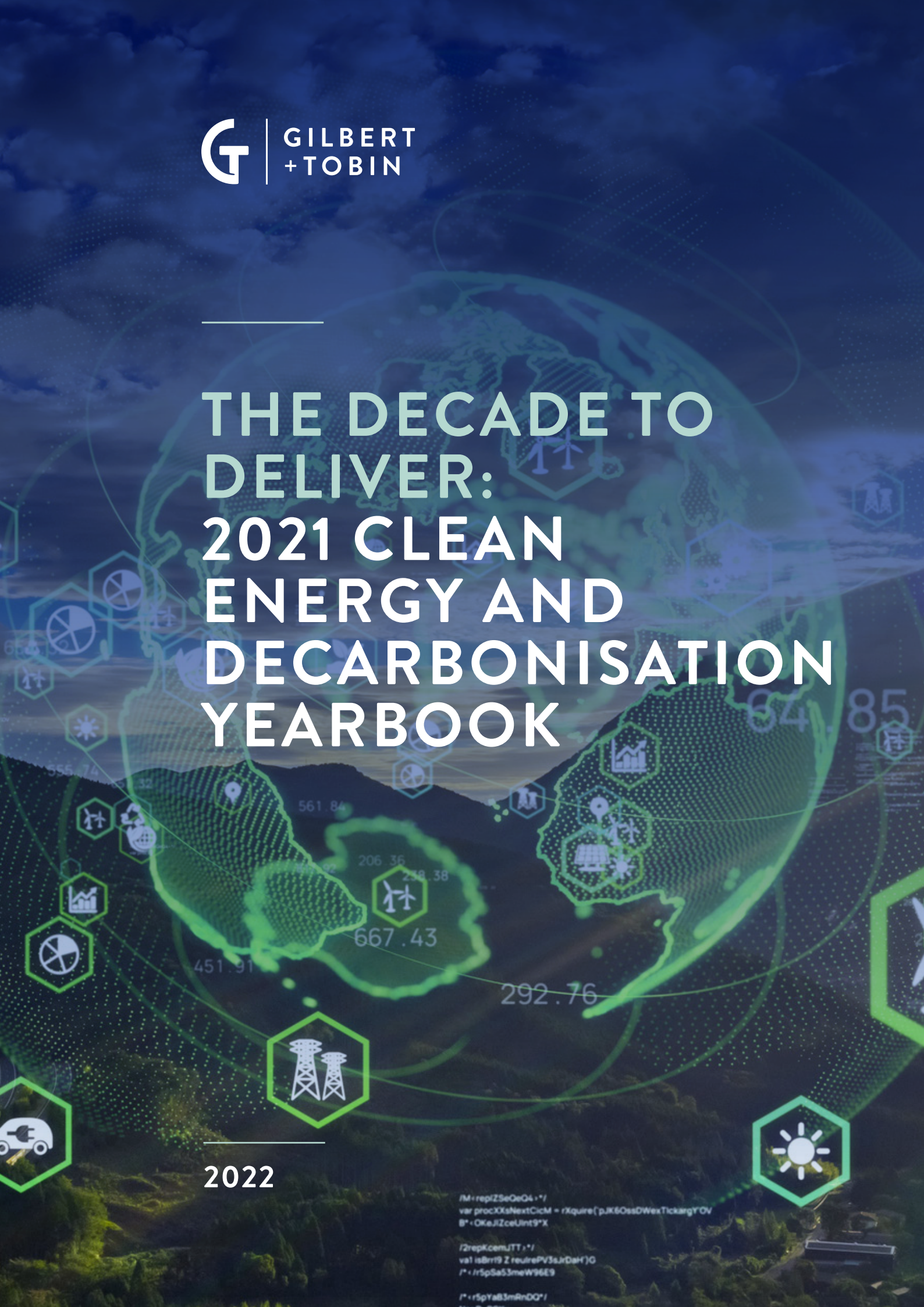
GILBERT +TOBIN

THE DECADE TO DELIVER: 2021 CLEAN ENERGY AND DECARBONISATION YEARBOOK



2022

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FOREWORD

2021 will be remembered for the staggering speed at which global momentum shifted towards the clean energy and decarbonisation transition, as public and private sectors pivoted to align with a transformation akin to an industrial revolution.

The hype and intensity surrounding the United Nations' COP26 conference in Glasgow in late 2021 only served to reinforce this trend. It is clear that immediate, effective and meaningful action is occurring across governments, industry and society, but that much also remains to be done.

G+T has followed events extensively over the past year, ensuring that its contribution from a legal standpoint remains informed and meaningful. We built on our existing knowledge at the forefront of the energy sector by consulting leading industry figures in nationwide presentations to gain an interdisciplinary understanding of the issues being faced by business generally, our society and our clients. These included talks from leaders as diverse as Samantha Tough of the Clean Energy Finance Corporation and Horizon Power, Richard Goyder AC of Woodside Petroleum, Qantas and the Australian Football League, Professor Peter Klinken AC, the Chief Scientist of Western Australia, David Frances of Province Resources Limited and Stuart Nicholls of Strike Energy Limited.

Based on this, throughout 2021 we published commentary and thought leadership on the existing and emerging issues of the clean energy transition. This yearbook compiles those articles by topic, providing a comprehensive guide to the transition.

G+T prides itself on taking a leading role in social and legal issues in order to benefit our clients and our communities. We remain committed to this history as we seek to make a genuine, meaningful and forward-thinking contribution to navigating the clean energy transition into 2022 and beyond.

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CONTENTS

GILBERT +TOBIN

1 THE CLEAN ENERGY TRANSITION

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CLEAN ENERGY + DECARBONISATION | YEAR IN REVIEW

03/12/2021

This year has seen a significant shift in expectation regarding net zero targets across the globe. Australia's transition remains under the spotlight with measurable action and government intervention at the centre of the debate.

To wrap up what was arguably the most significant year in the clean energy transition so far, the team at Gilbert + Tobin have reviewed six key areas of impact:

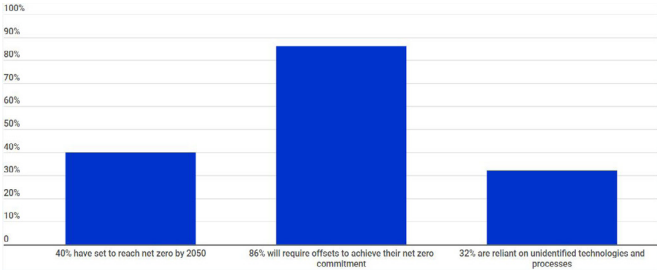
1. CORPORATE RISK: NET ZERO THE NEW NORMAL AS CLIMATE RISKS REALISED BY REGULATORS AND BOARDROOMS

Concerned whispers of 'greenwashing' and 'net-zero by 2050' became a deafening roar in 2021. A combination of market leadership and market pressure led to a deluge of corporate commitments to net-zero by 2050 amongst a resurgent wave of post-pandemic ESG. The inclusion of such statements in relation to financial product offerings led market regulator ASIC to remind companies that this aspect of the brave new world of clean energy and decarbonisation fits squarely within the existing regulatory framework which requires forward-looking statements to have a reasonable basis. The need to have such bases does not marry with the need to satisfy market demands to make the commitments, which has already led ASIC to require numerous prospectuses to be amended.

2021 also saw 'greenwashing' become a household term to describe misrepresenting the 'green' qualities of a product, service or firm. ASIC and the ACCC have warned industry that any such statement is capable of misleading or deceiving and will respond as such. Finally, at COP26 the ISSB, the green sibling of the ISAB was established. Along with multiple statements from ASIC, and as predicted in our first newsletter, we expect a climate-related

financial risk disclosure framework will be introduced, most likely based on the TCFD's framework.

Of the top 50-ASX listed companies, 34 companies (68%) have made public commitments to achieve net zero carbon emissions. Of those 34 companies:



2. CLIMATE LITIGATION IN AUSTRALIA

"Trauma will be far more common and good health harder to hold and maintain… It will largely be inflicted by the inaction of this generation of adults, in what might fairly be described as the greatest inter-generational injustice ever inflicted by one generation of humans upon the next…" Justice Bromberg in Sharma at [298]

Mitigating the adverse impacts of climate change will be one of the greatest challenges of this decade for both Federal and State Governments and corporate Australia. But is enough being done? In the past year, concerned Australians have expressed their frustration and taken court action to challenge government approvals of carbon intensive projects and developments based on environmental grounds. More pointed questions are being asked through the courts about corporate decision-making relating to emissions, climate impacts and the adequacy of disclosures to the market.

This year, Australian courts have accepted the science behind climate change and that the catastrophic impact of climate change on future generations is foreseeable. In doing so, Courts have recognised that a duty of care to prevent future harm associated with carbon emissions can exist. Pressure will inevitably emerge from multiple angles – regulators, investors, employees and communities – for corporate Australia to take a much more proactive approach to climate change lest they find themselves on the receiving end of novel climate change litigation.

This year in review article analyses the more notable Court proceedings from 2021. These cases have had a significant impact on Australian jurisprudence in that they set a baseline from which climate activists will seek to push the boundaries in the claims that they bring, and there is no reason to expect that the law will not continue to develop at the rate we have seen this year.

PART ONE: DUTY TO AVOID HARM FROM CARBON EMISSIONS

Sharma v Minister for the Environment

As discussed in our previous article Climate litigation around the world and potential risks for corporate Australia, in the case of Sharma by her litigation representative *Sister Marie Brigid Arthur v Minister for the Environment* [2021] FCA 560 (Sharma), a group of school children brought a claim against the Federal Minister for the Environment seeking to prevent the approval of a local coal mine. The Federal Court of Australia found that the Minister owed a duty to persons under 18 years of age to take reasonable care to avoid causing them harm from further carbon emissions when determining whether to approve the expansion of a coal mine. However, the Court was not prepared to prevent the Minister from granting the approval as there was no evidence that an approval decision was imminent (although, as it transpired, such a decision was imminent).

Notably, though, the expert evidence led by the children was accepted by the Court, which found that the burning of coal from the relevant project was likely to cause a "tiny but measurable increase to global average surface temperatures" and that that this would increase the risk of global average surface temperatures increasing beyond 2°C above pre-industrial levels, causing catastrophic climatic hazards. The Court also accepted that it was foreseeable that future generations could be exposed to a risk of injury (including death) from heatwaves, bushfires, severe flooding and extreme cyclones caused by climate change.

The Minister for the Environment appealed that decision and the appeal hearing took place on 18 – 20 October 2021. The hearing comes in the wake of the Federal Government's approval of three coal projects since the delivery of the first instance decision, including the Vickery Extension Project that prompted the Sharma litigation. Subject to the outcome of the Sharma appeal, it would be surprising if we did not see further court challenges to those approvals in light of the novel duty of care found to exist under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**).

Pabai Pabai & Anor v Commonwealth of Australia

On 26 October 2021, Paul Kabai and Pabai Pabai of Gudamalulgal in the Torres Strait filed a case in the Federal Court arguing that the Commonwealth Government has breached a duty of care owed to Torres Strait Islanders by failing to take steps to prevent current and projected impacts of climate change. Mr Kabai and Mr Pabai will argue this has resulted in the degradation of the land and marine environment, loss of Ailan Kastom and loss of Native Title rights.

In addressing the media on the case, Mr Kabai expressed a fear that his children and grandchildren would become "refugees on their own land." The impacts of rising water levels on low lying islands such as those in the Torres Strait are certainly now well publicised (and, indeed, were accepted in Sharma); the case may be the first of its kind filed in an Australian court, but it echoes the complaint to the United Nations Human Rights Council made by an alliance of Torres Strait Islanders back in 2019 on the same issue. The case appears to draw inspiration from the findings in the Sharma decision, but also a proceeding brought against the Dutch government, where the Dutch government was found to have an obligation to safeguard its citizens from the consequences of climate change as a result of global warming by reducing greenhouse gas emissions. This obligation to protect Dutch citizens from climate change was found to arise, in part, because of the Netherland's obligations under the European Convention on Human Rights and so is not directly applicable to Australian law.

PART TWO: CHALLENGES TO GOVERNMENT DECISIONS

Mullaley Gas and Pipeline Accord Inc v Santos NSW (Eastern) Pty Ltd [2021] NSWLEC 110

On 18 October 2021, the NSW Land and Environment Court published its decision regarding a challenge to the decision of the NSW Independent Planning Commission (**IPC**) to grant development consent for Santos' Narrabri Gas Project (**Project**).

In that case, the contentions made by the Mullaley Gas and Pipeline Accord Inc. (**MGPA**) that the IPC's decision was invalid on four grounds were rejected, largely due to the confined scope of the particular proceeding. But the Court reiterated that clause 14(1) of the State Environment Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (**Mining SEPP**) should be understood as including Scope 3 (downstream) emissions. Although in this case Santos had insufficient control of Scope 3 emissions to justify the imposition of a condition of consent to regulate downstream emissions, the Court noted that there may be other projects where the proponent would have sufficient control to justify the imposition of such a condition. Proponents should be aware that if their projects involve a relationship with an end user – including an end user within the same corporate group (which example was identified by the Court at [106]) – it remains open to decision-makers to impose conditions on Scope 3 emissions tied to the relevant project.

This decision will likely impact the determination of future carbon intensive projects under the Mining SEPP and, in a sense, represents a false victory for Santos, who will inevitably have future projects scrutinised under that very policy.

Bushfire Survivors for Climate Action Incorporated v Environment Protection Authority [2021] NSWLEC 92

The climate action group, Bushfire Survivors for Climate Action (**BSCA**) commenced a proceeding against the NSW EPA arguing that it had a duty under the *Protection of the Environment Administration Act 1991* (NSW) (**Act**), to develop objectives, guidelines and policies to ensure environmental protection from climate change.

The Court found that the EPA's duty continued to evolve over time to address evolving threats to the environment and it was acknowledged that climate change is currently one of the most significant threats to the environment. The Court held that the EPA had failed in its duty to implement the necessary policies, guidelines and objectives relating to climate change as none of the EPA's policy documents dealt specifically (or in some cases even at all) with climate change.

The BSCA argued that the duty to develop the relevant policies, guidelines and objectives should be more specific, and that the EPA should be required to develop policies, guidelines and objectives regulating and reducing greenhouse gas emissions to limit global warming to 1.5 degrees Celsius above pre-industrial levels. But the Court was not prepared to find that such a duty was owed, on the basis that the EPA has a discretion as to the specific content of the written instruments it develops. For further discussion of this case, please see our article: NSW EPA ordered to develop environmental protection guidelines aimed at climate change.

Proceeding against Victorian Environmental Protection Authority

Hot on the heels of the Bushfires decision, the Victorian Environment Protection Authority (**Victorian EPA**) is now in the firing line. A public interest group, Environment Victoria, has recently commenced a proceeding in the Supreme Court of Victoria against the Victorian EPA seeking judicial review of its licence review decision in relation to the three remaining coal power stations in Victoria. Environment Victoria, represented by Environmental Justice Australia, argues that in failing to set limits on greenhouse gas emissions when making its decision regarding the licences, the EPA failed to require best practice management of toxic emissions, to take proper account of the principles of environmental protection contained in the Environment Protection Act 1970 (Vic), and to consider key sections of the *Climate Change Act* (2017) (**Climate Change Act**).

The Climate Change Act – which will be tested in court for the first time during this proceeding – requires Victorian regulatory authorities to have regard to the potential impacts of climate change and contribution to the State's greenhouse gas emissions when making project approval and licensing decisions. The case serves as

yet another reminder to companies to scrutinise their climate policies and environmental impact assessment for their projects, which are likely to be the subject of greater focus by the EPA.

PART THREE: DISCLOSURES REGARDING CLIMATE CHANGE RISK

O'Donnell v Commonwealth of Australia [2021] FCA 1223

An action brought by Kathleen O'Donnell (**Applicant**), against the Australian Government is yet another case illustrating the consequences of failing to keep climate change front of mind. Whilst the cases mentioned earlier in this article have been focused on the failure to take account of climate change in decision making, this case focuses on the failure to disclose climate change-related risks. Globally, it is the first action seeking to hold a nation accountable for not disclosing the risks of climate change to sovereign bond investors.

The information alleged to have not been disclosed was defined as "Material Climate Change Information" which:

+ would inform holders about significant risks associated with holding the exchange-traded Australian Government Bond (**eAGBs**) that persons would reasonably require to make an investment decision, and/or
+ information that might reasonably be expected to have a material influence on decisions by investors as to whether to hold, dispose or purchase eAGBs.

An application by the Government seeking to have the Applicant's statement of claim struck out was largely unsuccessful and the Applicant's claim in misleading or deceptive conduct was allowed to proceed.

Corporate Australia has for some time now been on notice to ensure they make adequate climate risk disclosures, of the nature contemplated in the O'Donnell case; with a failure to do so likely to see them facing similar claims relating to misleading and deceptive conduct. However, it is imperative that companies do not just pay lip service to this disclosure requirement and ensure they have a proper basis for any statements contained in their disclosures; any perceived inadequacies in these disclosures may result in further climate change litigation.

Australasian Centre for Corporate Responsibility v Santos Limited

In that respect, 2021 saw the filing of Australia's first 'greenwashing' case and the first case globally to challenge the veracity of a company's net zero targets. The Environmental Defenders' Office, acting on behalf of the Australasian Centre for Corporate Responsibility (**ACCR**), commenced a proceeding against Santos Limited (**Santos**) in the Federal Court of Australia over its claims that natural gas is 'clean fuel' and that it has a 'credible and clear plan' to reach net zero emissions by 2040. The ACCR claims these representations - along with numerous other statements and omissions regarding Santos' net zero and clean energy claims - constitute misleading or deceptive conduct.

The EDO has described the case on its website as a "*world-first, test case in relation to the viability of carbon capture and storage, and the environmental impacts of blue hydrogen, increasingly touted as a key element in gas companies' pathways toward net zero emissions.*" Whilst the proceeding is still at an early stage, corporate Australia will likely be following it closely given its potential to be ground-breaking in more than one sphere.

The ACCR has notably retained Noel Hutley SC, lead counsel in Sharma and the leading author of an opinion commissioned by the Centre for Policy Development's on "Climate Change and Directors' Duties". Mr Hutley SC expressed in 2016 the view that "*it is likely to be only a matter of time before we see litigation against a director who has failed to perceive, disclose or take steps in relation to a foreseeable climate-related risk that can be demonstrated to have caused harm to a company.*" Given the progress of climate change litigation in 2021, that time would seem to be looming.

For further information about greenwashing and disclosures concerning net zero commitments, please see our article: "Net zero commitments": the latest minefield for directors.

Abrahams v Commonwealth Bank of Australia

In another case reinforcing the importance of climate risk disclosure for companies and the potential exposure of directors, the Federal Court has recently ordered the Commonwealth Bank of Australia (**CBA**) to release documents regarding its decision to finance seven oil and gas projects. Relying on the Corporations Act, Guy and Kim Abrahams as trustees for the Abrahams Family Trust (Abrahams), and as long-term shareholders of CBA, applied for access to the documents on the basis that CBA's involvement in such projects could infringe its own environmental and social policies. In particular, Abrahams requested the documents to determine whether CBA understood the requisite assessment of the environmental, social and economic impacts of the projects, and whether the projects are consistent with the goals of the Paris Agreement.

