



Notes for Inquiry into Hydraulic fracturing – Presentation 9th March 2017

With Drew & Shar

- *Acknowledgement: the Larrakia people as the Traditional Owners of the Darwin region. We pay our respects to the Larrakia elders past and present.*
- Intergenerational Equity
- Engagement of Aboriginal Communities
- Climate change impacts and issues
- Entry into Paris agreement brings the horizon forward - **The transition is in process**
- **net zero greenhouse gas emissions by 2050**
- **APRA's advice Feb 2017 – company directors liability**
- 'transition fuel'
- obsolescence with strong risks of carbon pricing in the future
- Risk that by the time the industry gets up and running carbon is priced and there is no social licence for fossil fuel industry development.
- Incredible waste of development and infrastructure funds – better directed to renewables
- **They could also impact negatively on innovation in and the development and deployment renewables and energy efficiency innovations, required to limit climate risks.**
- Fugitive methane emissions - impact



-
- **We have a choice in Australia and NT – to follow this self-interest or hold the needs of the entire planet and future generations at the centre of our strategies of resource use.**
 - **In addressing the process of fracking – need to follow the precautionary principle – risks of serious and irreversible environmental damage to the unique and internationally significant values of the natural environment biodiversity, unique flora and fauna**
 - **Includes in process aspects of fracturing: Water sources – need to understand aquifer relationships if using salty water as water input**
 - **Impacts of sand mining, chemicals -**
-
- **Transport/Road infrastructure – damage ecosystems – fragile and volatile landscape, eg grading roads – erosion.**
 - **Wastes from fracking – water**
 - **Lack and regulation, enforcement – no confidence from public or even industry regarding**
 - **Monitoring of wells once exhausted – future generations**
 - **Displacement of benefits of gas resource – risks and impacts borne by different community – short fall in supply of east coast gas for export is industry issue not to be fixed by putting NT future at risk**

Tasted by ECNT.



APRA

**AUSTRALIA'S NEW HORIZON:
CLIMATE CHANGE CHALLENGES AND PRUDENTIAL RISK**

GEOFF SUMMERHAYES

**Executive Board Member
Australian Prudential Regulation Authority**

***Insurance Council of Australia Annual Forum 2017
Sydney***

17 February 2017

also have a much keener idea of impacts at a local level, and the implications for countries, regions, cities and, yes, companies.

Piecing together this understanding has taken a long time and a lot of hard work. 58 years ago today, NASA launched the first ever cloud-cover satellite, the Vanguard 2. At the time there had only been a handful of successful satellite launches. Today there are a few thousand satellites in orbit. Over the intervening decades, this remarkable array of technology has vastly improved our understanding of weather - from cloud cover to snow packs and cyclones. Over time, it also allowed us to document, diagnose and understand the impacts of changes in climate. Measuring changes in Arctic sea ice is just one example.

This has been buttressed by decades of work on the ground by scientists across a whole range of disciplines to understand the causes and implications of climate change. One of the hallmarks of this research is that today, climate change is not just the realm of scientists - but of planners, policymakers, businesspeople and economists, too.

Addressing climate change is still a lofty goal. But we no longer talk about it with the starry-eyed ambition of, say, building a space program from scratch or challenging NASA to put a man on the moon in the face of unbelievable uncertainty. We're now at the stage of the collective effort, calibration and creativity to turn ambition into reality. What happens next isn't just a matter for rocket scientists - but also humble prudential regulators.

Three key recent developments

1. Paris agreement

A vital part of this is the Paris Climate Agreement - which is the first of the important recent developments I want to recap. The Paris Agreement entered into force globally last November. It has now been ratified by 131 countries, representing over 80 per cent of global emissions. Importantly for our purposes, this includes Australia.

The agreement establishes a binding global commitment to limit warming to between 1.5 and two degrees Celsius, and provides a pathway for more ambitious emissions reductions efforts if current policies are falling short of that goal. The host of new policies and commitments is significant. Even more significant is the framework the agreement provides for monitoring and ratcheting up these commitments and contributions over time.

The agreement provides an unmistakable signal about the future direction of policy and the adjustments that companies, markets and economies will need to make. This global agreement is being complimented by initiatives at national, state and city level.

