the cost of uranium itself. At CO2 costs above about \$30 a tonne -- expected to be reached well before 2020 in Australia -- nuclear energy will be our lowest cost option for electricity production. Australian firms are already building power reactors overseas, so we have world-class skills at home.
- Proliferation and regional arms races. In the Asian region, China, Taiwan, Japan, South Korea, India and Pakistan have nuclear energy and Indonesia, Thailand and Vietnam are planning nuclear futures. Dozens of nuclear warships, submarines and ice breakers cruise our oceans. Only two nuclear technologies are judged to be proliferation sensitive, uranium enrichment and reprocessing of spent fuel. Australia has no plan to pursue either.
- Terrorism. Nearly half of the capital cost of a reactor is spent on safety and security systems that are expected never to be stressed. A dirty bomb has yet to be activated. Terrorism is a serious issue but civilian nuclear establishments are very difficult targets with no known penetration.
- Water. Nuclear reactors operate on the same thermodynamic cycle as coal and gas-fired stations and need access to water at about the same level. However, use of sea water is a practical option so reactors are frequently sited along a coast. Cooling water does not contact the radioactive core and itself is not radioactive. Next generation reactors, especially smaller ones, may not need water cooling.
- Chernobyl. This 1986 accident was truly awful, with up to 100 fatalities to date and thousands of people whose lives have been affected by exposure to fallout. The Soviet design is not found in the West and would never be licensed. New reactor programs then stopped and the West has not completed a new construction since. Still, 440 reactors have continued to operate effectively and include the most productive electricity plants. About 50 reactors are under construction, mostly in Asia.
- Timeliness. From a standing start, Australia could have its first reactor by 2020. Some people claim this is too late. Fifty reactors by 2050 could produce almost all Australia's electricity needs, with low greenhouse gas emissions.
- Uranium. We have nearly 40 per cent of the world's recoverable uranium and provide fuel to the

equivalent of one-fifth of all reactors. With the next generation of fuel-burning systems including recycling to consume the non-fissile isotope U-238, global supply suggests thousands of years of fuel availability.

- Sovereign risk and role of government. We must have bipartisan support for nuclear energy and a robust world-class regulatory system. No commercial enterprise will accept the financial risk otherwise.

In more recent times, each country that has taken its first step down the nuclear path has had to confront these same concerns and win the support of its citizens, which they have done.

Two-thirds of the world's population in 31 countries live with nuclear reactors and use nuclear electricity apparently with little hesitation. Our government's important energy white paper is due next year but explicitly rules out consideration of nuclear power.

As the rest of the world pushes for more nuclear energy, Australia, alone among the world's top 28 economies, insists we're different. Perhaps we are, in our dependence on fossil fuels and world leading per capita greenhouse gas emissions. Previous studies have asserted that in the carbon-costed world of the 2020s, nuclear energy will be Australia's safest, cleanest and lowest cost form of baseload electricity generation.

Why not test these claims analytically next year? The Productivity Commission may be a good place to start.

Ziggy Switkowski chaired the 2006 review of uranium mining, processing and nuclear power for the Howard government.

14. Scientists 'crying wolf' over coral

Jamie Walker From: *The Australian* December 19, 2009 12:00

<http://www.theaustralian.com.au/news/scientists-crying-wolf-over-coral/story-e6frg6xf-1225811910634>

A SENIOR marine researcher has accused Australian scientists of "crying wolf" over the threat of climate change to the Great Barrier Reef, exposing deep division about its vulnerability.

Peter Ridd's rejection of the consensus position that the reef is doomed unless greenhouse emissions are checked comes as new research on the Keppel group, hugging Queensland's central coast, reveals its resilience after coral bleaching. Professor Ridd, a physicist with Townsville's James Cook University who has spent 25 years investigating the impact of coastal runoff and other problems for the reef, challenged the widely accepted notion that coral bleaching would wipe it out if climate change continued to increase sea surface temperatures. Instead of dying, the reef could expand south towards Brisbane as waters below it became warmer and more tolerable for corals, he said.

His suggestion is backed up by an Australian Institute of Marine Science research team headed by veteran reef scientist Ray Berkelmans, which has documented astonishing levels of recovery on the Keppel outcrops devastated by bleaching in 2006.

Professor Ridd said scientists who predicted corals would be mostly extinct by mid-century had a credibility problem because the Great Barrier Reef was in "bloody brilliant shape".

He said the reef had defied predictions that it would be overwhelmed by crown of thorns starfish, smothered in sediment from river runoff or poisoned by sediment and chemicals washed on to corals from the mainland. He accepted that ocean acidification associated with climate change was a genuine danger because it could impede the process of coral calcification, destroying the reef's building block. Scientists responsible for "crying wolf" over lesser threats had done the research community a disservice, he said.

"Ten years ago, I was told that the coral was going to die from sediment, and we have proved that is complete rubbish," Professor Ridd told *The Weekend Australian*.

"They are saying that pesticides are a problem, but when you look at the latest data, that is a load of rubbish. They are saying bleaching is the end of the world, but when you look into it, that is a highly dubious proposition. □ □ "So when something comes along like the calcification problem, you are sort of left with this wolf story . . . they are crying wolf all the time." □ □ Leading scientists including former AIMS chief scientist Charlie Veron and reef research pioneer Ove Hoegh-Gulberg, who attended the Copenhagen talks on climate change, have warned that the Great

Barrier Reef will be destroyed by the middle of the century if ocean temperatures continue to rise, unleashing more frequent and lethal bleaching. □□ Mass bleaching was recorded on the Great Barrier Reef in 1998 and 2002, affecting up to 60 per cent of all corals. The last severe outbreak, in which stressed corals eject the symbiotic algae that provide them with nutrients, causing many to die, was localised on the Keppel reefs three years ago. □□ More than 95 per cent of the corals were affected, of which about a third died. The corals became stressed after the water temperature topped 28.5C and began to die when it hit 30C and stayed at that level for a week or more, with limited wind or cloud cover to ease the heating. □□ Scientists have found the tolerance level of corals varies. Reefs around Magnetic Island, off Townsville, can withstand water temperatures in the low 30s, while those off Yemen, at the foot of the Arabian peninsula, live in temperatures that can reach 34C. □□ As The Weekend Australian reports today, some of the corals on the Keppel outcrops are more thickly covered in coral than before bleaching in 2006, raising hope the living heart of the reef can acclimatise to spikes in water temperature through a remarkable process of algal shuffling. □□ "That was a real surprise," Dr Berkelmans said, conducting us on an underwater tour of what he calls his "lab rat" reefs at the bottom of the Great Barrier Reef. □□ He said the findings made him more optimistic about the ability of corals to adapt to climate change, especially on inshore reefs such as those in the Keppels. □□ "People say the reef is dying," Dr Berkelmans said. "The Great Barrier Reef is 2000km long, with 3000 reefs. Are you telling me all of it is going to die? □□ "I don't think so. There are some areas that are naturally more resilient than others, there are some areas that see warmer temperatures less frequently because of favourable oceanography or other factors . . . We might lose species, and we might lose them at many reefs. The Great Barrier Reef would look vastly different, but the reef would still be there." □□ Great Barrier Reef Marine Park Authority chairman Russell Reichelt, a former AIMS scientist who worked on crown of thorns outbreaks, said Professor Ridd had cherry-picked data to support his thesis that the threat to the reef was exaggerated. "I would liken it to the medical debate around 'Does smoking cause cancer?'," Dr Reichelt said.