CONCLUDING REMARKS

The above cases demonstrate the clear direction in which climate litigation is heading and serve as a timely reminder that companies must be proactive in their climate targets and policies, rather than reactive to court mandated obligations. Upon a decision being made in ACCR v Santos, corporate Australia might expect an increasing number of cases in relation to inadequate climate risk disclosure, which may sound in claims of misleading or deceptive conduct as part of shareholder class actions, and directors will no doubt be in the cross-hairs next.

Whilst 2021 has seen it established that government bodies can owe a duty of care to prevent harm arising from climate change, it may be some way off before we see this manifest in a successful claim against a corporate for breach of a duty – there remains a question as to whether the science is currently capable of attributing a specific climate change harm to an individual source of emissions. That is, it is difficult to quantify the impact caused by a single company's emissions. But whether or not those claims will ultimately be successful might be beside the point – companies will unlikely relish their time in the spotlight on the receiving end of a claim brought against them for perceived inadequacies in their approach to climate change.

3. DEVELOPMENTS IN POLITICS AND LEGISLATION IN AUSTRALIA'S RACE TO EMBRACE CLEAN ENERGY OPPORTUNITIES

Analysts have made it clear that the world needs to reach net zero by 2050, if not before, in order to limit the worst impacts of climate change. The question now is simply 'how?'—and the answer is far more complicated. Over the past year we have seen legislative changes, or indications of such changes coming, at both Federal and State level, aimed at accommodating clean energy projects and achieving our net zero targets. Key legislative developments impacting Australian clean energy projects are:

+ **Offshore wind legislation:** The Commonwealth finally followed the lead of the States in turning its attention to wind farms when the *Offshore Electricity Infrastructure Bill 2021* (Cth) was tabled before Parliament. There is still detail to be included relating to the licencing regime (most of which has been deferred to the regulations), but the Bill promises to allow the development of large-scale offshore wind farms (or other renewable energy projects), and the storage and transmission of electricity, from between 3 and 200 nautical miles from Australia's shore.
+ **Renewable Energy Zones in NSW:** In 2020, the Electricity Infrastructure Investment Act 2020 (NSW) received assent, representing a fundamental shift in policy towards the encouragement of renewable energy projects in NSW. Under the Act, the Minister can declare a geographical area of the State a "renewable energy zone" (**REZ**) and specify the generation, storage or network infrastructure that will be implemented in that zone. 2021 saw the declaration of Australia's first REZ in the Central-West Orana region, which will host at least 3GW of solar, wind and storage. The Central-West Orana REZ—one of at least 5 to be established—will play a key role in addressing NSW's current infrastructure concerns and demonstrates NSW is 'walking the talk' on its 2050 net-zero target. Construction of the first REZ is expected to commence in 2022.
+ New 'diversification leases' lead land tenure reform for renewable energy in WA: A joint statement recently published by four WA Government Ministers announced significant land tenure reforms headlined by a new form of tenure – the diversification lease. The reforms facilitate the expansion of carbon farming, with pastoralists set to benefit from the extension of pastoral leases for up to 50 years and associated security of tenure benefits to attract carbon farming capital investment. However, questions remain how the reforms will 'unlock land for renewable energy', such as green projects, because:
  - *the best renewable energy sources in the State are in areas predominated by existing pastoral leases;*
  - *the grant of a new 'diversification lease' will still require agreements to be reached with pastoral lease and native title holders; and*
  - *more carbon farming will potentially create more conflicting land uses for clean energy projects and mining to contend with.*

From a policy perspective, Australia has focused on positioning itself as a hydrogen superpower, with all States having now released plans for developing their respective hydrogen industries. There is, therefore, not only a race to net zero by 2050 but also a race between the States in the development of burgeoning and successful hydrogen economies.

+ With three of Australia's top trading partners (Japan, Korea and China) having already made clear commitments to use hydrogen to decarbonise, Australian states are racing against each other to position themselves as Australia's hub for hydrogen export. Each State's hydrogen plan highlights their key competitive advantages, including for example, Queensland's close proximity to Asia and its established infrastructure, Victoria's connected transport network, which will enable the potential for integrated, multi-mode hydrogen transport, and WA's abundance of land and renewable resources. However, the key issues impeding Australian companies from capitalising on each State's potential are production costs, a lack of enabling infrastructure and regulatory uncertainty. NSW may just be leading the way in addressing these concerns having released integrated policies which consider the optimal locations for hydrogen production from a full supply chain perspective, ensuring efficiency and driving down costs. The NSW Parliament also recently approved the Energy Legislation Amendment Bill, which is expected to unlock $3 billion in government incentives and A$80 billion in private investments aimed at increasing the scale and competitiveness of the renewables industry.

Key highlights from the State's hydrogen strategies:

	2030 goal: WA's market share in global hydrogen exports to be similar to its share in LNG today (currently second largest LNG exporter in the world)
	$3 billion of incentives to commercialise hydrogen supply chains and reduce production costs
	Further large scale solar photovoltaic projects are being commenced which, when complete, will deliver over 1380 megawatts of clean power to QLD
	$6.2 million grant support for renewable hydrogen pilots, trials and demonstrations
	Predicted that 90% of SA's electricity could be generated from renewable sources by 2025
	Tasmania is on track to become the first Australian state or territory with 100% renewable power generation in 2022

4. CLEAN SLATE: SETTING THE STANDARD FOR NEGOTIATING RENEWABLE ENERGY PROJECTS WITH NATIVE TITLE HOLDERS

The "clean energy" movement is rapidly developing at a rate that is outpacing legislators and regulators. According to the Clean Energy Council, there are 89 renewable energy projects in construction or due to start construction soon across Australia. The transition to renewable energy represents the biggest shift in our lifetime, affecting all aspects of the global economy, and native title agreements are no exception. A new era of energy and commerce requires a new era of native title negotiations and relationships.

Over 62.8% of Australia's land mass is now subject to native title claims or determinations, which encompasses the location of a large portion of Australia's richest renewable resources. Traditional Owners recognise the opportunity in leading the clean energy revolution and negotiating agreements which set the standard for generations. Negotiating native title agreements for renewable energy projects has seen a change in focus. Traditional Owners are taking a more active role to facilitate participation and collaboration with proponents and developers. Renewable energy projects present a huge opportunity to create lasting, intergeneration benefits for Traditional Owners. However, renewable energy imposes a cost on country that is often forgotten in the well-intentioned race to net zero.

For the above reasons, Traditional Owners are key stakeholders in any project conducted on native title land and companies, now more than ever, need a social licence to operate. From a native title perspective, this means:

+ early engagement;
+ a better standard of negotiation; and
+ respecting discussions with Traditional Owners and the positions that they come from.

The First Nations Clean Energy Network (**Network**) was established on 17 November 2021 to encourage and facilitate partnerships between Aboriginal communities and renewable energy developers and construct renewable projects which in turn provide reliable power and end energy insecurity for Aboriginal communities. The Network, which is backed by the National Native Title Council, the Australian Council of Trade Unions and the Clean Energy Council, will also provide resources, educational training and support to empower Traditional Owners in negotiations with companies in respect of renewable energy projects.

KEY THEMES

Balancing bargaining power: participation and collaboration

There are a number of key "themes" we have seen arise during native title negotiations for renewable energy projects. One central theme is enhanced empowerment for Aboriginal people through a mutual redistribution of bargaining power. Traditional Owners at the negotiating table are experienced, commercially aware and focussed on sufficiently protecting country and their rights to ensure meaningful participation and collaboration between the parties.

We consider best practice for negotiations is that the agenda, nature and timeline of negotiations should be developed between the Traditional Owners and the company in a way to ensure that Traditional Owners have sufficient time and resources to meaningfully negotiate. In particular, it is best practice to ensure that Traditional Owners have access to qualified and independent experts to provide advice for negotiations. For this reason, it is often beneficial for companies to enter into a Negotiation Protocol or Negotiation Funding Agreement with the company they are engaging with, particularly in respect of large projects and agreements such as Indigenous land use agreements.

Negotiations must take place in a respectful manner and in good faith. Many renewable energy companies are supported by infrastructure funds (including from offshore) that have never entered into native title agreements and may require guidance to ensure that they are engaging in a productive and culturally appropriate manner.

The cost of decarbonisation: the role of Aboriginal heritage and environmental protection

As Tony McAvoy SC, founding member of the Network and

Australia's first Indigenous Senior Counsel, rightly stated "*the clean energy boom, while necessary, is not cost free*". Renewable energy projects have a different impact on country than traditional mining projects, however, this impact is still serious and in many cases, will continue for an indefinite period of time. Renewable energy projects can tie up huge expanses of land and, at the very least from a visual and amenity perspective, have a large impact on country. Traditional Owners are the custodians of the land and have a duty to maintain and protect their country. Adherence to the protection of Aboriginal heritage and the environment is a part of every renewable energy company's social (and potentially legal) licence to operate.

Protection of and access to sites of cultural significance on country is of key importance to Traditional Owners. The sheer scale of renewable energy projects risks interrupting this access. Early engagement with the Traditional Owners is key in this respect, as Traditional Owners can provide advice about their country's landscape and key areas of significance so the project can be developed with appropriate respect paid to those areas.

While the environmental impacts of traditional mining projects and their duration is widely known and understood, the impacts of renewable energy projects are less certain. From a certain point of view, the development of a renewable energy project involves developing technology being used for an unknown period in circumstances where tenure solutions and regulation are being developed by the States (apparently independently of each other). Renewable energy companies and Traditional Owners should work together to ameliorate uncertainty in this respect.

Recent events, such as the destruction of the caves at Juukan Gorge and subsequent Federal inquiry have thrown the importance of protecting Aboriginal cultural heritage sites into the spotlight. Now, more than ever, companies are being held to account for their actions in respect of Aboriginal heritage. We expect that Aboriginal heritage will continue to be an increasingly significant focus of native title agreement negotiations.

Opportunity and stability

Renewable energy projects present an opportunity for long-term, stable income for Aboriginal corporations. In light of the long term nature of these projects, Aboriginal corporations are looking to generate inter-generational wealth through economic participation and commercial involvement. However, they each present difficulties and issues which must be overcome.

Native title agreements for renewable energy projects present an opportunity to be creative in the ways that economic benefits are shared. The economic benefits shared can range from an equity ownership stake, management positions, royalty streams and break fees if there is uncertainty as to whether the project will proceed. There is no "one size fits all" solution and each individual agreement should be tailored to factor in the circumstances of that specific project and the priorities of the local communities affected. Similar to the industry itself, companies should look to get ahead of this and foster positive relationships with the communities they are working with to develop innovative and meaningful ways for those communities to participate, collaborate and derive benefit from renewable energy projects.

Social cohesion and inclusion

A key opportunity for collaboration between Traditional Owners and renewable energy companies is through forward planning for training and education. Renewable energy projects often have long project lead up times. These time periods provide community and companies the opportunity to establish training and education programs and scholarships. Such programs to enable the inclusion of Aboriginal skilled workers to contribute to the project upon commencement.

There are different phases of renewable energy projects, with different workforces required for construction, as opposed to operation. Early engagement with Traditional Owners and a clear and open dialogue about the needs of the project in each stage enables the company and community can work together to ensure an inclusive, diverse and efficient allocation of employment opportunities.

Besides employment, training and economic benefits, renewable energy projects can provide other benefits such as energy security to remote communities. Energy security is a basic right, yet many Aboriginal people living in remote communities still do not have access to reliable and inexpensive energy sources. In lieu of meaningful State and Federal programs, we foresee native title agreements for renewable energy projects clearly moving towards this trajectory and this is a key aim for the Network.

OPPORTUNITIES, NOT OBSTACLES

Given the importance of land to the viability of renewable energy projects, Traditional Owners are integral stakeholders. Traditional Owners are the custodial protectors of their country and bear a huge amount of the risk by allowing renewable energy projects of large scale to be constructed on country over an indefinite and uncertain timeline. As such, their rights to participate and have their say and share of the benefits of the project should be protected and representative of the risk assumed.

Renewable resources are indefinite by nature. Renewable energy projects may span generations so it is key that Traditional Owners are provided an opportunity to collaborate and set the parameters of their relationship with such projects. When commencing engagement with Traditional Owners, renewable energy companies must ensure there is a whole company commitment to upholding these principles, especially from the company leadership.

Negotiations and drafting can take a similar form to traditional

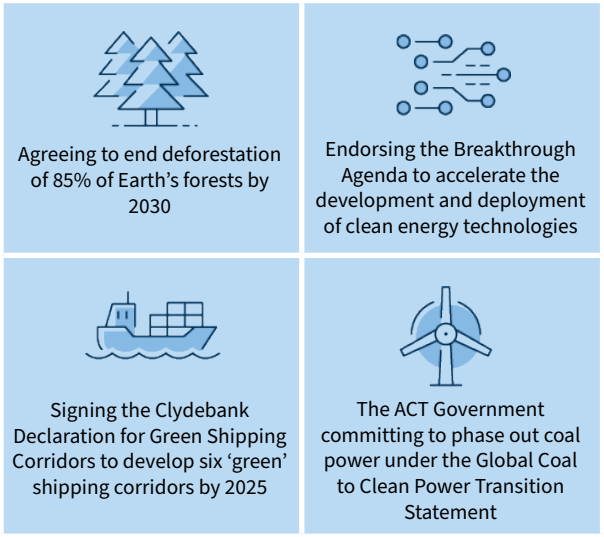
mining native title agreements, however, these principles and examples should only be used as a guide or a starting point, as renewable energy projects should go further in the empowerment of Traditional Owners and the creative opportunities and benefits offered, in recognition that this is a new frontier, and that decisions now will have effect in generations to come.

If you have a renewables project being constructed and would like tailored and strategic advice as to how to engage and commence negotiations in a culturally appreciative and sensitive way, please contact Amelia Arndt, Arabella Tolé or Marshall McKenna.

5. INTERNATIONAL DEVELOPMENTS PUT PRESSURE ON AUSTRALIA'S CLEAN ENERGY TRANSITION

International movements in the clean energy space inform, drive and impact developments in Australia. Despite a certain level of 'reluctance' in making decisive and meaningful change at a Federal level, international guidance, such as international hydrogen development principles, as well as global cooperation and agreement have put the spotlight squarely on Australian practices. This year, international pressure on Australia culminated with COP26, the UN Climate Change Conference in Glasgow, at which we were left in no doubt that Australia has more to contribute. From an economic perspective, Australian businesses (and governments) should expect intense international pressure to reverberate through supply chains, as demand for greener products grows.

+ COP26: Just days before the commencement of COP26, Australia came to the table with a 2050 net zero target. However, the long-awaited announcement was not enough to escape international criticism, with Australia failing to legislate its goal and placing heavy reliance on technologies which are yet to be developed. The pressure to keep up with other key players in the clean energy transition saw Australia make a number of important pledges throughout the course of COP26, including: Going forward, we expect that the clean energy transition will focus on carbon markets, offsets and certification as a means of providing flexibility in reaching net zero as well as certainty that products are actually green. Carbon markets and offsets are set to play a key role in satiating demand to reach net zero, given the ever tighter and more urgent deadlines as well as the fact that a lot of necessary technology is still in the research and development stage. Certification is the flipside of the same coin and should (ideally) validate the 'green-ness' of a product: we expect certification schemes will proliferate and, in time, become subject to greater scrutiny as some will invariably miss the mark.



+ International hydrogen development principles: The Marrakech Partnership for Global Climate Action (tasked with helping implement the Paris Agreement) has developed 'Guiding Principles for Climate-Aligned Hydrogen Development' (Principles), which set out 7 principles to 'help inform the production and use of hydrogen in ways consistent with avoiding unintended consequences' to the planet. These principles range from where and how to focus hydrogen development, to the importance of scrutinising emissions from hydrogen production (with an emphasis on moving towards purely green hydrogen) and the requirement for a just and equitable hydrogen industry development. Our assessment of these principles is that Australia is already well on the way to adopting a best-practice approach to hydrogen development when compared against the Principles, given that the focus is primarily on green hydrogen and its use in areas that are difficult to electrify. Companies, government and communities now need to focus on getting projects up and running, as well as ensuring a just transition by considering, in particular, native title issues.
+ The Green Hydrogen Catapult, a business coalition of leading green hydrogen developers, announced that it was committing to 45 gigawatts of electrolysers for development by 2026, with commissioning in 2027. The commitment will form a cornerstone of the COP26 Breakthrough Agenda on Green Hydrogen, which focuses on accelerating development and deployment of clean energy technologies such as green hydrogen. It also represents a key step towards rapidly lowering the cost of hydrogen to US$2 per kilogram.
+ Supply chains: Companies should expect that pressure to reduce greenhouse gas emissions will build throughout supply chains—Europe, for instance, is looking at implementing a green hydrogen import percentage for industries utilising hydrogen, so that importers must ensure a certain amount of hydrogen is green. Such measures will reverberate through supply chains, as export markets and the companies supplying those markets are forced to adapt.

6. THE TOPICS WE EXPECT TO GAIN TRACTION LOOKING FORWARD AT 2022

Going forward, we expect that the clean energy transition will focus on carbon markets, offsets and certification as a means of providing flexibility in reaching net zero as well as certainty that products are actually green. Carbon markets and offsets are set to play a key role in satiating demand to reach net zero, given the ever tighter and more urgent deadlines as well as the fact that a lot of necessary technology is still in the research and development stage. Certification is the flipside of the same coin and should (ideally) validate the 'green-ness' of a product: we expect certification schemes will proliferate and, in time, become subject to greater scrutiny as some will invariably miss the mark.

+ Carbon markets and offsets: The importance of carbon markets and emissions offsets is set to increase in 2022 as governments, companies and communities seek to make good on their net zero targets. Australia is closing in on its first national carbon market following a tender this year by the Clean Energy Regulator. Meanwhile, at COP26 the long-awaited rules for an international carbon market were finally agreed upon, including a minimum 2% cancellation of each credit traded on that market (thereby ensuring an overall drop in global emissions). In addition, the role of offsets will be scrutinised, with emphasis likely shifting from avoidance units (created by renewable energy projects, for instance) and biological storage units (ie trees) to sequestration units (the removal of greenhouse gas emissions from the atmosphere).
+ Certification: Following on from carbon markets, offsets and our coverage earlier this year, we expect certification and guarantee of origin schemes to become a major aspect of the clean energy and decarbonisation landscape for 2022. Such schemes which seek to certify the purported 'clean' or 'green' characteristics of a given product, service, process or even an entire firm both satisfy and create demand in the fledgling renewable energy markets. Green certification is a highly marketable product attribute. Further, as domestic and international regulatory pressures see the introduction of carbon-intensive prohibitions, such as the EU carbon border tax, green certification has the potential to become an imperative compliance and risk-avoidance measure. 2021 saw the announcement of the Smart Energy Council's Zero Carbon Certification and a consultation draft of the Commonwealth government's H2 Guarantee of Origin Scheme which has been in consideration since early August. There are competing interests inherent in such schemes, and we expect the discourse to continue into 2022 where we hopefully see the substantial and meaningful implementation of one such scheme.