2. FSB Taskforce on Climate-related Financial Disclosures

The second development I want to mention is vital to this adjustment, because it relates to financial markets and investors need to assess risk and make investment decisions. This is the release of an influential new report in December by the Financial Stability Board's "Taskforce on Climate-related Financial Disclosures".³ Several years ago, G20 Finance Ministers and Central Bank Governors perceived that a lack of company transparency on climate risks was impeding investment, credit and underwriting decisions and obscuring potentially systemic climate-related risks. This is the response - a business-led report

³ The TCFD report is available here: <https://www.fsb-tcfd.org/publications/recommendations-report/>. A joint opinion piece by FSB Chair Mark Carney and TCFD Chair Michael Bloomberg is available here: <https://www.theguardian.com/commentisfree/2016/dec/14/bloomberg-carney-profit-from-climate-change-right-information-investors-deliver-solutions>

to real estate impacted by climate change and to re-pricing (or even 'stranding') of carbon-intensive assets in other parts of their loan books. They also include exposure of asset owners and managers - an important consideration given the size of Australia's superannuation sector and its heavy weighting towards carbon-intensive equities and a relatively resource-intensive domestic economy.

I will leave a more detailed exploration of these risks for another day. The general point is that the transition now in train could potentially lead to significant repricing of carbon-intensive resources and activities and reallocation of capital. This process will be highly sensitive to changes in regulation, technology, the physical environment and behaviour by investors and institutions - and interrelated perceptions and sentiment about all of the above. Inevitably, even under a sanguine view of how smoothly this transition happens, there will be systemic impacts and implications that have to be carefully monitored.

From a regulatory perspective, one key to getting a better handle on potential system-wide exposures is better information on risk and strategy at the firm level. We are keenly aware of potential systemic implications. But in simple terms, a comprehensive understanding that will help to identify and avert potential vulnerabilities is not possible unless entities and regulators are systematically monitoring, disclosing and talking about these risks. This is the key rationale for the FSB's focus on disclosure practices in the first instance.

There are two related, broader points I want to make here. First, while physical risks are obviously a very serious matter, it is transition risks that are likely to be especially important for financial entities. The developments I have spoken about today are bringing these transition risks forward. The Paris Agreement provides a very reliable signal that policy and regulatory efforts will intensify. Better disclosure standards mean that investors and markets will have more information on climate exposure and risk management and will respond accordingly. The possibility of legal liability heightens risks for companies that aren't responding - one of the many ways, including damage to valuation and reputation, that failure to be on top of this issue might manifest. As the recent legal opinion on directors duties makes clear, these are risks for corporate boards.

Second, the transition risks that stem from existing and anticipated policy and regulatory changes may not be averted or minimised even if these policy changes are delayed or do not eventuate in some jurisdictions. It may be that the latter scenario could make risks greater and more abrupt. This is because there could be either sharper, more significant policy changes and market adjustments down the track, or the physical impacts of climate change could become more severe, more likely and more unpredictable.

Now, to avoid any doubt, I am not making any comment about the appropriateness of one particular policy or mechanism. Clearly governments here and globally have a wide range of policy approaches available to meet their emissions reductions commitments. My point is that it's unsafe for entities or regulators to ignore risks just because there is uncertainty, or even controversy, about the policy outlook. Like all risks, it is better they are explicitly considered and managed as appropriate, rather than simply ignored or neglected.

Scenario analysis as the new normal

A critical implication of what I have just recounted is the importance of considering, and modelling, the potential impact of climate-related risks under different scenarios and over different time horizons. The most important scenario, in my opinion, is the sub-2 degree Celsius transition scenario that the Paris Agreement is anchored around, since that will guide much of government policy around the world.

on unconventional or emerging issues. Frankly, it is a challenge for us, just as it is for regulated entities, to manage a long list of issues, often in areas where expectations are rising, test traditional thinking and require diverse expertise.

However, we make no apologies for expecting regulated entities to rise to this challenge with us. These are shared responsibilities. When things go wrong, it reflects badly on all of us - regulators, entities, governments, and the entire financial ecosystem. For our part, we know that when regulators are slow-moving, or equivocal, it makes problems even worse.

So, if you will allow me to finish with a sporting metaphor, you can expect to see us on the front foot on climate risks, so as to make the challenges on the horizon a little clearer.