THE NEXT FRONTIER – CLEAN ENERGY AND DECARBONISATION

22/09/2021

"The pace of change is swift and unrelenting, racing to make up for the decades we ignored the need to address the greatest challenge humankind may ever face." - Michael Blakiston

Paradigm shifts come along maybe once in a generation, but this one has been brewing for much longer. Some call it the Anthropocene – an unofficial new epoch of our own making, the most recent period in our geological history when human activity started to have a significant impact on the climate and ecosystems. Our climate crisis, and the urgent need to reverse the impact of climate change, is forcing every system in every industry across the globe to transition. The pace of change is swift and unrelenting, racing to make up for the decades we ignored the need to address the greatest challenge humankind may ever face.

At the forefront of the need to abate emissions is the energy sector. Energy is fundamental to humanity, but the way we currently produce and consume it is fundamental to our future. The energy sector is the source of approximately three-quarters of greenhouse gas emissions today and holds the key to averting the worst effects of climate change.

Societal, political and investor pressures are accelerating the shift away from fossil fuel-based energy and toward a zero-carbon economy, pushing us towards the next frontier: a decarbonised future. The challenge is reaching that future before it is too late.

The decisions that need to be made to reach that goal are going to change every aspect of the economy. We see investors asking whether their portfolio companies are taking the steps to get ahead of climate change forces. We see large mining companies spinning out or otherwise disposing of their fossil fuel assets. We see shareholders less willing to accept risks associated with fossil fuel such that traditional energy assets are now being described in some quarters as 'stranded' or 'legacy assets'. We see the reallocation of capital to the deployment of new technologies, and alternative ways to power our energy systems, transport, agriculture, and the mining industries. We see nations considering radical changes to energy procurement and mobility. Increasingly, we see a sustained interest from commerce and State Government sectors in a green future, yet we are still waiting for our Federal Government to provide a coherent energy policy which both industry and the public can support.

Novel technologies for clean energy production are not new. The Paris Agreement in 2016, and the imminent 26th United Nations Climate Change Conference of the Parties in Glasgow in November 2021 have pushed them to the front line as governments take up the challenge to meet ambitious national emissions goals. As a result, the way the world uses and consumes energy is visibly changing. Buildings are being retrofitted with zero carbon ready technology, large-scale wind and solar farms are generating electricity for retail consumers and industrial users, and electric and fuel-cell vehicles are being rolled out onto purpose-built highways.

Achieving net zero emissions goals requires large-scale deployment of clean energy technology, which is reliant on securing a significant volume of critical minerals and rare earths. The mining industry is not only fundamental to the production of critical minerals and metals required to produce clean energy but is itself an industry which must decarbonise to reduce collective emissions. Many large Australian mining companies including Fortescue Metals Group and IGO are viewing Environmental, Social and Governance (**ESG**) as a strategic opportunity and a chance to collaborate with other stakeholders who similarly recognise the need to be cost competitive and innovative to drive down the costs of zero emissions products like green steel.

Due to our large mining industry in Western Australia we are enthusiastic and early adopters of green energy. Western Australia is well positioned to be a renewable superpower: the land is available, our natural endowment of sun, wind and ample salt water, and entrepreneurial spirit means our mining and energy companies have a unique opportunity for testing technologies and capitalising on the production of clean energy.

Perhaps the greatest economic opportunity is the use of hydrogen to stimulate decarbonisation activity. Green hydrogen has potential as a carbon-free energy source. We understand that the Western Australian Government is actively considering the land tenure and gas pipeline reforms that will be needed to support the development of large-scale renewable energy and green hydrogen projects. These reforms are also likely to reveal broader regulatory challenges for companies seeking to decarbonise. Prompt and innovative action will be needed to meet these challenges and ensure Australia's increased competitiveness as an early adopter of green hydrogen. This will propel Australia to the forefront of the burgeoning hydrogen market.

By 2022, major European brands such as Mercedes-Benz and Volvo intend to integrate sustainable environmental processes into their traditional supply chain. For example, Mercedes-Benz has announced all vehicles will be manufactured in plants that are powered by renewable energy.

The Carbon Border Adjustment Mechanism (CBAM) announced by the European Commission in July and new European laws will undoubtedly be a game changer in the global value and supply chain. Any country exporting to the EU will be obliged to evaluate the effects of CBAM and adopt climate related reporting practices and green credentials to remain competitive. It is just a matter of time before consumers commit to carbon neutrality across their entire supply chains.

At a macro level, the price of energy has come down since the coal revolution sparked the industrial revolution, reducing the cost of electricity. The move to a clean energy economy threatens that low-cost model however the continued reduction in the cost of renewable energy, particularly wind and solar power and increasing Government incentives to transition, are expected to contribute significantly to the increased competitiveness of hydrogen production and distribution. This will encourage the scale-up of these technologies and infrastructure to levels that will make it competitive with the fossil-fuel industry.

The breadth of the new frontier means that all industries, including the legal industry, are working fast to understand the range of issues and become familiar with the unique legal needs of clean energy projects and the risk of not having a clearly articulated and fact-based transition strategy. Gilbert + Tobin has been running a national masterclass series, inviting the best in the field to present to the firm's lawyers to deepen their knowledge of the opportunities and challenges involved in achieving emissions abatement and a clean energy future.

From scientists to executives, we have heard a spectrum of views and experiences, but so many of the themes remain constant:

+ The most significant opportunity now is that we have technology for clean energy generation and energy storage. Absorbing the risk and cost of scaling-up these technologies is key to balancing rhetoric and reality. In the case of hydrogen, the market may need to be incentivised, subsidised, and localised to be economic in the short-term.

+ The change is, and will continue to be, driven by industry. The private sector is setting, and is determined to meet, aggressive decarbonisation targets in order to obtain finance, retain and remain relevant to shareholders and operate with a social conscience and licence. The penalties for failing to set and meet these targets are felt in the margins and the loss of a social licence to operate. The Australian States are running their own race in the absence of Federal Government policy, but the thrust of change will still come from industry.
+ Australian companies can't ship hydrogen tomorrow, although some significant work is being done in developing capacity to do so in the medium term. Many of the technologies required to decarbonise have not been developed or perfected at scale and there needs to be a balance of responding to the short-term needs of 'keeping the lights on' and the long-term need to decarbonise. There is still a role for liquified natural gas in the clean energy 'transition' as a stabilising fuel while building a clean energy future. Undoubtedly, oil and gas companies have a pivotal role to play in our medium term energy mix.
+ Hydrogen is just one piece of the decarbonisation puzzle. The scale-up of wind and solar in the last five years has enabled companies to think broader than hydrogen, which has allowed emissions cuts to come at the same time as economic growth. There is increasingly greater potential for offshore wind and other renewable technologies to meet the demands of the industry and the race to achieve net zero by 2050 is driving innovation. However, with innovation comes a grey box of regulatory and legal issues which must be understood and navigated.
+ The heat is on company directors. Various watershed moments in 2021, from the Dutch Shell decision to Exxon's appointment of 'activist' directors and the Australian 'Sharma' case on the climate change duty-of-care, are transforming the way boards approach decision-making. Investor sentiment is moving fast and an authentic approach to sustainable objectives beyond merely compliance measures and greenwashing, is needed from boards of companies in every industry.

The Western Australian Government has been showing real leadership in supporting industry and the economy as it faces new challenges – including adding the ministerial portfolio of Hydrogen Industry Minister held by the Honourable Alannah MacTiernan MLC.

The energy transition is inevitable, and businesses need to be making decisions to ensure a better future. This is no longer just a matter of social conscience. It is a matter of social licence to operate, legal responsibility and remaining relevant. The uptick in the level of climate activism and recourse to litigation has put boards on notice of the need to account fully for climate risk and to consider the emerging social duty to reduce emissions. The translation of that duty to legal duties for boards and government ministers is on the radar of Australian courts and governments.

Despite the generations it has taken to create this paradigm shift, the challenges exist now and will need to be met with action to provide a sustainable outlook for future generations. Failure to do so is catastrophic – the Anthropocene cannot be humanity's fleeting legacy in geological history. What is now the paradigm shift must very quickly become the convention.

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KNOWLEDGE ARTICLES YOU MAY BE INTERESTED IN:

Decarbonisation: is zero-emission energy a zero-sum game for governments?

Carbon Capture – a bottomless pit or an important initiative in getting to zero net emissions?

Climate Change Risk – Why is it heating up the Boardroom?

ENERGY AT THE CENTRE OF ESG AND CRITICAL ASSET SCRUTINY

07/10/2021

This article was first published in the Australia Financial Review on the 6th of October 2021 - *Energy at the centre of ESG and critical asset scrutiny*.

It goes without saying that ESG and decarbonisation imperatives are driving significant M&A activity in Australia. Recent deals like BHP Petroleum and Woodside, Infigen, Tilt and Santos and Oil Search are amongst many that can be seen to have been motivated by these forces. There's no reason to think these pressures will reduce any time soon.

Financial sponsors, with upstream investors with an intense ESG focus, are sitting on enormous pools of capital and looking to invest in secure assets with multi-decade horizons and infrastructure-like qualities. Institutional equity investors are under pressure to rebalance portfolios away from carbon-intensive stocks, and everyone is looking to pick winners from the energy transition.

Energy will always be a sector of key ESG focus, and in other sectors - businesses' own consumption of energy will be their own biggest ESG concern for the foreseeable future. This will pose complex questions for boards and asset managers in hard to abate industries where the 2021 IPCC report shows material gains are needed in decarbonisation. Equally, the opportunity to assist those sectors is a key reason why we're seeing deal activity around battery minerals, green-hydrogen and other technological solutions which, when viable on a mass scale, will be poised to reap huge benefits.

APRA and ASIC really led the market on disclosure of climate-change risks while legislation lagged. This has resulted in a growing majority of ASX 100 companies following the TCFD recommendations. But the trendline is still pointing up - the UK and NZ have recently announced new climate disclosure regimes and the Biden administration is clearly going to be active. Capital is global, and ESG focused investors (an increasing and vocal majority) will expect best practice standards to be adopted here too.

Even though there's much to come on disclosure, it feels like there have been impressive developments in the ASX100 beyond reporting on climate risk to actively grappling with solutions. Transitioning to net-zero while technological solutions are still being nutted out is incredibly difficult for heavy industry and is demanding plenty of courage. It's an amazing time when an Australian iron ore champion is streaming 10% of net profits to green energy ventures and our largest listed steel company has appointed a CEO for Climate Change.

Many prominent ESG or corporate purpose initiatives recognise that stakeholder type concerns are most important in firms with systemic social importance. This is where the overlap between highly-sensitive ESG and national interests concerns on energy investment starts to reveal itself. Over the last 5 years the Federal Government has been engaging in a continuous program of intensifying the regulation of critical infrastructure assets and the scrutiny of deals activities in those sectors.

The *Security of Critical Infrastructure Act 2018* created a framework for managing national security risks through creation of a critical infrastructure asset register and empowering Government to exercise control over those assets in certain circumstances. Legislation currently in front of Parliament looks to substantially expand the scope of that Act, by focusing on cyber security threats to critical infrastructure. The bill widens the categories of critical infrastructure assets, including the energy sector generally, imposing enhanced cyber and reporting obligations. The obligations go well beyond those contained in equivalent laws globally, not least an ability for the Australian Signals Directorate to step in and take control of critical asset IT systems that have been hit by a cyber-attack.

Whilst similar laws exist in other leading economies, the regime in Australia is notable for its scope. In the case of energy, it is essentially a recognition of the integral role that technology now plays in delivering power and that the IT systems and data sitting behind the functioning of the hard infrastructure is often as critical as the infrastructure itself. In some senses, just like ESG and stakeholder concerns, what we're seeing with the critical asset reforms is a statement by the government that some sectors are too important to Australians to be left to traditional free market economics.

This all puts energy transactions right in the centre of complex overlapping regulatory, political and investment themes around ESG, decarbonisation and increasingly national interest-centric regulation. The deals aren't going to slow down, so these acquisition and divestment strategies are going to have to find their way through the middle of these megatrends.

Antarctica's intention to replace fossil fuel-based energy with clean renewable energy.

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KNOWLEDGE ARTICLES YOU MAY BE INTERESTED IN:

The Next Frontier – Clean Energy and Decarbonisation

Decarbonisation: is zero-emission energy a zero-sum game for governments?

Green hydrogen in Australia – our progresses towards a new industry

THE DECADE TO DELIVER – A ROADMAP TO THE ENERGY TRANSITION AND CLIMATE CHANGE RESILIENCE

24/11/2021

The 2021 IPCC Report found that the Earth is likely to warm by 1.5C by 2030. However, most net zero deadlines are not until 2050—this discrepancy means that urgent action on climate change, clean energy and decarbonisation is needed now. This requires a huge 'transition' at scale and speed—but it will go further than this.

Given our climate trajectory, businesses also need to develop climate resilience and the ability to manage the physical risks of an inevitably warmer planet.

This is the decade to deliver. Our climate future will be determined by our decarbonisation decisions and actions at this precise juncture. Time is not on our side and this is a call to action. How quickly can we adapt to the decarbonisation transition and how resilient to climate change can we become?

A TRANSITION ROADMAP

More than 130 nations as well as businesses operating in every sector, in every industry, across the world have now set or are considering a net zero commitment. Australia just committed to net zero by 2050 after much political wrangling. However, our climate crisis also demands that the commitments go beyond rhetoric and are matched by immediate decisions and actions.

Nations, businesses and communities all have a role to play in the transition:

+ Nations: it is only Government that can provide an overall framework of policies, regulatory reform, global partnerships and investment and innovation incentives to position Australia to meet its commitments.

To not be leap-frogged by other nations in the clean energy world, Australia will also need to emulate the leadership of the United States and the European Union who are keeping 1.5C within reach through short and medium term reduction objectives and serious clean energy policy and regulatory reform.

+ Business: bold decarbonisation decisions and actions by the clean energy pioneers have revolutionised global energy supply chains and are spawning development of the clean energy infrastructure of the future, such as large scale onshore and offshore renewable energy and hydrogen production facilities.

But the shift to sustainability must be made by every business, along its entire supply and value chain. This will differentiate a business that is part of the solution to our climate crisis from those that will become diminishing suppliers to the global marketplace.

+ Community: the unrelenting pace and nature of change in 2021 evidences that the public voice has been heard. Community action and civil society attitudes will shape political will to influence a coherent, effective and just transition.

By way of example, just like Australia's LNG industry, building a green hydrogen industry in Australia will take decades. However, for green hydrogen and ammonia to be delivered at scale to the global market in the second half of this decade, the investment is required today. The challenge for our nation is to drive cost competitiveness and attract capital and innovation for green hydrogen to be produced in Australia for under $2/kg before others in the global race to net zero.

Not only will today's decarbonisation decisions and actions determine if Australia emerges from the transition as a green energy superpower, they will also determine to what extent we will all be left dealing with the devastating consequences of climate damaged business models and economies.

CLIMATE CHANGE RESILIENCE

Currently, Earth is headed towards a climate in which extreme weather events will become commonplace. The Paris Agreement aims for less than 2C by 2050 but the UN's Emissions Gap Report has current pledges seeing the world warm by 2.7C this century. Even if we meet less than 2C, businesses will still need to be resilient to the physical effects of climate change, which will still be severe.

In order to withstand climate change impacts, businesses will need to:

+ Infrastructure: ensure infrastructure decisions factor in future climatic changes. In Canada, special wind turbines are designed to withstand the freezing temperatures of the Arctic; in Australia, the issue will be more frequent heatwaves, cyclones and rising sea levels.
+ Workforce: ensure the role of human capital remains viable and productive in harsher climates. Indeed, a major mining company in the Pilbara was recently fined for exposing workers to working conditions over two days where temperatures reached over 37 degrees, resulting in the death of one worker.
+ Diversity of energy sources: build energy systems that can accommodate a mix of clean energy derived from renewables and hydrogen. In a deeply electrified economy, hydrogen promises to provide vital 'deep' storage back-up during renewable energy droughts or if weather events damage energy systems. In this way, hydrogen's role may go beyond decarbonising grids and the hardest to abate sectors.
+ Community engagement: ensure they are meeting or helping to shape community expectations, as they could otherwise lose their social licence to operate, which could be value destructive.

If we do not adapt to this challenge, we will be left behind, facing lost growth opportunities and productivity, and paying for climate-damaged businesses. The clean energy transition holds enormous economic opportunity and promise: we all stand to gain significantly.

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CHAIN REACTIONS – GLOBAL DEMAND FOR SUPPLY CHAIN SUSTAINABILITY

11/10/2021

CARBON NEUTRAL - THE NEW NORMAL

According to the Energy and Climate Intelligence Unit, 137 countries have committed to carbon neutral targets, with most aiming for 2050. While the Australian Federal Government still refuses to make 'blank cheque commitments', West Australian companies like Fortescue Metals Group Ltd (**FMG**), the world's fourth largest iron ore producer, are leading the way, recently committing to decarbonising operations by 2030.

Globally:

+ Toyota's carbon neutral target across its production processes is 2035;
+ Apple has committed to becoming 100% neutral across its entire business, manufacturing supply chain and product life cycle by 2030; and
+ Mercedes-Benz is aiming to ensure all new passenger cars are carbon neutral across its entire supply chain by 2039.

Achieving carbon neutrality is necessary for businesses to continue to have a social licence to operate and to attract and retain consumers. Global consumers will demand transparency and accountability across the entire supply chain. A lack of transparency will result in the loss of customers. Ensuring the sustainability and transparency of downstream supply chains and upstream value chains is key to successfully achieving carbon neutrality.

WESTERN AUSTRALIA'S UNIQUE OPPORTUNITY

Australia is well positioned to become a renewable energy 'superpower'. WA Chief Scientist Peter Klinken notes Western Australia is best placed to lead the way, thanks to our endless natural resources and access to salt water, as well as a complete suite of battery metals. Our land mass, resources, existing infrastructure and mining experience mean we are perfectly positioned to capitalise on the next industrial revolution.

Global industries have already earmarked Australia as a frontrunner in sustainable supply chains. Tesla's Chair Robyn Denholm declared that Tesla plans to spend more than $1 billion on Australia's minerals to cater for the growing demand for electric vehicles. She noted that each electric vehicle contains an estimated $5,000 worth of minerals and 'Australia is the only country in the world with resources in all three of the critical battery metals, as well as other minerals required for the clean energy transition'.

West Australian businesses are leading the way. BHP has signed a deal with Tesla to supply nickel from its Nickel West operations and in doing so, committed to lowering its carbon emissions in the battery supply chain. IGO Limited has transformed itself from a traditional metals miner into a leader in developing 'products critical to clean energy' after acquiring a stake in Greenbushes lithium mine and associated downstream refinery.

GLOBAL DEVELOPMENTS INCREASE COSTS OF PASSING THE BUCK

Europe is currently leading global efforts to combat the effects of climate change. The European Union (EU) already imposes strict obligations on companies to assess the direct and indirect environmental impact of its supply chain. In addition, it has proposed further changes which would require all 27 EU member states to introduce legislation imposing human rights, environmental and governance due diligence standards across the supply chain for all companies in the EU market and sanctions for non-compliance. If implemented, all EU companies will be accountable for the environmental impact of their supply chains, including materials sourced from suppliers outside of the EU.

These obligations go even further than the Carbon Border Adjustment Mechanism (**CBAM**), which imposes a levy on EU imports of specific non-EU products (such as electricity, cement, aluminium, fertiliser, iron and steel products) and will force export countries to adopt climate reporting practices in order to market themselves to EU importers. Similar mechanisms to the CBAM are also being proposed in Canada, Japan and the US.

These changes will reverberate beyond the EU as the EU looks to create a level playing field between domestic EU producers and imports into the EU. To remain competitive and attract European importers, Western Australian producers need to inform themselves and adapt to the stringent EU standards.

In an attempt to diversify supply chains and reduce reliance on China, the United States intends to rely on ally countries to supply the bulk of the metals required for electric vehicle production. We expect other countries around the world will also be seeking to diversify their supply chains and reduce reliance on a single source.

ANTICIPATION IS A PREREQUISITE FOR FUTURE PARTICIPATION

Geographically and geologically, Western Australia is best placed to own this space if industry acts now. Global manufacturers and producers will be evaluating all critical components of their supply chain, both from a carbon neutral and geopolitical perspective.

It is key that Western Australian producers and innovators work to ensure that in establishing their carbon neutral roadmaps and infrastructures, they are working towards the current global best practices and standards to continue to be competitive and avoid losing potential offtake opportunities and customers.

Adherence to such standards will not merely be a popular goal but a prerequisite to participating in the global market.

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GILBERT +TOBIN

2 CORPORATE RISKS

GILBERT +TOBIN

TNFD - IS THERE A NEW NATURE-RELATED FINANCIAL RISK ON THE HORIZON

22/04/2021

The 2020 year was a challenging one for Australia, characterised by the dual crises of COVID-19 and severe bushfires. Although 2021 commenced on a brighter note, it has quickly been overshadowed by "once in 50 year" floods in New South Wales, reminding us once again that Australia remains vulnerable to a range of natural disasters and the social and economic upheaval that ensues in their wake.

These developments have required directors to work harder than ever to understand the risks faced by the companies they oversee and recalibrate their risk-management frameworks accordingly, taking into account the unique circumstances of their companies and the fact that the economic burden of various events can fall on companies unevenly. Directors of companies that have been worst affected by these developments have been required to focus on managing more immediate impacts such as ensuring there is sufficient liquidity to service debt and meet other contractual obligations. For those companies less directly affected, directors may be more focussed on considering the longer-term implications of a global economic recession and ongoing climate change issues.

Regardless of their specific circumstances, directors must remain mindful of their fundamental duties to act with due care, skill and diligence and in the best interests of the company. In discharging these duties, a company's climate-related financial risks is an area which directors are increasingly monitoring and requiring appropriate disclosure to be made. Following the launch of a new taskforce on nature-related financial disclosure last year and the publication of a handbook by the University of Cambridge Institute for Sustainability Leadership (**CISL**) on nature-related financial risks (**CISL Handbook**), director's duties may well extend to considering and disclosing the impact of nature-related financial risks on the company.

This article provides directors with an overview of the emerging concept of nature-related financial risks, together with best practice guidelines for disclosing the more established and now widely acknowledged climate-related financial risks.

CLIMATE-RELATED FINANCIAL RISK

Consequences of a failure to disclose climate-related financial risks

In Australia, companies that fail to report on climate-related risks may contravene Australian Corporations law or the relevant listing rules (as discussed below). However at present, there is no express legislative requirement to report and disclose climate-related risks. This is in contrast to countries such as the United Kingdom where, under the *Companies Act (2006)* (UK), directors must consider the impact of their company's operation on the environment when discharging their duty to act in good faith and in the best interests of the company.

Under the *Corporations Act 2001* (Cth) (**Corporations Act**), directors do have a duty to disclose financial risk. Under section 295 of the Corporations Act a director must sign a declaration stating that the director believes the financial statements provide a true and fair view and are in accordance with accounting standards. Additionally, section 299A requires the directors to prepare an operating and financial review (**OFR**) which must include information that shareholders would reasonably require to make an informed assessment of the company's prospects in future financial years.

Directors are also subject to broader duties under sections 181-183 of the Corporations Act, namely to discharge their duties in good faith and with due care and diligence and to act in the best interests of the company. As discussed in: *Climate Change Risk – Why is it heating up the Boardroom?* there is an emerging body of opinion that a failure to properly consider and disclose foreseeable climate-related risks to the company's business may constitute a breach of a director's duty of care, skill and diligence. In 2019, Noel Hutley SC and Sebastian Hartford-David provided a 'Supplementary Memorandum of Opinion' to their earlier 2016 landmark opinion on 'Climate Change and Directors Duties' which suggests that the exposure of individual directors to climate change litigation is exponentially increasing. In his opinion pieces, Noel Hutley SC has warned that it is "only a matter of time" before climate change litigation is brought against a director.

There have also been some high-profile claims made in recent years along these lines. In *Guy Abrahams v Commonwealth Bank of Australia VID879/2017*, shareholders filed proceedings alleging the Commonwealth Bank of Australia (**CBA**) had breached its obligations under the Corporations Act to adequately disclose climate-related risk in its annual report. Similarly, in 2017, an Australian pension fund member filed suit against the Retail Employees Superannuation Trust (**REST**) alleging REST had breached the Corporations Act by not providing the information requested by the member regarding the implications of climate-related risks. Both cases were withdrawn after CBA and REST agreed to report and disclose the impacts of climate-related financial risks on their companies, in line with the Financial Stability Board's Task Force on Climate-related Financial Disclosures recommendations (which are discussed below).

In addition, regulatory bodies, including the Australian Securities Investment Commission (**ASIC**) and the Australian Securities Exchange (**ASX**), now recognise climate-related risk as a subset of financial risk. Because of the view adopted by regulators, directors have an increasing obligation to report on and address the risks that climate change presents for their companies and the impact of their company's business on the environment. By way of example of this increased regulatory scrutiny, in 2019 ASIC amended its Regulatory Guide 247, Effective disclosure in an operating and financial review (RG 247), and Regulatory Guide 228 Prospectuses: Effective disclosure for retail investors (RG 228). The update to RG 247 explicitly recognises that climate change can have material impacts on a company's future financial position, performance or prospects. Similarly, RG 228 provides guidance on what financial information needs to be included in a prospectus so investors can make an informed assessment of the offer of securities under section 710 of the Corporations Act. The updated RG 228 recommends that directors consider whether they need to include in a prospectus a discussion of the different types of climate-related risks where this could represent a threat to the company's business.

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD) GUIDANCE

What is the TCFD?

The TCFD was established in 2015 by the Financial Stability Board (**FSB**) to develop voluntary climate-related financial risk disclosure principles which can be adopted by companies to inform stakeholders about the risks climate change poses to their company. The TCFD considers "the physical, liability and transition risks associated with climate change and what constitutes effective financial disclosures across industries."

TCFD Recommendations

The TCFD recommendations, which have been endorsed by ASIC and ASX, set out the following matters that directors should be aware of when assessing, managing and disclosing climate-related risks:

Governance recommendations – entities should disclose their approach to governance of climate-related risk and opportunities by describing:

- the processes and frequency by which the board and/or board committees are informed about climate-related issues;
- whether the board and/or board committees consider climate-related issues when reviewing and guiding business activities including major capital expenditure, annual budgets, acquisitions and divestitures;
- how the board monitors and oversees progress against goals and targets for addressing climate-related issues;
- whether the organisation has assigned climate-related responsibilities to management-level positions and, if so, whether such management positions report to the board or a committee of the board and whether those responsibilities include assessing and/or managing climate-related issues; and
- how management monitors climate-related issues.

Strategy recommendations – entities should disclose the actual and potential impacts of climate-related risks on an entity's business, strategy and financial planning by describing:

- the climate-related risks and opportunities the organisation has identified over the short, medium and long term;
- the impact of these risks and opportunities on the organisation's businesses, strategy and financial planning; and
- the resilience of the organisation's strategy.

In recognition that the timing and magnitude of climate-related risks are highly uncertain and complex, the TCFD recommends entities conduct and report on stress testing and scenario analysis to help inform their strategic and financial planning as well as disclose how resilient their strategies are under a range of different climate-related scenarios. This includes taking a proactive approach to assess the potential impacts associated with a variety of future climate change outcomes – including the use of a 2°C or lower scenario (in line with the Paris Agreement), in addition to others which are most relevant to the particular organisation and provide a reasonable diversity of potential future climate states.

Stress testing and scenario analysis is a new frontier for many companies. Fortunately, there are a growing number of climate risk reporting services available to help directors design a framework for measuring the risks of climate change for their business, including testing a company's resilience to climate change in different scenarios and over different time horizons.

Risk management recommendations – entities should disclose their risk management process for identifying and assessing and managing climate-related risks by outlining:

- whether they consider existing and emerging regulatory requirements specific to climate change;
- their processes for mitigating climate-related risks;
- their processes for prioritising climate-related risks and how materiality determinations are made; and
- how their processes for identifying, assessing, and managing climate-related risks are integrated into their overall risk management framework.

Metrics and targets recommendations - entities should disclose the metrics and targets they use to assess and manage climate-related risks by providing:

- metrics on relevant climate-related risks associated with water, energy, land use, and waste management;
- their internal carbon prices as well as climate-related opportunity metrics such as revenue from products and services designed for a lower-carbon economy;
- their greenhouse gas (**GHG**) emissions; and
- their climate-related targets such as lowering GHG emissions, water usage and energy usage.

When discussing these targets, organisations should also include the timeframe for these targets and the key performance indicators used to measure and assess progress.

NATURE-RELATED FINANCIAL RISK

What is nature-related financial risk?

A nature-related financial risk is the risk of loss of value, profits or revenue on a company's investment or asset that stems from a decline in natural capital, such as biodiversity loss or land degradation.

For example, land clearing and deforestation which leads to increased rates of biodiversity loss poses a significant risk for a wide range of organisations, including those in the tourism, agriculture and pharmaceutical industries.

In contrast, a climate-related financial risk describes the financial risk deriving from long-term global temperature increases, such as specific extreme weather events influenced by climate change

While nature-related financial risks are distinct from climate-related financial risks in a reporting sense, the two are commonly inter-related in complex feedback loops. To continue with the above example, while biodiversity loss is typically considered to be a nature-related financial risk, climate change is one of the main drivers of biodiversity loss in Australia. Conversely, many causes of biodiversity loss, such as deforestation, are also associated with a reduction in the amount of carbon dioxide stored in the environment, resulting in more carbon dioxide in the atmosphere to exacerbate climate change.

What is the *taskforce on nature-related financial disclosure (TNFD)*?

The TNFD was publicly announced in September 2020 and was tasked with establishing a framework to guide nature-related financial disclosure by companies by 2022. Thirty-four financial institutions from five continents have joined forces with the governments of UK, France, Peru and Switzerland, as well as the World Bank and the OECD, to create an Informal Working Group (**IWG**) to create this framework.

The TNFD aims to build awareness and capacity to reduce the negative impacts of the financial sector on nature and biodiversity. It aims to increase understanding of the dependencies and impacts that different business sectors of the economy have on nature's ecosystem services. It also aims to increase recognition within the financial sector, of new nature-positive investment and lending opportunities, as they emerge.

The IWG will be supported by a Technical Expert Group (**TEG**). The TEG will be made up of individuals with representative expertise and an overview of relevant sources for biodiversity data and tools for assessing nature-related investment risk.

What is the CISL Handbook?

Published in March 2021, the CISL Handbook explains the key concepts relating to nature-related financial risk and provides a framework for risk identification. The framework can be broken into four components:

1. the type of nature-related financial risks – physical risk, transition risk and liability risk;
2. the source of the above risks – such as a decline in air quality;
3. the impact of that risk on the company – such as a disruption of activities; and
4. the resultant financial risk – credit risk, market risk, liquidity risk and/or business risk.

The CISL Handbook was created in collaboration with financial institutions with the aim that individuals from financial institutions can begin to identify the nature-related risks faced by their portfolios, assets, operations and revenue.

Consequences of a failure to disclose nature-related financial risks

As for climate-related financial risks, there is no express legislative requirement for directors of Australian companies to report and disclose nature-related financial risks. Also, in contrast to the regulatory guidance on climate-related risks, neither ASX nor ASIC has made any public statements specifically recognising nature-related financial risk as a subset of financial risk.

However, ASX's 4th edition of the Corporate Governance Principles and Recommendations (**ASX Recommendations**) states that a listed entity should disclose whether it has any material exposure to environmental risks and how it manages those risks. The updated RG 247 also provides that an OFR should include a discussion of environmental risks where they could affect a company's achievement of its financial performance. While primarily focused on climate-related financial risks, it is arguable that the requirement in RG 247 and the ASX Recommendations to discuss environmental risks is broad enough to encompass nature-related financial risks.

DIRECTORS' DUTIES, CLIMATE-RELATED FINANCIAL RISK AND NOW NATURE-RELATED FINANCIAL RISK: THE WRITING IS ON THE WALL

The need for directors to approach climate-related financial risks with the same diligence as other financial risks is now clear and cannot be ignored. Doing so not only ensures the companies to which they are appointed are well prepared to adapt to the risks posed by climate change, but will also reduce their own exposure as directors to potential legal action. Following the establishment of the TNFD and publication of the CISL Handbook, we are likely to see increasing debate over whether a director's duties under sections 181-183 of the Corporations Act should extend to considering and disclosing the impact of nature-related financial risks on a company, as a subset of the financial risks they are already required to disclose.

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DIRECTORS DUTIES TO DISCLOSE CLIMATE-RELATED FINANCIAL RISK CONTINUES TO BUILD MOMENTUM

18/05/2021

Gilbert + Tobin recently published an article providing directors with an overview of the emerging concept of directors duties to include disclosing nature-related financial risks, together with best practice guidelines for disclosing climate-related financial risks (which are now widely acknowledged as risks appropriate for disclosure).

The momentum on this issue continues to grow with the recent publication of a new supplementary opinion on directors' duties to consider, disclose and respond to climate-related risks by Noel Hutley SC and Sebastian Hartford (2021 Opinion). The 2021 Opinion was published by the Centre for Policy Development (CPD) along with a range of new materials relating to directors' duties and climate-related financial risks that emerged from a roundtable convened by the CPD in December 2020 (2020 Roundtable).

This article summarises the key takeaways from the 2020 Roundtable and 2021 Opinion.

THE CPD'S 2020 ROUNDTABLE

The 2020 Roundtable examined challenges for directors and trustees seeking to meet their climate-related obligations by focusing on three hypothetical scenarios relating to (i) 'greenwashing' and selective corporate disclosure of climate-related risks; (ii) effective governance by superannuation funds in respect of climate-related risks; and (iii) competition law implications of industry-level collaborations on climate change.

The key conclusions for each of these scenarios were as follows:

'Greenwashing' on climate-related issues creates an acute legal risk

Greenwashing, the term now used to describe the practice of providing a false impression or misleading information regarding how a company's products or initiatives are more environmentally friendly than is in fact the case, can constitute misleading or deceptive conduct. Directors need to take care to ensure that their climate-related targets and risk analyses are underpinned by appropriate governance.

Superannuation funds have a major role to play in supporting the transition to a greener economy and should prepare for greater scrutiny of their climate-related risk management

Recent developments have highlighted that climate-related risks must now be a core focus of governance and risk management, especially as the investment risks and opportunities regarding climate change become increasingly complex.

Industry-level collaborations on climate change must consider the implications of competition law but, if properly managed, these issues should not impede collective action to address climate change

There is growing enthusiasm to collaborate across sectors to develop and roll out low-emissions technology, and to deliver industry-level net zero pathways. But any such coordination between competitors on climate change could potentially constitute cartel conduct. However, if collaborative initiatives are mindful of this possibility and proactively address it, there should be no major obstacles to industry collaboration on climate change.

NEW SUPPLEMENTARY LEGAL OPINION BY NOEL HUTLEY SC AND SEBASTIAN HARTFORD

Following the 2020 Roundtable, Noel Hutley SC and Sebastian Hartford provided a new supplementary legal opinion on directors' duties to consider, disclose and respond to climate-related risks in light of recent developments. The 2021 Opinion builds on their influential 2016 and 2019 opinions. The 2016 Opinion focused on the existence of the duty to disclose climate-related risks, which according to the authors, this duty is now uncontroversial. The 2019 Opinion observed that the liability risk for directors in this area is increasing exponentially as is the standard of care required by directors in discharging their duty on climate-related risks.

Merely considering and disclosing climate-related risks is no longer sufficient

The 2021 Opinion focuses on the impact of recent developments on the standard of care to be exercised by directors in discharging their duty in relation to climate-related risks. It argues that in certain sectors, those duties now extend beyond disclosure to taking reasonable steps to ensure that positive action is being taken to manage such risks. The major developments impacting this standard of care, include APRA's issuance of draft guidance to banks, insurers and superannuation trustees on climate-related financial risk management; the emergence of the Taskforce on Climate-related Financial Disclosure and other industry-based initiatives. In the view of the opinion's authors, these developments mean:

"it is no longer safe to assume that directors adequately discharge their duties simply by considering and disclosing climate-related trends and risks; in relevant sectors, directors of listed companies must also take reasonable steps to see that positive action is being taken: to identify and manage risks, to design and implement strategies, to select and use appropriate standards, to make accurate assessments and disclosures, and to deliver on their company's public commitments and targets"

Net zero emissions commitments and 'Greenwashing'

Because of these recent development and stakeholder pressure, companies are increasingly making net zero emissions commitments. However, where such commitments are made without a reasonable basis, the commitments could potentially be regarded as 'greenwashing' and present litigation risk. In the view of the opinion's authors, it is foreseeable that a company and its directors could be found to have engaged in misleading or deceptive conduct under the *Corporations Act*, and or the *Australian Securities and Investments Commission Act 2001* (Cth) by not having reasonable grounds to support the representations contained within its net zero emissions commitment.

The 2021 Opinion also notes that a company's failure to disclose certain facts relating to climate-related risks may constitute misleading or deceptive conduct through silence.

While net zero emissions commitments do present litigation risk, the opinion's authors are clearly of the view that this does not mean it is safe for directors to avoid making such commitments given the recent developments noted above.

Reducing the likelihood of liability arising from a net zero emissions commitment: practical steps

The 2021 Opinion contains suggested steps that companies and their directors might consider taking to minimise the risk of liability arising from net zero emissions commitments, as follows:

- develop a net zero emissions strategy which is integrated with their company's operational strategy;
- document the drivers of the company's ability to decarbonise and the assumptions underpinning that strategy;
- if appropriate, have the strategy reviewed by external consultants;
- explain which emissions (scope 1, 2 or 3) the strategy

encompasses and the relevant time-frame for achieving the targeted emissions reductions; and

+ promptly disclose if the net zero emissions strategy is amended, not suitably fulfilled or affected by intervening circumstances.

The 2021 Opinion highlights the inevitable changes to directors' duties and is a further wake up call to directors on the need to adopt best practice in climate change risk governance

With the 2021 reporting season just around the corner, directors will need to take heed of the matters raised in the 2021 Opinion when reporting on their climate change strategy.