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Mark Wakeham

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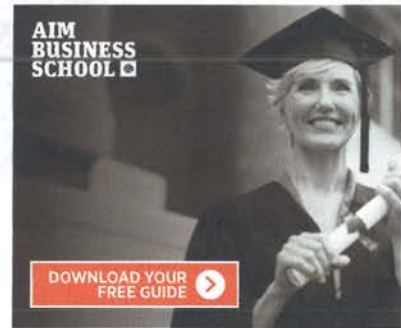
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The war on renewable energy is entering its final, desperate stages. It is inevitable that Australia and the world will soon be entirely powered by the wind, sun, waves and water. The only questions left are whether that will happen in time to prevent the worst impacts of global warming, if coal-mining communities will be supported through the transition, and exactly when the Coalition will crawl out of its ideological bunker and realise the battle is already over.

What makes me so sure that the game is up for fossil fuels? It's not the increasing shrillness of a national Treasurer fondling a lump of coal in our parliament, or the "truth overboard" attempts to blame renewable energy for everything from South Australian blackouts to arrested production at Alcoa's Portland aluminium smelter. Neither is it the desperate parade of Coalition politicians, state and federal, promising to scrap renewable energy targets or bankroll new coal-burning power stations. Powerful industries will always have their political backers, and there's no doubt the coal, oil and gas lobbies are powerful.



For three years in a row, there's been more investment globally in renewables than in fossil fuel power stations. Photo: Paul Jones



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No, it's the combination of three other factors – decisive financial markets, viral growth models and overwhelming community support for renewable energy.

Capital markets have decided that the future is renewable. For three years in a row, there's been more investment globally in renewables than in fossil fuel power stations. And the gap is growing. In 2015, \$286 billion was invested globally in renewable power projects, more than double the \$130 billion in coal and gas power stations. (Data for 2016 is still being summarised.) In China, coal use has peaked and is now declining, but the renewable energy industry is growing at globally unprecedented rates.



Treasurer Scott Morrison with a lump of coal during question time. Photo: Alex Ellinghausen

In the US, coal-burning power stations are dropping like dominoes – 94 closed their doors in 2015 and another 41 closed last year. Even Donald Trump can't stop this tide – another six coal power stations have announced their closure since he was elected.

Australia not immune

Australia is not immune to this trend. When Hazelwood generates its last electricity at the end of this month it will be the ninth coal power station to close in the past five years. Last year, Australia retired 520 megawatts of coal, and built 1100 megawatts of renewable energy. This year, with the closure of Hazelwood, at least 1640 megawatts of coal will exit the market, and more than 3000 megawatts of renewables will be built. This shift is only heading in one direction, and it's accelerating.

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The second reason renewables will triumph is their decentralised and viral funding models make them more nimble and bankable than large, expensive fossil fuel projects. Each week there's another

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addition to the list of electricity markets where it's cheaper to build new renewable projects than coal or gas. And each time that tipping point is achieved, there's a stampede of capital to clean energy. In this financial landscape, ageing coal generators are like the last mature specimens of a once dominant species, unable to reproduce and therefore ultimately doomed to extinction.

In developed countries like Australia, new coal-burning power stations are 'unbankable'. No wonder the Turnbull Government is turning to desperate and damaging measures such as offering them loans from the public purse.



Malcolm Turnbull wants to blame our problems on a too-fast shift to renewables, to justify a new subsidy for new coal-fired power stations. Photo: Bloomberg

Renewables projects, meanwhile, are financed every day by families and businesses trying to save on their energy bills. Last year in Australia the equivalent of 14 solar panels were installed for every minute of daylight. This year it will be more. As the remaining coal generators lose customers and hike up electricity prices, going solar or adding batteries is becoming even more attractive, leading to the so-called death spiral for electricity retailers – trying to recover increasing costs by gouging a decreasing customer base. Meanwhile, the 1.6 million Australian households with solar power have become passionate advocates for the technology with their friends and family.

That leads to the third reason. Renewable energy is enormously popular right across the political spectrum. Recent polling by government agency Sustainability Victoria found 84 percent of Victorians support the state's target of 40 percent renewable energy by 2025. Even in the deeply conservative Queensland seat of Dawson – where One Nation is currently spooking the Coalition – the majority of voters support a 50 percent national renewable energy target by 2030. Only 28 percent oppose it. All this makes the Victorian and federal Coalition's current culture war on renewables a rather "courageous" political strategy, as *Yes Minister's* Sir Humphrey Appleby would say.