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GREENWASHING: CLEAN ENERGY'S DIRTY LAUNDRY

17/08/2021

Earlier this year, we published articles covering Noel Hutley SC and Sebastian Davis' 2021 updated opinion on directors' duties and climate risk. Corporate Australia has broadly endorsed the notion that directors have a positive duty to consider climate risks in business decision making, and there have been several supportive developments across the courts, parliament and the regulatory space.

A recent issue is "greenwashing", a term that describes conduct that is misleading as to the environmental characteristics of a company, product or project. It can also include paying lip-service to decarbonisation and net-zero goals (sometimes referred to as 'green *wishing*') in order to capitalise on the goodwill often attached to companies perceived to have positive green credentials.

As the clean energy and decarbonisation transition gathers momentum, we expect increasingly sophisticated regulatory responses to Greenwashing which will expose officers and their companies to risk. This article provides a brief preview of issues we foresee developing in the near future. The G+T clean energy and decarbonisation team will be closely following these issues and will be covering them in more detail in future publications as they develop.

THE FUTURE IS NOW – AND SO IS THE RISK

ASIC has confirmed Hutley and Davis' predictions that greenwashing is a live issue that ASIC are monitoring and that such conduct may breach the Corporations Act and the ASIC Act. ASIC has already issued warnings to several companies regarding potential non-compliance.

Hutley and Davis' opinion noted that net zero commitments and formalised climate-risk reporting frameworks are relevant to the "foreseeability and materiality of climate risks". The Federal Court of Australia recently handed down a landmark decision in recognising that the Commonwealth Minister for Environment has a duty of care to protect young people from climate change when exercising powers of approval relating to coal mining projects.

THERE IS A RIGHT WAY TO MAKE DISCLOSURES

At a recent Market Liaison Meeting, ASIC noted frustration at the lack of uniform reporting and disclosure methods. ASIC explicitly endorsed the Task Force on Climate-Related Financial Disclosures (**TFCD**) framework as its preferred disclosure method. Since then, APRA has released consultation draft CPG 229 on managing climate-related financial risks which explicitly states that it is based on the TFCD framework.

We consider it will be useful for Australian companies to adopt this framework early, as regulators will likely push for its substantial imposition. Companies who are already compliant will be well-positioned for any regulatory overhaul.

PLAYING IT SAFE IS TOO DANGEROUS

2021 has seen a noticeable uptake in net-zero emission commitments. These commitments can expose companies to risk, especially if they are not made upon a reasonable basis. Given the inherent uncertainty of uncharted regulatory landscapes and unproven technologies seeking to provide the decarbonisation solution, it is understandable that some might err on the side of caution and avoid making climate-related statements or commitments. However, abstaining from such comments and taking a safety-first approach may itself transform the transition to clean energy and decarbonisation into a slippery slope of risk exposure.

If the TFCD framework is implemented in Australia, as noted by Hutley and Davis, it may actually require directors to make certain representations about the future, potentially including net-zero commitments or aspirations. If such representations are not made upon a reasonable basis, the company or directors may contravene misleading or deceptive conduct prohibitions.

COMPLEX SCIENTIFIC CONCEPTS HAVE A TENDENCY TO MISLEAD...

A lesser-explored issue concerns consumer protection in the clean energy context. Home batteries, solar panels and zero-emission vehicles are becoming increasingly popular. This uptake in adoption brings with it regulatory issues. For example, companies may attempt to position themselves as the 'cleaner' alternative or make representations about the comparative efficiency of alternative energy sources.

No matter how it is marketed, how or why a given energy source is 'clean', cleaner or more efficient than competing products is a complex scientific concept. Prohibited statements do not need to be intended to mislead, nor is it required that any person is actually misled or deceived. The law only requires that a statement has a tendency to, or is likely to mislead or deceive a person of the intended audience.

BE ALIVE TO THE RISK

Staying informed is critical to compliance and good governance. The clean energy transition is outpacing corporate regulators and legislators, but that does not mean the risks are not as populous, real and present. Many clean energy issues are within the scope of existing regulatory frameworks. Some of these were not designed to deal with clean energy concepts, potentially exposing even honest, genuine conduct to retribution.

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KNOWLEDGE ARTICLES YOU MAY BE INTERESTED IN:

Directors duties to disclose climate-related financial risk continues to build momentum

TNFD - Is there a new nature-related financial risk on the horizon?

"It's not easy being green" – Sustainability Linked Loans and avoiding the "Greenwash"

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DECARBONISATION: IS ZERO-EMISSION ENERGY A ZERO-SUM GAME FOR GOVERNMENTS?

27/08/2021

In 2019, the Coalition of Australian Governments published a national hydrogen strategy (**National Strategy**) to set a path to build Australia's hydrogen industry, accelerate commercialisation, reduce technical uncertainties and build up domestic supply chains and production. The National Strategy also flagged tax reforms in saying that, as hydrogen production and use grows, appropriate taxation, excises, fees or levies could help ensure that the community shares in the economic benefits from a developing hydrogen industry. In this article, two years on from the publication of the National Strategy, we consider what government monetisation of clean energy might look like in the near future and the potential implications for industry.

THE NEED FOR DECARBONISED ENERGY SOLUTIONS

The need for practical clean energy solutions is increasingly pressing as we navigate climate change and the COVID-19 pandemic. Decarbonised energy sources, such as green hydrogen, offer an appealing solution to the myriad of problems associated with the energy transition. Investment enthusiasm is at an all-time high, not least due to growing societal and investor pressure for companies to be socially and environmentally responsible.

However, a transition away from traditional energy sources may mark a transition away from traditional revenue streams for government. For example, in the 2020 financial year alone, WA's government recorded $9.3 billion in resources royalties. In WA, like in most jurisdictions, royalties represent the cost to the explorer of taking and selling the State's natural non-renewable resources. With solar and wind, the resources are renewable and so the theoretical justification for an explorer paying for something which is otherwise free and renewable is missing.

The clean energy and decarbonisation transition may therefore lead to a decrease in revenue from these traditional resources. While the social and environmental benefits of clean energy are an important policy consideration for governments, the flagging of tax reforms in the National Strategy indicates that government has identified a need to monetise clean energy and it is foreseeable that the case for reform will only become stronger as the clean energy revolution becomes an economic reality.

Little has been published by the Federal and State governments on this issue and, in this respect, we suggest industry should be at the forefront of driving change. State monetisation of clean energy is also a pressing concern for industry as practical obstacles arise in its absence, such as the difficulty in completing feasibility studies without a known financial outcome for government. As the leaders in this space, it is important that commercial producers are leading the conversation on monetising the clean energy space so that future policies are practical and viable.

In this two-part article, we consider the potential approaches that may be taken to monetise clean energy in a resources-based economy. To this end, we consider avenues relating to monetisation of the sale, or production of clean resources themselves, and which of these are most likely to be the subject of reform.

BESPOKE WAYS TO MONETISE CLEAN ENERGY AND DECARBONISATION INITIATIVES

'Sandboxing'

As the pace of the clean energy transition inevitably outpaces regulatory reform, agreements between proponents and governments may provide a method for government to enable clean energy projects to proceed through concept or early stage to commercialisation. In certain circumstances, these have been referred to as a regulatory 'sandbox' so that key project objectives can be achieved in a relaxed regulatory environment with appropriate safeguards in place.

Historically, the government has turned to State agreements, contractual agreements between the State and a project proponent that are ratified by parliament, to support emerging resource industries. Previously a common feature in the WA resources industry, their popularity has since declined in favour of the 'laws of the land' applying in their usual way in relevant circumstances. Though new State agreements are unlikely to resurface prominently in WA, government support for a nascent hydrogen industry may be found in bespoke 'sandbox' or other project specific arrangements entered into between government and proponents of the most viable hydrogen projects. Could such arrangements offer innovative benefits to the government apart from any legislated royalty or tax rate?

From an international perspective, concession agreements provide governments with custom monetisation and are utilised in Europe. In essence, these are private agreements between a government and a specific company for the grant of rights, land or property. For instance, land owned by a government is granted, via a concession agreement, to an energy company to build and operate a plant (such as a green hydrogen plant or renewable asset); the relevant concession agreement may provide for payments from the company to the government, as a form of fee or compensation. We also do not anticipate that concession agreements will become a feature of the Australian corporate landscape; however, the existence of concession agreements internationally, and the historical significance of State agreements in WA, indicates that project specific arrangements may form a feature of the clean energy project landscape in WA. The question is therefore whether these arrangements could form the basis of the monetisation of clean energy projects.

In our view, private arrangements between governments and proponents of large scale hydrogen projects in Australia are more likely to provide the transitional support and flexibility to facilitate the clean energy revolution while the industry and relevant legislation takes shape and matures. However, overall it is unlikely that such agreements will provide the mechanism for deriving government revenue, given unresolved questions as to the source of the government's legislative power to monetise renewable projects. Part 2 of this article will consider a possible avenue for government to establish such a power.

CERTIFICATION AND GUARANTEE OF ORIGIN

Another approach to the potential monetisation of clean energy is certification schemes, under which governments may impose fees for certifying a given aspect of clean energy resources or production.

The Department of Industry, Science, Energy and Resources recently released a discussion paper for its hydrogen certification scheme (Greenwashing is the surface level compliance for the sake of environmental marketability. It is an emerging issue in the race to implement green strategy. For example, the consumption of water in some forms of hydrogen production is not necessarily environmentally friendly, and there may be other emissions involved in production.) The Smart Energy Council has also announced a scheme with founding partners including the Victorian, Queensland, Western Australian and ACT governments and Norweigian giant Yara, and the NSW government has announced a pilot renewable gas certification scheme. Industry has also launched private schemes such as service provider GreenPower, and the NSW Hunter Valley project teaming up with Enosi Energy. There is also pressure on the Federal government to formally legislate international hydrogen safety standards.

Certification schemes are beneficial to companies as consumers tend to view them as a value-add that guarantees the product

they are purchasing. While it may not be the green saviour of consolidated revenue, certification may at least provide a new income stream that also encourages wider economic benefit. Although this approach is not exclusive to Western Australia, it is highly relevant given the number of proposed hydrogen projects in the State and the national impact of a certification scheme more generally.

An effective and national green certification scheme that goes beyond hydrogen can help prevent 'greenwashing'1 and ensure a robust national brand based on a sound environmental process. Australia is in a unique position to capitalise on its global reputation for high quality energy and resource production, arguably making this one of the most mutually beneficial monetisation channels. Certification schemes can implement safety standards and ensure net-zero emissions, whilst adding economic and environmental benefits. Such a value proposition may lead to the monetisation of a national certification scheme.

Industry should enter this space early so that any scheme that is implemented is not obstructive to productivity. While schemes alone may not directly provide significant revenue, the indirect economic benefits of a robust domestic and export industry will bring its own revenue.

PROPERTY RIGHTS AND ROYALTIES

Mineral royalties (where the State charges a fee for the exploitation of State minerals by the holder of a mining lease) is a familiar concept in the resources sector. No wonder, as it is an easy concept to grasp: the mineral resource is not renewable, limited in quantity, and remains the property of the State until mined. Clean energy resources such as solar and wind, in theory, have none of these qualities, which complicates the application of existing royalties to emerging decarbonised resources. Below we consider ways in which the State may consider employing existing or new frameworks to monetise clean energy, and the associated difficulties.

Existing mineral royalties are generally charged either as a flat rate based on the amount produced, or with an additional 'ad valorem' adjustment that takes account of a given mineral's value and sale price. There may be difficulties in applying such a regime to renewables where lowering production costs remains one of the most significant barriers to commercialisation of clean energy production.

Petroleum royalties are slightly more diverse. Wellhead royalties are charged based on the gross value of resource extracted, less certain presale production costs. There is also the Petroleum Resource Rent Tax (**PRRT**) which is a profit-based tax. A royalty based on profit may be less onerous for first-moving producers but may also discourage further industry uptake.

Two features are apparent in both mineral and petroleum royalties. Firstly, the type of costs that producers are permitted to deduct for the purposes of calculating a royalty or tax rate are dictated by the government. This provides the basis and a precedent for legislative flexibility to account for the changing and yet to be discovered costs of clean energy production. A combination of a profit-based tax with selective deductions may be a form of royalty suitable for emerging resources.

The second common feature is that, in Western Australia at least, the State's property rights in all minerals are the basis for existing royalty schemes under the *Mining Act 1978* (WA). This poses the most significant difficulty in adapting existing royalties to new resources in which the State has no property rights. The State may look to production inputs that do have existing property rights. For example, the water required for green hydrogen production may be the subject of further or augmented taxes and royalties. However, it is questionable whether such an approach will provide a sufficient economic replacement for declining resources being phased out.

We also caution against the assumption that a lack of property rights in a given 'thing' entirely prevents the State from legislating with respect to that 'thing'. For example, in 2013 the WA Liberal government introduced the *Petroleum and Geothermal Energy Legislation Amendment Act 2013* (WA) which created previously non-existent property rights in the storage and retention of greenhouse gases. This amendment puts industry on alert that, if necessary, the State may take unexpected or unprecedented paths to monetisation, especially where the forms of resource production are also unprecedented. Further, it begs the question as to what limit there is to the government's entitlement to monetise natural resources.

Royalties are a familiar commercial and regulatory concept which might be seen to provide certainty and consistency. We also note the 2015 WA Royalty Review's recommendation that royalties are not fixed ad hoc in State agreements, but more uniformly under legislation. This may not sit well with sandboxing agreements the State might need to rely on in the early stages of the transition. It is difficult to see a path for the imposition of royalties into clean energy that is not fraught with difficulty or danger.

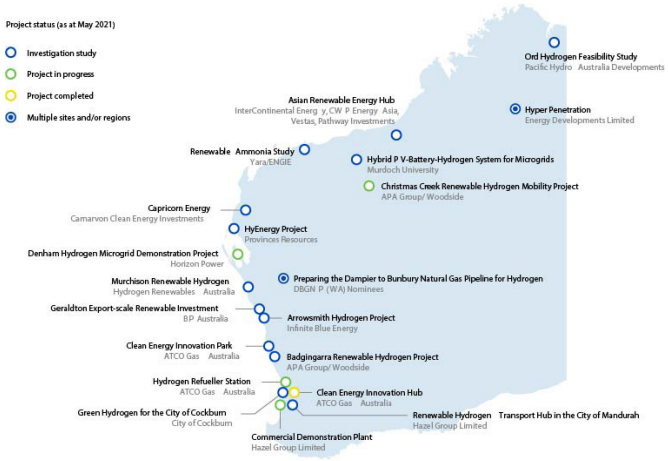
RENT

Another well-accepted form of monetisation is rent. Large fixed infrastructure assets, such as power plants, will typically be constructed on leasehold land (insofar as the operator does not own the land itself) in order to obtain secure and exclusive occupation rights. Such leases will be subject to rent payments.

Given that approximately 92% of Western Australia is Crown land, with only 8% constituting freehold land, we expect most clean energy projects will require a lease of Crown land and therefore be subject to rent or similar fees. The determination of the value of the rent will depend on valuation principles and in certain

circumstances such valuation may be linked to the revenue that may be derived from the economic benefit associated with the use of the leased land.

Yara, one of the world's largest fertiliser producers, holds a lease in the Pilbara on which it aims to produce 'green' fertilizer that would be subject to rent requirements payable to the government. In our experience, rental payments that are determined by reference to the economic benefit associated with the use of the leased land (as opposed to nominal or relatively low value rents) are not widespread or uniform, therefore in the absence of 'market rent' review clauses applying the transition or grandfathering of existing industry as part of any reform of rents for the hydrogen industry may present a challenge.



A snapshot of developing hydrogen projects throughout Western Australia, including numerous potential projects currently being investigated. Yara's project on the coast of northern Western Australia is shown here.

TAXES AND TARIFFS

The introduction of taxes and tariffs on clean energy – though currently the subject of considerable backlash – is inevitable: taxes are fundamental to government revenue generation. With the focus currently on encouraging widespread uptake of clean energy, governments have been careful not to push the issue of taxation of clean energy sources, storage and production too far. Further, as we noted in part 1 of this article, economic benefit is not the only consideration for governments when implementing taxes. The actual or perceived social or environmental value of clean energy may provide sufficient wider benefits to society in lieu of taxation to compensate to some degree for lost revenue. However, with the increasing development of clean energy projects and corresponding production, we expect governments may seek to tap into this source of income.

In Australia, discussions around taxes and tariffs relating to clean energy are starting to emerge, with the Australian government signalling possible future changes to taxation of, for instance, hydrogen, should certain uptake indicators be achieved over the medium term. The Federal government also envisages strong hydrogen export in the medium term, in which case it might consider export tariffs as a means of revenue raising.

Interestingly, some types of clean energy projects, such as wind farm assets, are already taxed at the normal company tax rate in Australia. This contrasts with other countries, such as The Netherlands, where the normal company tax rate is qualified by subsidy grants and special allowances for environmentally friendly and sustainable energy assets.

In the shorter term, during the transition towards a 'greener' future, and as governments temporarily lose revenue from their traditional sources, governments may consider taxing so-called 'negative environmental externalities'. For instance, in the electric vehicle space, governments may choose to tax other types of negative environmental effects beyond carbon emissions. These may include the distance travelled by an electric vehicle, the rate of traffic congestion (essentially the time travelled), as well as wear and tear to roads.

CONCLUSION

In Australia, the focus remains largely on encouraging investment into the clean energy space. The Federal and State governments are taking action to spur on the decarbonisation movement in Australia but, to date, there are few definitive commitments to reduce current rates of carbon activity or introduce decarbonisation targets by changing regulation or legislation. However, the market has seen the stirrings of what could begin a regulatory revolution.

It is clear the clean energy space is especially fast-moving. We expect that when monetisation does eventually occur, the pace of change will be no exception to the rapid pace that the clean energy and decarbonisation transition is already setting. Accordingly, it is important that, when companies are dealing with projects, agreements or land tenure, they factor in the risks of potential changes under which monetisation of the clean energy industry may occur and position themselves to drive conversations and agendas in order to optimise commercial outcomes.

This article is up to date as at 27 August 2021

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"NET ZERO COMMITMENTS": THE LATEST MINEFIELD FOR DIRECTORS

04/10/2021

As the global transition to clean energy sources continues, directors face increasing demands from a variety of stakeholders to establish and promote their company's "green credentials". However, as recent litigation both in Australia and abroad demonstrates, this is not without risk. "Greenwashing" is now firmly in the sights of both regulators and well-funded private litigants.

WHAT IS GREENWASHING?

Greenwashing is the process of conveying a false impression or providing misleading information about how a company's products are more environmentally sound.

ASIC Chair Cathy Armour recently stated that Greenwashing "poses a threat to a fair and efficient financial system" by "distort[ing] relevant information that a current or prospective investor might require in order to make informed investment decisions driven by ESG considerations."

However, one should spare a thought for boards, who often face conflicting pressures when it comes to environmental disclosures. On the one hand, investor relations teams urge boards to signal a company's commitment to environmental causes, which are becoming more central in investment decision making. On the other, legal teams point to the increasing risk that boards will be held legally accountable, in one way or another, for these statements (see our article - Directors duties to disclose climate-related financial risk continues to build momentum).

In an oft-cited opinion commissioned by the Centre for Policy Development, Mr Noel Hutley SC and Mr Sebastian Hartford Davis note that "net zero emissions targets, commitments and strategies have become a critical focal point for assessing board-level climate governance", as community expectations move from simply identifying and assessing climate-related risks, to taking positive steps to manage and mitigate carbon intensity across supply chains. The increasing prevalence of "net zero" commitments greatly amplifies the risk of Greenwashing, creating a new and novel minefield for directors to navigate.

MARKET PRACTICE: HOW THE TOP 50 ASX LISTED COMPANIES ARE RESPONDING TO THEIR NET ZERO CARBON EMISSION COMMITMENTS

To test the way these conflicting forces are playing out in the market, we have reviewed public announcements by the top 50 ASX-listed companies concerning their net zero carbon emission commitments.

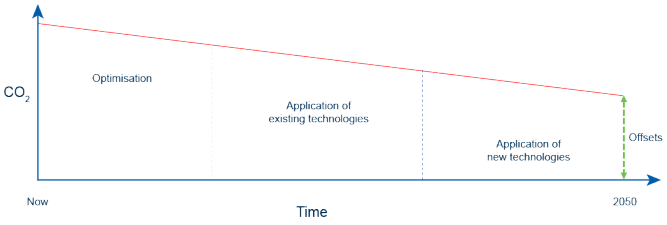
Our research shows that net zero commitments are often vague, prone to misunderstanding, and convey insufficient information to permit stakeholders to make an accurate assessment of the achievability of the company's net zero ambitions; none of which should be surprising, given the complexity of the issues involved and the rapidly evolving investor landscape.

Of the 50 companies surveyed:

+ 34 (68%) have made public commitments to achieve net zero carbon emissions;
+ of these, 2050 is the most common deadline for the achievement of net zero, nominated by 20 (40%) of the 50 companies surveyed (the mean year for all companies making net zero commitments being 2043);
+ in all but seven cases (14%), offsets are required in order to achieve net zero commitments;
+ 11 of the 34 companies making net zero commitments (32%) are reliant on as-yet-unidentified technologies and processes to achieve that commitment – of which eight (73%) are engaged in the extractive industries; and
+ in no cases were Scope 3 emissions included in a company's net zero commitment.

While it is difficult to discern a truly "typical" model for a net zero commitment given the wide disparity in language used, our analysis of the 34 net zero commitments has identified four key components or stages (as depicted in the chart below):

+ First, optimisation of existing processes so as to find a means of reducing emissions. An example may be an organisation switching to a paperless environment, or purchasing electricity derived from renewable resources.
+ Second, altering existing processes using existing technologies to reduce emissions. An example may be the substitution of electric for diesel vehicles in a mining operation.
+ Third, adopting as-yet-unidentified processes or technologies to reduce emissions. An example (the subject of dispute in the Santos case) may be the adopting of carbon capture and storage technologies, which are yet to be proven at scale.
+ Fourth, to the extent that the first three components do not deliver a net zero outcome within the desired timeframe, purchasing offsets.



THE LEGAL RISKS – AND HOW TO MANAGE THEM

As the Hutley opinion notes, commitments presented in this way have the potential to convey a number of different representations. However, for present purposes we focus on the implicit representation (for which Hutley SC cites as authority Campbell v Backoffice Investments Pty Ltd (2009) 238 CLR 304, 321 [33] (per French CJ)), that the company's commitment is based on reasonable grounds. This is a potentially potent source of risk for boards, given the liability regime for misleading and deceptive conduct in the *Corporations Act 2001* (Cth) and the Australian Consumer Law.

Section 1041H of the *Corporations Act 2001* (Cth) prohibits conduct which is misleading or deceptive, or likely to mislead or deceive, and there are similar provisions in the *ASIC Act 2001* (Cth) (s 12DA) and the Australian Consumer Law (s 18).

Importantly, s 769C of the *Corporations Act 2001* (Cth) provides that, if a person makes a representation about a future matter, and the person "does not have reasonable grounds for making the representation", then the representation is "taken to be misleading" (s 12BB of the *ASIC Act 2001* (Cth) and s 4 of the Australian Consumer Law are to a similar effect).

Although these provisions do not shift the ultimate onus of proof, a finding that a representation concerns a future matter places an evidential burden on the person who makes the representation, to adduce evidence that there were reasonable grounds for making it (Australian Competition and Consumer Commission v Woolworths Limited [2019] FCA 1039).

Adopting the stylised net zero commitment framework noted above, it can be seen that there are at least four implicit representations that are embedded in the commitment:

+ That there is the capacity for optimisation of the company's existing operations;

+ That there are existing technologies which can be plausibly applied to those operations to further reduce emissions over time (usually in the short to medium term);
+ That new technologies will emerge (or be proven) that will be able to be applied to existing operations to reduce emissions in a manner which is financially sustainable; and
+ At the end of the "commitment period", there will exist a market for offsets, and that such offsets will be able to be purchased on financially attractive terms.

Hutley SC opines that representations such as these are inherently in the nature of a promise or forecast. While some elements are perhaps better characterised as representations as to the present state of affairs, on an overall level it is very difficult to rebut that view. If so, companies and boards need to ensure they have reasonable grounds before making a net zero commitment.

HOW WOULD COMPANY BOARDS SHOW "REASONABLE GROUNDS"?

Essentially, what is required is the application of appropriate due diligence by boards to statements setting out the company's net zero commitment. Given the novelty of the issue, there is no legislative or judicial guidance as to what this may entail, and in our experience, practices vary greatly. However, the typical approach to due diligence investigations in the capital raising context could provide boards with a roadmap for establishing reasonable grounds for net zero commitments.

Typically, this approach, reflected in documents such as the AFMA industry standard Due Diligence Planning Memorandum, involves four phases, being:

+ Scoping and review;
+ Investigations;
+ Verification and sign-off; and
+ Ongoing due diligence.

With appropriate adaptation, this methodology could be applied to a board's consideration of a net zero commitment:

+ Scoping and review: implement a governance structure (an ESG committee perhaps, in substitution for a due diligence committee) and where necessary, appoint experts to opine on technical matters inherent in the net zero commitment;
+ Investigations: receive and interrogate reports and identify key issues either to be resolved or which need to be clearly disclosed in connection with the net zero commitment (for example, risks around the adoption of novel technologies or the potential unavailability of offsets);
+ Verification and sign-off: identify material statements in the net zero commitment and reference these back to source materials; and
+ Ongoing due diligence: implement a governance process by which the relevance and accuracy of the commitment (essentially, the slope of the curve on the stylised model above) can be tested on a periodic basis (perhaps quarterly, or at least half-yearly, in line with the financial reporting cycle) for its accuracy, and adjusted if necessary.

Documentation of this process (minutes, action items and key issues registers) should be maintained with the same amount of rigor as in the capital raising context.

In taking these steps, not only will the company itself minimise the risk of Greenwashing claims: its directors are more likely to be able to avail themselves of the "business judgment rule" in s 181 of the Corporations Act 2001 (Cth), should their actions in committing the company to a net zero pathway be challenged in the future.

THE STATE OF NET ZERO COMMITMENTS IN CORPORATE AUSTRALIA

Our research shows that "corporate Australia" is only at the early stages of a journey to engage investors, regulators and other stakeholders in a meaningful dialogue on net zero commitments. Operating in an increasingly litigious backdrop, boards will need to adopt new and more robust processes to minimise the prospects of Greenwashing claims, while also meeting community expectations, which continue to outstrip legislative change.

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COP26 promises and problems for net zero ambitions

WA EPA is turning net zero ambitions and policies into project reality

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3 CLIMATE LITIGATION

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CLIMATE LITIGATION AROUND THE WORLD AND POTENTIAL RISKS FOR CORPORATE AUSTRALIA

17/08/2021

Recent judicial decisions in Australia and abroad have demonstrated that individuals are more prepared to take on the big players in respect of their carbon emissions; equally, Courts have been prepared to find that duties can be owed to individuals in respect of the carbon emissions produced from existing operations and proposed projects.

In the face of society's evolving environmental conscience and the development in judicial attitudes, companies ought to carefully reflect on their emissions and reduction targets. Otherwise they may find themselves defending climate change litigation that might previously have seemed novel, but may well become more common in the not too distant future.

In this article, we consider the state of climate litigation in Australia and overseas, and the ramifications which may arise for company directors and senior management as a result.

CLIMATE LITIGATION IN AUSTRALIA AND AROUND THE WORLD

International climate litigation against corporate and government defendants has fallen into three broad categories (although Australian litigation has predominately fallen within the first):

1. Challenges to decisions approving projects and developments;
2. Challenges to corporate decision-making and disclosures to the market; and
3. Litigation against companies responsible for significant emissions.

The local experience: Australia

In the case of *Sharma by her litigation representative Sister Marie Brigid Arthur v Minister for the Environment* [2021] FCA 560 (**Sharma**), a group of school children brought a claim against the Federal Minister for the Environment seeking to prevent the approval of a local coal mine. The Federal Court of Australia found that the Minister owed a duty to persons under 18 years of age to take reasonable care to avoid causing them harm from further carbon emissions when determining whether to approve the expansion of a coal mine, but the Court was not prepared to prevent the Minister from granting the approval (as there was no evidence that a decision in that respect was likely to be made).

The Federal Government has indicated that it intends to appeal the Federal Court decision. But, for the time being, one can expect heightened scrutiny of carbon emissions when approval applications are being assessed by government decision makers. Further, whatever the outcome of that appeal, the Court's decision demonstrates both the preparedness of Australian citizens to take legal steps to protect the environment and of the judiciary to uphold those claims. It should put corporate Australia on notice that any emissions intensive industries in which they operate or invest may increasingly face climate related legal challenges. Other examples of legal action concerning the effects of climate change include:

+ in 2019, a group of Torres Strait Islanders made a complaint to the United Nations Human Rights Committee against the Federal Government, claiming that its failure to act on climate change violated their fundamental human rights due to rising sea levels; and
+ in 2020, environmental groups disputed approvals granted for a coal project in the Queensland Land Court on the basis that the approvals were in breach of the *Human Rights Act 2019* (Qld), including the right to life, protection of children and cultural rights of Aboriginal and Torres Strait Islander peoples.

This increase in climate litigation is likely to gain further momentum as a result of growing public dissatisfaction with government inaction on the issue of climate change and emissions reduction. Indeed, one of the children in Sharma noted that "*after too many years of politicians turning a blind eye, [this ruling] will make it harder for them to continue to approve large-scale fossil fuel projects*".

Future litigation may go further still, not only prescribing matters that government decision makers need to consider when approving carbon intensive projects but, potentially, obstructing those approvals, or compelling government and private enterprise to actively pursue climate change mitigation and carbon reduction policies. Saying that, it is important to keep in mind that the nature of the Australian legal system is such that, at least in the short-term, it is unlikely that a court would find that a polluter is required to pay compensation for losses caused as a result of carbon emissions: as the impacts are largely indirect, diffuse and global, such that it would be difficult to establish that loss suffered was caused by any one particular party. Significantly, the Court in Sharma was not asked to decide whether any compensation would be paid in the event the approval allowing those emissions was granted.

The New Zealand experience

Across the Tasman, a legal proceeding commenced against seven companies across a range of industries (including dairy, mining, energy and resources) sought a reduction in the defendants' carbon emissions on the basis that their contributions to climate change constituted public nuisance, negligence and a breach of duty causing damage to sites of cultural and spiritual significance and other customary resources (*Smith v Fonterra Co-Operative Group Limited* [2020] NZHC 419 (**Fonterra**)). The High Court of New Zealand struck out the claims for public nuisance and negligence before they even got to trial on the basis that:

+ the alleged harm suffered by Mr Smith was not the direct result of the defendants' activities but rather the consequence of those defendants supplying either fuel or coal to third parties who then released greenhouse gases (that is, the defendants were being sued in respect of their Scope 3 emissions); and
+ the damage claimed by Mr Smith was:
  - not a reasonably foreseeable consequence of the defendants' activities, whose collective emissions were considered "miniscule in the context of the global greenhouse gas emissions which are causing climate change"; and
  - such an unlikely or distant result of the defendants' emissions that it would not be fair to impose liability on them.

The New Zealand position reflects the likely result of bringing similar claims in Australia, which may be contrasted to the more rapidly developing position in Europe, where conglomerates in emissions intensive industries have been the subject of court orders compelling them to adopt more ambitious emissions reduction targets.

The European experience

In the much publicised case of *Milieudefensie and others v Royal Dutch Shell* (ECLI:NL:RBDHA:2021:5339) (**Shell**), the District Court of The Hague held that Royal Dutch Shell (**RDS**) has an obligation, arising from an "unwritten standard of care" owed by it under Dutch law, to mitigate adverse human rights impacts arising from climate change. As the head of a corporate group collectively responsible for 1% of the world's carbon dioxide emissions and, as the policy-setting entity of that group, RDS was ordered to reduce the

corporate group's emissions by at least 45% by the end of 2030[1] through stricter policy settings. The Court's scathing assessment of RDS' policies thus far was that they "mainly [show] that the Shell group monitors developments in society and lets states and other parties play a pioneering role. In doing so, RDS disregards its individual responsibility, which requires RDS to actively effectuate its reduction obligation through the Shell group's corporate policy".

KEY TAKEAWAYS FOR AUSTRALIAN COMPANIES AS TO THE RISKS POSED BY CLIMATE LITIGATION

Whilst there are some structural impediments to climate change litigation in Australia, and whilst a court making a similar finding to Shell may be some time away, company directors should not assume this will remain the status quo. Changes to corporate liability may well be achieved through legislation, rather than litigation. The *Liability for Climate Change Damage (Make the Polluters Pay) Bill 2021* (Cth) (**Make the Polluters Pay Bill**) considered by the House of Representatives in May seeks to make emitters of greenhouse gases greater than 1 million tonnes in any 12 month period liable for climate change damage (with retrospective effect), giving victims, such as the 2019 – 2020 bushfire survivors, the right to bring an action against fossil fuel companies.

Notwithstanding that the Make the Polluters Pay Bill may not ultimately be passed (or may be heavily watered down if it is to be passed), the recent success of climate change litigation will only serve to encourage legal proceedings against government and industry bodies who are seen to be ignoring community expectations in respect of climate change. Similar to any other litigation, climate related litigation carries with it the potential for a company to suffer significant reputational harm, including the likely publicity associated with being a defendant in such litigation, and, at an extreme, being subjected to scathing judicial criticism as faced by RDS in the Dutch District Court.

Although the immediate risk to corporate Australia is largely reputational, the prospect remains that new legislation will be introduced along the lines of the Make the Polluters Pay Bill, such that the emission of greenhouse gasses will attract liability. Companies that continue to operate on a "business as usual" basis leave themselves vulnerable to legislative reforms that will likely require them to respond quickly, in circumstances where such drastic operational changes cannot be implemented overnight.

Lastly, whilst no Australian court has, to date, considered whether directors' duties require them to take into account climate change-related risk that may be relevant to the company's business, individuals in those positions should not be complacent. Directors should be aware of the risks of greenwashing allegations in relation to inadequate climate risk disclosure, which may sound in claims of misleading or deceptive conduct as part of shareholder class actions.

[1] Relative to 2019 levels.

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NSW EPA ORDERED TO DEVELOP ENVIRONMENTAL PROTECTION GUIDELINES AIMED AT CLIMATE CHANGE

02/09/2021

In a recent decision by the NSW Land and Environment Court, the NSW Environment Protection Authority (**EPA**) has been compelled to develop objectives, guidelines and policies to ensure environmental protection from climate change after the Court found (perhaps unsurprisingly) that the EPA owed a duty to do so. Whilst the decision may be appealed, its ramifications will likely extend beyond the EPA to all companies requiring EPA approval for any projects that may impact (or be impacted by) climate change and represents a continuation of the trend of activist litigation in Australia.

THE CASE

The proceeding was brought by a climate action group, Bushfire Survivors for Climate Action (**BSCA**), who argued that the EPA had a duty under the Protection of the *Environment Administration Act 1991* (NSW) (**Act**), to develop objectives, guidelines and policies to ensure environmental protection from climate change.

The Court found that the EPA's duty continued to evolve over time to address evolving threats to the environment and it was acknowledged that climate change is currently one of the most significant threats to the environment. The Court held that the EPA had failed in its duty to implement the necessary policies, guidelines and objectives relating to climate change as none of the EPA's policy documents dealt specifically (or in some cases even at all) with climate change.

The BSCA argued that the duty to develop the relevant policies, guidelines and objectives should be more specific, and that the EPA should be required to develop policies, guidelines and objectives regulating and reducing greenhouse gas emissions to limit global warming to 1.5 degrees Celsius above pre-industrial levels. But the Court was not prepared to find that such a duty was owed, on the basis that the EPA has a discretion as to the specific content of the written instruments it develops.

IMPLICATIONS

The implications of this case are three-fold.

The Court's view of climate change

In case there was any doubt, Australian Courts are prepared to find that climate change is a "current and grave threat to the environment". In this case, the Court also found that "the threat to the environment of climate change is of sufficiently great magnitude and sufficiently great impact as to be one against which the environment needs to be protected". Proponents and consent authorities should expect a very high bar to be applied by the Court when it comes to the adequacy of environmental impact assessment and mitigation of climate change impacts for projects.

Evolving standards for companies requiring EPA approvals

The case commenced by the BSCA should serve as a clear indication to companies requiring EPA approval for projects that may impact (or be impacted) by climate change of the increasing scrutiny placed on emissions and climate change.

Companies may expect the EPA to assess project proposals with the Court's interpretation of the Act in mind (and to mitigate the risk of the EPA finding itself the subject of further judicial scrutiny). In this way, going forward, it would be prudent for companies to ensure robust analysis of any climate change impacts as part of the design and environmental impact assessment for their projects so as to ensure a more streamlined passage through the EPA's approval process.

An uptick in the level of climate activism and recourse to litigation

The case is just another example of society's evolving environmental conscience where climate activist groups are increasingly taking matters into their own hands by commencing proceedings against government agencies and corporates alike.

Consistent with other Australian decisions to date, the BSCA sought to effect change by seeking an order which set out the EPA's duty to protect the environment from significant threats and compelling it to take certain steps in that regard. This case comes hot off the heels of *Sharma by her litigation representative Sister Marie Brigid Arthur v Minister for the Environment* [2021] FCA 560 (**Sharma**), handed down earlier this year, in which the Federal Court of Australia found that the Federal Minister for the Environment owed a duty to persons under 18 years of age to take reasonable care to avoid causing them harm from further carbon emissions when determining whether to approve projects with a significant emissions footprint.

Corporate Australia should be alive to the potential for such activism to spill beyond government and regulators and into the corporate sphere – climate activists should be expected to have an increased appetite for taking on big corporates.

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For information on climate change activism and the implications for corporate Australia, please see our article: Climate litigation around the world and potential risks for corporate Australia

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4 REGULATORY AND POLICY REFORM

TASMANIA GOES BIG ON RENEWABLES - DRAFT RENEWABLE ENERGY ACTION PLAN 2020

26/05/2020

The Tasmanian Department of State Growth (Department) has released the 'Draft Renewable Energy Action Plan 2020' (Draft Action Plan) for public comment.