NSW aims to attract billions of dollars of investment in renewables as part of its "advanced energy" program. Photo: Supplied

Manage the transition

Since being elected in 2013, the federal Coalition have sat on their hands and watched as seven coal power stations have closed, leaving communities to deal with the aftermath. Only with Hazelwood's closure has there been modest, though late, financial support to diversify the Latrobe Valley economy. A responsible federal government would get behind renewable energy but also manage the transition away from fossil fuels. That's why we need a schedule for retiring the remaining 20 coal-burning power stations in Australia and a plan to create new jobs and opportunities in affected communities.

It's time for a ceasefire in the war on renewables. The Coalition needs to peek above the political trenches and see that financial markets and the Australian public have already called the victor. Clean energy won.

Instead of fighting against the future, we need politicians and business leaders who will embrace it and the accompanying jobs and investment. We need leaders positioning Australia to benefit from the trillions of dollars that will be spent on renewable energy globally in the next decade. And if we're going to be 100 per cent powered by renewables then why not get on with it, do it by 2030 and play our part in halting the worst impacts of global warming.

Coal is going the way of the fax machine and typewriter – once useful, now superseded. If politicians keep fighting yesterday's battles, they'll make themselves redundant too.

Mark Wakeham is CEO of Environment Victoria.

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Malcolm Turnbull calls energy crisis talks amid gas shortage blackout warnings

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Malcolm Turnbull has called urgent crisis talks with Australia's east coast gas companies after the energy market regulator warned of looming shortages that could lead to widespread blackouts as early as next year.

Describing the potential shortfall as "very concerning", the Prime Minister also called on state governments to loosen restrictions on onshore gas exploration and development in a bid to avert the energy emergency.



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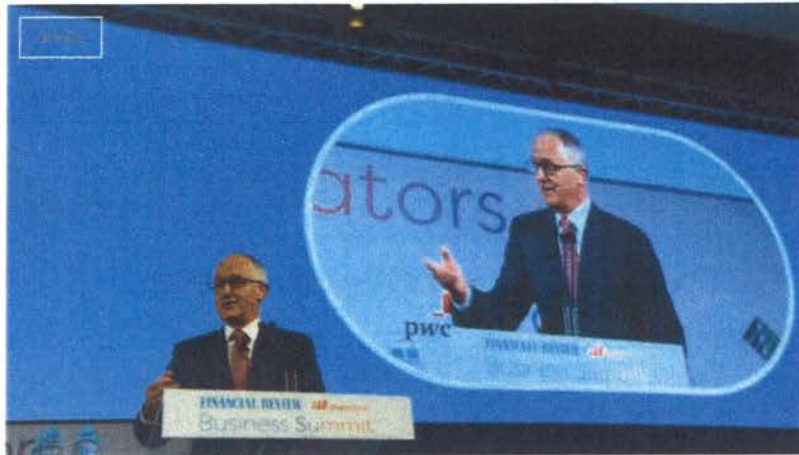
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AEMO report predicts natural gas shortage

Australia could face a natural gas shortage as early as next year, posing a risk to electricity supplies and security in several states, according to a new report by the Australian Energy Market Operator.

His government is also considering some sort of domestic reservation policy to boost gas supplies but is grappling with how to implement it, fearing it could act as a disincentive to investment.

The Australian Energy Market Operator has also warned that power costs will continue to rise even if new gas supplies come online, putting the "financial viability of some commercial and industrial customers" under threat.



PM Malcolm Turnbull speaks at the AFR Business Summit in Sydney on Thursday. Photo: Peter Braig

In its latest report on Thursday, AEMO said that without a swift response, New South Wales and South Australia could face supply risks as early as the summer of 2018-19, Victoria in 2020-21 and Queensland between 2030 and 2036.

With energy demand rising and gas production from existing fields in decline, the market needs new sources of gas or the rapid implementation of new non-gas electricity generation to avoid cuts, the regulator said.

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"We can either redirect some of the LNG from the international markets into the domestic market, assuming that the price allows that to happen, we can increase production from the existing fields, we can explore and develop new fields or we can have investment in the pipelines," said AEMO chief operating officer Mike Cleary.

The AEMO report said new gas supplies might help with reliability and security but, due to rising production costs, would not bring price relief.