As a part of the Tasmania-First Energy Policy, the Tasmanian Government has set a target to deliver 100 per cent self-sufficiency in renewable energy generation by 2022 – with a 200 per cent target by 2040. It has also committed to delivering the lowest regulated electricity prices in the National Electricity Market by 2022 (Renewable Energy Target).

The Draft Action plan has been released to define a pathway for Tasmania to reach the Renewable Energy Target, help safeguard energy supply and transition the state to renewables, particularly as the economy looks for ways to recover from the impacts of COVID-19.

The Draft Action Plan outlines 20 actions under three key priority areas that detail the Government's intention to work with the Tasmanian community and renewable energy industry to achieve the Renewable Energy Target over the next 20 years. The three priority areas are:

+ **Priority 1** – Transforming Tasmania into a global renewable energy powerhouse;
+ **Priority 2** – Making energy work for the Tasmanian community; and
+ **Priority 3** – Growing the economy and providing jobs.

Public consultation on the Draft Action Plan closes on **11 September 2020**.

KEY ACTIONS

The key actions proposed by the Draft Action Plan include:

+ **Action 1.1 Renewable Energy Target** – introduce legislation which sets the Renewable Energy Target and demonstrates the Government's intention to expand Tasmania's renewable generation. This legislation will allow Tasmania to increase energy exports into the National Energy Market, attract and develop new industries such as renewable hydrogen and enhance Tasmania's competitive advantage as a renewables based, low carbon economy.
+ **Action 1.2 Project Marinus and Battery of the Nation** – advance the development of major national renewable energy projects, including Project Marinus and Battery of the Nation to provide reliable services to mainland Australia and enable Tasmania to benefit from the global hydrogen industry. The Project Marinus proposal is for a 1500-megawatt capacity undersea electricity connection, linking Tasmania and Victoria, which will form part of a potential new Bass Straight interconnection. The Battery of the Nation initiative investigates and develops pathways for future development opportunities which will allow Tasmania to make a significant contribution to the National Energy Market.
+ **Action 1.3 Renewable Hydrogen Action Plan** – implement the Renewable Hydrogen Action Plan which sets out goals and actions for Tasmania to develop the renewable hydrogen industry. A key action of the Renewable Hydrogen Action Plan allocates $50 million to support renewable hydrogen by setting up a fund, granting concessional loans, facilitating land and infrastructure access and providing assistance to developing offtakes for hydrogen end-use.
+ **Action 1.5 Renewable Energy Centre of Excellence** – establish a world class Renewable Energy Centre for Excellence to undertake innovative research, training and collaboration which will solidify partnerships between industry, research sector, academic institutions and the Government.
+ **Action 1.7 Renewable Energy Coordination Framework** – review of the current regulations and development of a new policy framework. The new policy framework will coordinate and support renewable energy growth and focus on efficiently delivering major energy projects, including new transmission which is required to unlock generation capacity and yield load investment within the prospective renewable energy zones. The framework will also address community concerns and promote local benefits resulting from wind and solar projects.
+ **Action 1.8 Transport Industry Emissions Pathway** – reduce Tasmania's transport emissions and costs and improve energy security by supporting the uptake of electric vehicles powered by locally-produced renewable energy. The Government will install 14 fast charging stations at 12 strategic locations across Tasmania by the end of 2020 as a part of the ChangeSmart Grants Program.
+ **Action 2.1 COVID-19 Electricity Relief** – provide a 100 per cent waiver to eligible small business customers and community services organisations for the first quarterly electricity bill issued after April 2020 and cap electricity rates at 2019-20 rates for all household, business and community sector organisation on regulated tariffs.
+ **Action 2.2 Pricing Framework** – break away from mainland Australia electricity contracts and establish a wholesale Tasmanian pricing framework that is based on Tasmanian electricity system costs only.
+ **Action 2.4 Advanced Meters** – continue to monitor, evaluate and ensure the progressive rollout of advanced meters across Tasmania. The imitative seeks to ensure that all Tasmanian households receive an advanced meter which will enable electricity retailers to continue to offer energy users the combination of advanced meter data and digital platforms and provide users greater insights into their energy use.
+ **Action 2.5 On-Farm Energy Audit and Capital Grant Program** – continue to roll out the on-farms energy imitative, which has provided farmers with affordable and predictable power prices.
+ **Action 2.6 Energy Efficiency Programs:**
  - continue to provide the Energy Saver Loan and Subsidy Program which encourages low income households to invest in energy efficiency products to lower their electricity bills;
  - continue to offer No Interest Loans which provides subsidy of up to 50 per cent toward purchasing new energy efficient appliances. The Government will also provide an extra $1 million as a result of COVID-19 to enable further loans to be provided to healthcare card receipts; and
  - provide targeted schemes including Power$mart Homes, Power$mart Businesses and the Tasmanian Energy Efficiency Loan Scheme.
+ **Action 3.1 Renewables Tasmania** – establish the Renewables Tasmania to promote, develop and manage the production of renewable energy across the state. The body will be responsible for regulating the energy sector, engaging with key stakeholders and promoting renewable development, particularly Tasmania's emerging biomass and ocean sectors.
+ **Action 3.3 Promotion of the Tasmanian 'brand'** – develop and promote the Tasmanian energy 'brand' as a model for innovation and sustainability. The Government will work closely with Hydro Tasmania, the Tasmanian Climate Change Office, the Department and the Tasmanian community to develop a major public campaign which will promote and support continued investment in all forms of renewable energy in Tasmania, such as wind and solar. In particular, the Government will focus on progressing Project Marinus which will unlock significant investment in new wind generation projects.

- **Action 3.4 Energising Tasmania** – provide training in major energy development related priority skills needs areas, such as engineering, project management, civil construction and trades through the Energising Australia partnership.
- **Action 3.5 Antarctic Gateway Strategy** – the Department to work with Tasmania's Antarctic and energy business sectors to capitalise on the major economic opportunity presented by Antarctica's intention to replace fossil fuel-based energy with clean renewable energy.

It will be important for businesses to consider the risks and opportunities presented by the Draft Action Plan as it will likely guide the Department's and key stakeholders' approach to investment in, and development of, renewable energy projects in Tasmania for the foreseeable future.

LODGE A SUBMISSION

The Department is seeking feedback on the Draft Action Plan. Submissions can be made to renewableenergy@stategrowth.tas.gov.au until **11 September 2020**.

Please contact us if you would like to discuss the potential implications of the Draft Action Plan for your business - or require any assistance with the drafting of a submission to the Department.

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WA EPA IS TURNING NET ZERO AMBITIONS AND POLICIES INTO PROJECT REALITY

24/09/2021

Of all the Environmental Protection Authorities in Australia, it is the WA Environmental Protection Authority (**WA EPA**) that is quietly leading the way on emissions reductions, refusing to shy away from its role in protecting the environment. Recent environmental approvals of new and large projects have been given subject to clear conditions for the avoidance, reduction and offset of greenhouse gas emissions. Such conditions have ranged from a general requirement to exact targets over set interim periods to achieve net zero greenhouse gas emissions by 2050, and are informed by the WA EPA's primary artillery, the revised Environmental Factor Guideline: Greenhouse Gas Emissions (**GHG Guideline**).

The WA EPA's guiding approach has been felt across industries and companies, affecting names as big as Woodside and FMG (through its Pilbara Energy Generation Power Station project (**Pilbara Energy**)), and covering mining and gas majors to electricity and, most recently, fertiliser plants.

Against the backdrop of the COVID-19 pandemic, which has coincided with an acceleration of global interest in climate change, clean energy and green technologies, the WA EPA's bold foray into black letter emissions reductions is a signal to the rest of Australia that the time for action is now. Directors and senior management should be aware that such developments are only likely to intensify and companies should prepare themselves for stricter greenhouse gas emissions reporting and reduction targets in relation to new, large project approvals, as well as significant expansions leading to an increase in greenhouse gas emissions.

KEY TAKEAWAYS

Given the WA EPA's track record on approving new, large emissions intensive projects subject to conditions, we consider that four key trends are likely to impact future emissions intensive projects, namely:

+ a shift to mandatory emissions reduction targets to achieve net zero by 2050;
+ increased investment in emissions reduction technologies;
+ broader regulation to include greenhouse gas emissions along the whole value chain; and
+ increased scrutiny of the effectiveness of offsets.

WA EPA'S APPROACH TO GREENHOUSE GAS EMISSIONS REDUCTIONS

By way of background, prior to implementing significant projects in WA, project proponents require environmental approval under the Environmental Protection Act 1986 (WA). The WA EPA assesses projects and provides recommendations to the Minister for Environment, who (in consultation with other relevant Ministers) ultimately decides whether to approve a project and on what conditions. The GHG Guideline informs the WA EPA's assessment of proposals referred to it where those proposals indicate that greenhouse gas emissions will exceed 100,000 tonnes of carbon dioxide equivalent.

The most recent revision of the GHG Guideline, released in April 2020, requires that new large projects, as well as expansions leading to an increase in greenhouse gas emissions, must demonstrate how they will contribute to net zero greenhouse gas emissions by 2050. In particular, a proponent is required to develop a 'Greenhouse Gas Management Plan' demonstrating the proponent's "contribution towards the aspiration of net zero emissions by 2050", including interim targets reflecting an overall reduction in scope 1 emissions over the proposed project's lifetime. There is a potential risk that companies undertaking an expansion of existing operations may find their entire operation subject to greenhouse gas emissions reduction conditions, rather than only the expansion. However, the WA EPA has indicated in the GHG Guideline that its assessment will be informed on a case-by-case, flexible basis.

The WA EPA's approach under the GHG Guideline differs from previous guidelines in that it requires tangible and specific targets to be set by proponents in reducing their greenhouse gas emissions; it is also a step back from the hardline March 2019 guideline proposals that sought to require that new major projects offset all their greenhouse gas emissions from the outset.

EMISSIONS REDUCTION CONDITIONS IMPOSED ON RECENT NEW, LARGE PROJECTS

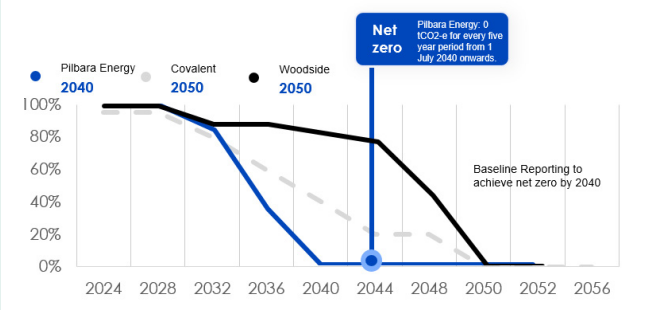
Despite this back down and the reference to an 'aspirational' net zero target by 2050, it appears that, in practice, the WA EPA is flexing more muscle under the GHG Guideline. 2021 has seen significant proposals being approved subject to emissions reduction conditions that require definitive and tangible reductions.

In February 2021, the Pilbara Energy received ministerial approval. Condition 6 of the ministerial statement requires set interim reductions of greenhouse gas emissions to zero tonnes of carbon dioxide equivalent by 1 July 2040. Meanwhile, the ministerial approval for Covalent's lithium hydroxide refinery in Kwinana, Perth, requires net zero by 1 July 2050.

Interestingly, Stage 2 of the Waitsia Gas Project, a joint venture between Beach Energy Ltd and Mitsui E&P Australia Pty Ltd, is not subject to specific emissions reduction conditions. Rather, the project is merely required to avoid, reduce and offset its emissions over successive five-year periods over the life of the project, without being subject to numerical interim targets. However, the joint venture parties have committed to reducing greenhouse gas emissions and the project is expected to offset approximately 60% of its emissions as a result.

Following independent expert advice from the WA EPA, the Minister for Environment approved changes to Woodside's Pluto LNG project. The project is now subject to a 'target' 30% reduction in greenhouse gas emissions by 2030. The WA EPA is set to review Woodside's original ministerial statement to ensure compliance with the revised emissions target. However, journalist Peter Milne has drawn attention to the fact that Woodside's revised target does not require as great a reduction in greenhouse gas emissions as it would seem, in his post Woodside's real plan for Pluto LNG: delay action, not reduce emissions. Nevertheless, the conditions reflect the WA EPA's increasing scrutiny of greenhouse gas emissions, a trend which is only likely to continue.

Most recently in September 2021, the WA EPA approved the Perdaman Urea Plant (Perdaman) subject to greenhouse gas emissions reductions reaching net zero by 2050, with reductions spaced over 5-year intervals.



Emissions reductions required against baseline reporting to reduce greenhouse gas emissions to net zero by 2050 (includes interim steps under WA EPA conditions where relevant).

WHERE ARE WE HEADED NOW?

We see four key trends emerging from the WA EPA's implementation of the GHG Guideline that are likely to impact future emissions intensive projects.

First, it is likely that the current 'aspirational' target of net zero by 2050 will shift towards a mandatory target. Despite the wording of the GHG Guideline, the conditions imposed on Covalent, Pilbara Energy and Perdaman's projects demonstrate that the WA EPA already expects tangible emissions reductions to occur. These projects are under clear conditions to reduce or offset their greenhouse gas emissions to net zero by 2050.

The WA EPA's March 2019 proposed guideline amendments originally required an immediate and complete offset of all greenhouse gas emissions produced. This may be an indication of where the WA EPA is willing to go with future revisions of the guideline. As of 30 June, the WA EPA has commenced its review of the GHG Guideline.

Guidance may also be drawn from other Australian jurisdictions, where State governments are pushing for strong net zero targets. The NSW government has endorsed the Paris Agreement and has committed the State to achieving net zero greenhouse gas emissions by 2050; the Victorian government is aiming for net zero by 2050, with five yearly interim targets to be met in the meantime. This contrasts with the Commonwealth government commitment under the Paris Agreement to reduce emissions by 26 to 28 per cent on 2005 levels by 2030, with Scott Morrison noting a 'preferable' target of net zero by 2050. Queensland maintains a similar target to WA, with an aspirational target of net zero emissions by 2050 and a 30% reduction in emissions on 2005 levels by 2030. These targets may be given additional impetus by the UN Climate Change Conference (COP26), to be held in Scotland in November: see COP26 promises and problems for net zero ambitions.

Second, we expect pressure will increase on proponents to invest in emissions reduction technologies and offsets for scope 1 emissions. Current predictions for limiting global warming to 1.5 to 2 degrees Celsius are not promising and, given that Pilbara Energy is already subject to a net zero target by 2040, we expect that timelines for net zero targets will become tighter. Powerful international movements such as 'The Climate Pledge' are already facilitating a net zero carbon economy by 2040, with companies such as Amazon, Verizon and Microsoft having signed up.

With tighter timelines, it is likely companies will focus on offsets while technology catches up with aspirations. In Australia, offsets may be achieved by reforestation initiatives, such as the Yarra Yarra Biodiversity Corridor, which provides Biodiverse Reforestation Carbon Offsets, or by purchasing and trading Australian Carbon Credit Units under the Emissions Reduction Fund. There are also a range of international offset certification schemes and overseas carbon trading markets: see Carbon markets in Australia and overseas 2021. As a means of diversifying risk, companies may also consider investing in renewable energy projects, such as Fortescue Future Industries' proposed green hydrogen projects in Tasmania and Brazil, or carbon capture storage technology.

Third, regulatory focus may shift to greenhouse gas emissions across the whole value chain, including scope 3 emissions. Some Australian jurisdictions, especially NSW, are actively debating how to assess scope 3 emissions from resource developments. Indeed, the NSW legislative council looked into the Berejiklian government's *Environmental Planning and Assessment (Territorial Limits) Bill 2019*, which aims to stop the NSW EPA from considering scope 3 greenhouse gas emissions from NSW coal exports. More recently, the Northern Territory government introduced an WA EPA greenhouse gas policy similar to that in WA. However, it goes further in that it will cover the mitigation of both scope 1 and scope 2 emissions.

Lastly, increased scrutiny of offsets is likely. The GHG Guideline enables the WA EPA to consider action taken to mitigate emissions by avoiding, reducing and offsetting emissions (in order of the WA EPA's preferred approach). At this stage, while companies are re-orientating towards a net zero future, offsets are a popular and straight-forward option. The WA EPA recommends use of offsets under the Australian Carbon Credit Units scheme to ensure integrity of the offsets.

However, scrutiny of the actual efficacy of offsets is increasing. The recent devastating bushfires in Australia highlighted the shortcomings of planting trees to offset emissions: when they burn, carbon is released straight back into the atmosphere. With bushfires increasingly common as the Earth's climate warms, planting trees may come to be considered too risky to provide a viable offset strategy. Companies may find that certain types of offsets become preferable or even mandatory. Carbon capture storage, if the technology proves successful, may provide one viable avenue.

Western Australia's Environmental Protection Authority is the gold standard The WA EPA is leading the way on environmental protection through emissions reduction conditions. Recent ministerial approvals of new, significant projects demonstrate the WA EPA's commitment to greenhouse gas emissions reductions, with new projects increasingly subject to conditions to reach net zero by 2050. This provides a stark contrast to the NSW EPA, which was recently brought into line by the Land and Environment Court regarding its lack of climate change environmental protection guidelines: see NSW EPA ordered to develop environmental protection guidelines aimed at climate change. We expect that targets for net zero by 2050 will only become stronger, while the focus shifts to investing in emissions reduction technologies as well as mitigating emissions across the value chain.

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NSW SET TO BECOME A RENEWABLE ENERGY SUPERPOWER

18/12/2021

The *Electricity Infrastructure Investment Act 2020 (NSW)* (the **Act**), described as the most ambitious energy plan in the country, has been passed by both houses of the NSW Parliament and received assent on 3 December 2020.

The purpose of the Act is to co-ordinate investment in new generation, storage and network infrastructure in NSW. The Act gives effect to the NSW Government's Electricity Infrastructure Roadmap, which sets out the policy framework for investment to deliver a modern electricity system and maintain an affordable, reliable, clean and sustainable electricity supply in NSW as the State transitions from coal to renewable generated power.

The Act represents a fundamental shift in policy towards the encouragement of renewable energy projects in NSW and is targeted at reducing investment risk and providing industry and investors with the certainty they need in relation to new energy infrastructure.

It is projected that the "whole-of-system approach" under the Act will attract $32 billion of private sector investment by 2030 and secure NSW's future as an "energy superpower".

WHY WAS THE ACT REQUIRED?

A large portion of the existing infrastructure which provides NSW's energy supply is nearing the end of its technical life, with four of the five coal-fired power stations in the State being scheduled to close in the next 15 years, starting from 2023. These power stations must be replaced by new energy infrastructure before they are closed to avoid substantial price rises.

It has been recognised that NSW has some of the best renewable energy and pumped hydro resources in the world. However, the view of the NSW Government is that the State has not been able to take advantage of these resources due to congestion in the transmission system, which resulted in limited capacity to connect new generation. Further, it was identified that there was no clear pathway under the existing regulatory and market framework for co-ordinated investment across different types of energy infrastructure to deliver the necessary investment at the scale and in the timeframe required.