Mr Turnbull's meeting with gas company CEOs - expected to include bosses from Shell, Exxon Mobil, Santos, BHP, Origin and Arrow Energy - is expected to take place in Canberra next Wednesday.

"What Australians want is a result. They want energy security, energy that is affordable, and we need to meet what we agreed to in Paris," he said.



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The oil and gas industry's peak body, the Australian Petroleum Production & Exploration Association, said the shortages were the consequence of many years of policy failure by state governments, particularly in Victoria and NSW.

APPEA chief executive Malcolm Roberts said politicians on both sides had been wilfully ignoring the warnings.

"The response has been policy indecision, restrictive regulations and politically motivated bans and moratoriums that have stymied exploration and development of local gas supplies," Dr Roberts said in a statement.

Dr Roberts said onshore exploration was at its lowest level in than three decades, with expenditure falling 64 per cent last year.

A number of industry figures pointed out AEMO's warning came the same week as Victoria introduce new bans on gas exploration and development, with Energy Networks Australia accusing the state government of undermining energy security.

Victorian Premier Daniel Andrews gave his strongest indication yet he would support a portion of the state's gas production being reserved for local use.

"We are sending more than half of our gas overseas, we are exporting it out of Victoria. It is chasing the highest price," Mr Andrews said.

"If some of that should be reserved to support Victorian consumers, Victorian businesses, Victorian jobs, that's a debate I think we should have."

But the Labor leader also lashed out at Mr Turnbull for playing politics with the issue, calling for a "mature debate".

NSW Energy Minister Don Harwin said while the report does raise concerns, gas for electricity generation is only a small percentage of the energy mix in NSW's diversified market, compared to other jurisdictions.

"NSW does not have a moratorium on onshore gas exploration, like that in Victoria," he said.

Federal opposition environment spokesman Mark Butler urged the government to adopt Labor's policy of a gas export "national interest test" to ensure new gas projects wouldn't leave a shortage for domestic users.

The Australian Workers Union said Mr Turnbull should use the CEO meeting to force a renegotiation of contracts for existing gas fields to reserve a portion of Australian gas for local industry and households.

"Simply entertaining the idea of reservation for new onshore projects is not enough. It will be far too late by then," said AWU national secretary Daniel Walton.

The Climate Council said power shortages could be avoided by quickly expanding clean competitive renewable energy and storage technology.



Shell has blamed some customers in the east coast for selling fuel back to LNG export ventures.

Anti-coal seam gas campaigners Lock the Gate slammed Mr Turnbull's announcement, calling it a "slap in the face" for farmers who are having their land and water ruined by big gas companies.

With Richard Willingham

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ACT climate change minister Shane Rattenbury said the looming gas supply shortage on the Australia's east coast demonstrated the vulnerability of the fossil fuel market and that the ACT's energy future lied in renewables.

"Far from being to blame for electricity supply problems during the heatwave, renewable electricity generation like wind and solar were the quiet achievers," Mr Rattenbury said.



Mr Rattenbury said renewable energy helped stabilise the energy grid. Photo: Rohan Thomson

"We need to ensure that investment in gas is not out-competing investment in the renewable energy plans of the future."

Australian Energy Market Operator chief operations officer Mike Cleary said Thursday's warning gave energy companies ample time to provide solutions before supplies dropped.

"If nothing was to happen and the market did not respond we'd expect a shortfall on gas between 2019 and 2024," Mr Cleary said.

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"Anything that's going to help increase gas into the market is going to be good for the market."



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Mr Cleary said any impacts to the NSW market would impact the ACT with the current debate around Australia's energy security making AEMO's report more timely.

But Mr Rattenbury said more gas in the market would not drive down prices.

"Gas prices are rising yet AEMO has today debunked the myth that bringing on more gas supply will drive down prices," Mr Rattenbury said.

"Although gas is cleaner than coal, it is still a fossil fuel."

"AEMO's findings highlight the risk of banking on gas and coal to provide for our long term energy needs."

ActewAGL's general retail manager Ayesha Razzaq said AEMO identified a range of factors impacting the energy sector that could increase gas and electricity prices.

"These factors are nationally-driven and impact the entire energy market," Mr Razzaq said.

"The ACT continues to have very reliable energy supply and ActewAGL is continuing to monitor and manage these market impacts closely."

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