The framework under the Act has therefore sought to alleviate these issues, opening up the opportunity for the renewables sector to invest in energy generation and storage in order to meet the future energy needs of NSW.

FRAMEWORK

The framework in the Act for investment in generation, storage and network infrastructure includes the following main components:

+ monitoring an energy security target for electricity supply each year;
+ "renewable energy zones" (REZs) in specified geographical areas of NSW that are made up of particular generation, storage and network infrastructure;
+ construction and operation of network infrastructure in NSW (including in REZs);
+ cost recovery in respect of the construction and operation of network infrastructure;
+ derivative arrangements for persons who construct and operate generation, storage and firming infrastructure; and
+ contributions from distribution network service providers.

Certain provisions in the Act commenced by proclamation on 9 December 2020, with the remaining provisions to commence on 1 May 2021 and 1 July 2021.

KEY FEATURES

Renewable Energy Zones

The central feature of the Act is the establishment of a process under which the Minister can declare a geographical area of the State a REZ and specify the generation, storage or network infrastructure that will be implemented in that zone.

The main function of a REZ is to enable the coordinated development of new grid infrastructure in energy rich areas to connect multiple generators in the same location. This approach is considered to create economies of scale, which could reduce generation costs, and will provide opportunities for early planning and community engagement.

There are 5 initial REZs declared in the Act, namely:

+ Central-West Orana;
+ Illawarra;
+ New England;
+ South West; and
+ Hunter-Central Coast.

The Minister can also declare REZs on application, which enables the delivery of non-governmental led REZs. A declaration will involve a consideration of planning, environmental and heritage matters, as well as the views of the local community in the proposed REZ.

Access Schemes

The Act gives power to the Minister to declare "access schemes" that operate in REZs. An access scheme authorises (or prohibits) access to, and the use of, specified network infrastructure by operators of generation and storage infrastructure within a REZ.

These access schemes are intended to support investment in the network and provide investors with comfort that their project will be authorised to access a stable grid connection.

The declaration of an access scheme may specify how access rights are to be conferred on participants and the fees payable. The fees under the scheme are envisaged to be applied towards the cost of the network infrastructure required to enable the REZ and for distribution to funds set up for the benefit of communities within the REZ.

The Minister may only amend a declaration in the very limited circumstances set out in the Act and may only repeal a declaration if there are no participants in the access scheme or in accordance with its terms.

Electricity Infrastructure Investment Safeguard

The Act establishes an "electricity infrastructure investment safeguard" that includes:

+ legislative objectives set out in the Act for each type of new infrastructure (i.e. generation, long-duration storage and firming);
+ a process for the consumer trustee appointed under the Act to plan the development pathway to construct each type of new infrastructure; and
+ the ability for the consumer trustee to award "long term energy supply agreements" (**LTES Agreements**) through a competitive tender process, if the consumer trustee determines that such agreements are required to meet the development pathway.

The LTES Agreement is a derivative agreement under which long term energy supply operators (**LTES Operators**) will construct and operate infrastructure for eligible renewables and storage projects in return for periodic options to exercise financial derivative arrangements.

The intention of the LTES Agreement is to provide certainty to investors that the project can earn an agreed minimum level of revenue from selling its services to the electricity market and to provide a financial incentive for the development of projects to be accelerated so that they can be brought online quickly, which will enable a swifter build-out of REZs.

Electricity Infrastructure Fund

The Act requires the scheme financial vehicle which is a party to the LTES Agreement to establish an "electricity infrastructure fund" to receive payments and cover the financial liabilities of the scheme financial vehicle and operations of the consumer trustee and regulator. Distribution network services providers are required to pay a specified contribution to the fund determined by the regulator each year. The fees payable by participants in access schemes are also required to be paid into the fund.

Energy Security Targets

The Act establishes an "energy security target" which is a mechanism to determine how much firm capacity is needed in NSW in the medium to long term to ensure the electricity system remains reliable. The energy security target under the Act is equivalent to the maximum demand experienced in NSW every 10 years, plus a reserve margin. An energy security target monitor will be appointed to calculate annual energy security targets and monitor whether or not the energy security target will be met in the next 10 years.

Considerations for Projects

+ **Prohibitions** – There is a risk that projects located in REZs which do not have a development consent under the *Environmental Planning and Assessment Act 1979* (NSW) for the proposed infrastructure could be prohibited from being connected to network infrastructure in a REZ. This can occur if the infrastructure planner under the Act (Energy Corporation of NSW) considers that there is significant opposition to the project from the local community. Developers should therefore consider engagement strategies with stakeholders as early as possible and spend time genuinely engaging with communities to build and maintain local support for the project.
+ **Compliance** – There are offences in the Act for failure to comply with its provisions, including for providing false and misleading information to the entities appointed under the Act. Penalty notices can be issued and financial penalties imposed for breaches of certain provisions in the Act. Fines under the Act apply to businesses, individuals and network operators. Parties involved in the energy sector must therefore be aware of their obligations and liabilities under the Act.
+ **Incentives** – Developers should consider the impact of the Act on their business, including how to structure their proposed projects and tenders in order to maximise the potential benefits to revenue that could flow from the financial derivative arrangements under the proposed LETS Agreements.

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DEVELOPMENTS IN POLITICS AND LEGISLATION IN AUSTRALIA'S RACE TO EMBRACE CLEAN ENERGY OPPORTUNITIES

03/12/2021

Analysts have made it clear that the world needs to reach net zero by 2050, if not before, in order to limit the worst impacts of climate change. The question now is simply 'how?'—and the answer is far more complicated. Over the past year we have seen legislative changes, or indications of such changes coming, at both Federal and State level, aimed at accommodating clean energy projects and achieving our net zero targets. Key legislative developments impacting Australian clean energy projects are:

+ **Offshore wind legislation:** The Commonwealth finally followed the lead of the States in turning its attention to wind farms when the *Offshore Electricity Infrastructure Bill 2021* (Cth) was tabled before Parliament. There is still detail to be included relating to the licencing regime (most of which has been deferred to the regulations), but the Bill promises to allow the development of large-scale offshore wind farms (or other renewable energy projects), and the storage and transmission of electricity, from between 3 and 200 nautical miles from Australia's shore.
+ **Renewable Energy Zones in NSW:** In 2020, the Electricity Infrastructure Investment Act 2020 (NSW) received assent, representing a fundamental shift in policy towards the encouragement of renewable energy projects in NSW. Under the Act, the Minister can declare a geographical area of the State a "renewable energy zone" (**REZ**) and specify the generation, storage or network infrastructure that will be implemented in that zone. 2021 saw the declaration of Australia's first REZ in the Central-West Orana region, which will host at least 3GW of solar, wind and storage. The Central-West Orana REZ—one of at least 5 to be established—will play a key role in addressing NSW's current infrastructure concerns and demonstrates NSW is 'walking the talk' on its 2050 net-zero target. Construction of the first REZ is expected to commence in 2022.

+ New 'diversification leases' lead land tenure reform for renewable energy in WA: A joint statement recently published by four WA Government Ministers announced significant land tenure reforms headlined by a new form of tenure – the diversification lease. The reforms facilitate the expansion of carbon farming, with pastoralists set to benefit from the extension of pastoral leases for up to 50 years and associated security of tenure benefits to attract carbon farming capital investment. However, questions remain how the reforms will 'unlock land for renewable energy', such as green projects, because:
  - the best renewable energy sources in the State are in areas predominated by existing pastoral leases;
  - the grant of a new 'diversification lease' will still require agreements to be reached with pastoral lease and native title holders; and
  - more carbon farming will potentially create more conflicting land uses for clean energy projects and mining to contend with.

From a policy perspective, Australia has focused on positioning itself as a hydrogen superpower, with all States having now released plans for developing their respective hydrogen industries. There is, therefore, not only a race to net zero by 2050 but also a race between the States in the development of burgeoning and successful hydrogen economies.

+ With three of Australia's top trading partners (Japan, Korea and China) having already made clear commitments to use hydrogen to decarbonise, Australian states are racing against each other to position themselves as Australia's hub for hydrogen export. Each State's hydrogen plan highlights their key competitive advantages, including for example, Queensland's close proximity to Asia and its established infrastructure, Victoria's connected transport network, which will enable the potential for integrated, multi-mode hydrogen transport, and WA's abundance of land and renewable resources. However, the key issues impeding Australian companies from capitalising on each State's potential are production costs, a lack of enabling infrastructure and regulatory uncertainty. NSW may just be leading the way in addressing these concerns having released integrated policies which consider the optimal locations for hydrogen production from a full supply chain perspective, ensuring efficiency and driving down costs. The NSW Parliament also recently approved the Energy Legislation Amendment Bill, which is expected to unlock $3 billion in government incentives and A$80 billion in private investments aimed at increasing the scale and competitiveness of the renewables industry.

Key highlights from the State's hydrogen strategies:

	2030 goal: WA's market share in global hydrogen exports to be similar to its share in LNG today (currently second largest LNG exporter in the world)
	$3 billion of incentives to commercialise hydrogen supply chains and reduce production costs
	Further large scale solar photovoltaic projects are being commenced which, when complete, will deliver over 1380 megawatts of clean power to QLD
	$6.2 million grant support for renewable hydrogen pilots, trials and demonstrations
	Predicted that 90% of SA's electricity could be generated from renewable sources by 2025
	Tasmania is on track to become the first Australian state or territory with 100% renewable power generation in 2022

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Interested in offshore wind? See Unfurling the sails: the future of offshore electricity investment in Australia.

For more on WA's land tenure reforms, see Renewable energy and reusable reforms: WA's land tenure amendments are familiar but exciting.

Want more on green hydrogen? See Green Hydrogen: The New Commodity of the 21st Century.

UNFURLING THE SAILS: THE FUTURE OF OFFSHORE ELECTRICITY INVESTMENT IN AUSTRALIA

19/10/2021

The global shift towards a greener and more sustainable future is now well and truly underway.

As countries the world over embrace the vision of a net-zero economy, the Australian Government has taken a critical step towards the development of a leading offshore energy industry by the introduction of the *Offshore Electricity Infrastructure Bill 2021* (the **Bill**) into the Commonwealth Parliament on 2 September 2021.

The introduction of the Bill is a crucial first step in the establishment of a comprehensive regulatory regime and framework for the licensing and eventual development and construction of offshore renewable energy generation and transmission infrastructure (**OREI**). Tabled by the Minister for Energy and Emissions Reduction, The Honourable Angus Taylor MP, the Bill aims to "unlock a wave of new investment" in Australia's offshore electricity sector and harness what has been described as one of the "big three" streams of clean energy set to drive the renewables transition, alongside solar and onshore wind assets. We explore the Bill in detail later in this article.

Whilst offshore wind energy has found itself an industry becalmed in Australian waters, the introduction of a new licensing and regulatory regime for the full life-cycle of OREI projects, as provided for in the Bill, promises a transparent pathway to the future, hopefully de-risking and reassuring sponsors, investors and financiers.

Once enacted, this legislation will hopefully act as a catalyst in accelerating the development of Australia as a destination jurisdiction for investment in offshore wind energy. According to recent data, that market spurred more than US$500 billion worth of investment in 2020 alone. More importantly, the Bill signals that Australia is awake to all aspects of the renewable economy and that its world-class and abundant natural wind resources are now open for business.

THE ROLE OF OFFSHORE WIND IN THE CLEAN ENERGY TRANSITION

Currently, offshore wind accounts for only a fraction of global energy supply. However, offshore wind is set to be a "superpower" of the next generation, with the number of projects in development forecast to triple globally throughout the 2020s.

According to studies commissioned by the International Energy Agency, the global offshore wind market experienced steady, year-on-year (**YoY**) growth of 30% between 2010 and 2018. In 2020, the Global Wind Energy Council (**GWEC**) reported that the wind energy market recorded its "best year in history", experiencing an astonishing YoY growth of 53%. That figure becomes even more impressive in the context of a global pandemic, and the still unperturbed demand for wind energy that saw a colossal 92GW of new installations worldwide.

Now, with more than 740GW of wind power capacity installed worldwide, the greenhouse gas emissions benefits can be seen and are immense. Recent estimates identify that harnessing this energy avoids over 1.1 billion tonnes of CO2 globally – a figure comparable to the annual carbon emissions of the continent of South America. Whilst the carbon footprint advantages of wind power are established, the rapidly maturing market for offshore wind energy is abundant with both investment and, more broadly, economic benefits and opportunities.

Investment in, and development of, OREI, specifically offshore wind projects, is forecast to quadruple in the next four years globally. Almost 24GW of new installations are forecast for 2025 alone. With increased offshore wind production comes a commensurate (and rapidly increasing) prominence in the share of total wind production (both onshore and off). Currently, offshore wind accounts for a steadily growing 6.5% of share of all global wind energy production. By the time 24GW of energy is produced offshore, in 2025, this number will leap to over 20%.

The importance of wind power to the overall carbon-neutral goal and broader renewables push cannot be understated. Earlier this year, the GWEC hailed wind energy as an "enabling technology" in the operation of other renewable energy sources, such as green hydrogen (which has been the subject of previous G+T analysis in March and August of this year). This importance is underscored by projects such as NorthH2 off the coast of the Netherlands and, closer to home, an increasing number of proposed "green" hydrogen projects throughout Australia, a number of which are currently subject to feasibility studies – these projects aim to scale the production of "green" hydrogen via the use of wind or solar energy, reducing the dependency on fossil fuels throughout the generation process.

Offshore wind's quantum leap comes on the back of both a global governmental and private shift towards carbon-neutral economies. Whilst government support has been historically critical in the facilitation of OREI projects, Australia finds itself uniquely positioned to capitalise on both government incentives and, perhaps more crucially, significant private investment.

In this regard, one interesting aspect for Australia is the existence in this country of substantial offshore oil and gas (O&G) assets and the presence of major O&G companies. Offshore wind energy is set to experience a rise to prominence for O&G companies, especially in view of the potential to defer or avoid costly de-commissioning costs as offshore O&G assets reach the end of the production lifecycle and the potential to invest in offshore wind projects as part of an overall net zero emissions strategy. With a developed market for O&G production, both onshore and offshore, as well as one of the world's leading resources capabilities more generally, Australia is already home to many of the major players in this space. The regulators and stakeholders are well-understood in the market. All of which compliment what, according to BloombergNEF, is a key trend underpinning clean energy investment: the push by O&G companies to build low-carbon portfolios and eventually achieve net-zero emissions. In the past 5 years alone, direct clean energy investment by O&G "majors" has surpassed US$60 billion – with wind taking the lion's share.

GLOBAL DEVELOPMENTS – THE ROARING '20S AND BEYOND

As the traditional land-owner issues associated with onshore wind projects continue to impact onshore developments, OREI projects open vast areas of the world's oceans as prime real estate for energy investment – provided, of course, that the anchoring jurisdiction is attractive from both an investment and regulatory perspective. This has been reflected in the countries leading the charge in offshore wind development – each provides a relatively low-risk and stable investment profile (so far as OREI projects go) and in some cases state support in the form of concessions and subsidies, flow-through incentives or even direct funding (such as the UK with its Offshore Wind Growth Partnership and China with various provincial subsidies tied to its goal to reach peak emissions by 2030, followed by carbon neutrality in 2060).

As global and domestic factors including jurisdiction-specific policy-making (and not least a global pandemic) have upset many of the leading OREI markets, Australia's wealth of natural resources and, for better or worse, its measured approach to the renewables transition has it primed as a force in the future of offshore wind generation. With the UK in the midst of a full-blown fuel crisis and continental Europe struggling to toggle the sharp snap-back of energy demand in the wake of COVID-19 (with its concurrent phase-out of fossil fuels and increasing dependency on renewables), the stage is set for Australia to manage (and regulate) the inevitable expansion of OREI generation and the gradual tapering of fossil fuel production.

Whilst the rapid scalability, opportunity and fertility of resources located in emerging markets such as Africa, the Middle East, Latin America and the Pacific are expected to shape the future of OREI

development, it is the UK, Europe and, increasingly, China which are the present titans of OREI design, investment, manufacture and construction.

With that in mind, it is worth canvassing the OREI projects and markets making headlines globally, as well as those on the drawing boards in Australia.

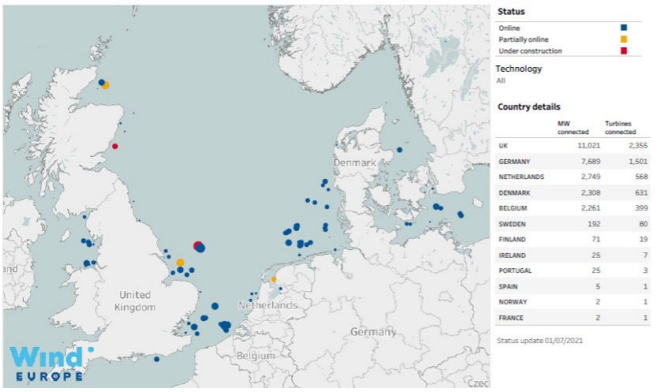
United Kingdom

Bounded by the North Sea and its strident blusters, the UK was always going to be a market-leader in offshore wind generation. It is home to almost a third of all offshore wind installations worldwide, and more than any other country, the UK continues to forge ahead with industry-wide governmental support and ambitious installation targets.

Targeting over 40GW of offshore wind production by 2030 (the figure currently sits just north of 10GW), the UK announced the Offshore Wind Sector Deal in 2019, a collaboration and set of guiding principles between both government and industry, and has since stocked an OREI development pipeline that aims to meet, and then exceed, its targets. With offshore wind already powering over 10% of the UK's electricity needs, energy generated by offshore wind is forecast to be the "backbone" of the UK's economy by 2030 and support a broader renewables transition through its enabling of "green" hydrogen generation.

Key developments:

+ **Hornsea Offshore Wind Farm:** Hornsea One and Two, the two largest offshore wind farms in the world, bring a combined capacity of 2.6GW to the UK grid. Owned by Ørsted, the landmark projects serve as beacons for the sophistication and scale that a second wind of investment and development can bring to the OREI industry. Hornsea One went operational in 2020, with the second project forecast to reach full production in 2022.
+ **Dogger Bank Wind Farm:** A 50/50 joint venture between Norwegian energy company Equinor and Irish renewable energy developer SSE Renewables, the Dogger Bank complex (consisting of 3 construction phases) will be the world's largest offshore wind farm with a combined generation capacity of 3.6GW (an estimated 5% of the entire UK electricity demand) when completed in 2026.
+ **Kincardine Floating Offshore Windfarm:** Located a touch off Scotland's northeast coast, the Kincardine project is far more important than its relatively meagre 48MW generation capacity would suggest. It is the world's largest floating offshore windfarm and, according to the American Bureau of Shipping, demonstrates the potential of floating turbines – an asset that is expected to have an increasingly prominent role in the global net-zero economy.



Europe

Mainland Europe's concentrated scattering of almost 6000 turbines across over 120 separate developments highlights the crucial role of environment and geography in harnessing offshore wind capability. Dominated by installations across the North Sea by Germany, the Netherlands, Denmark and Belgium (all with ample ocean frontage), and guided by the EU Strategy on Offshore Renewable Energy, which was published in November 2020, offshore wind will be the cornerstone generation asset of a climate-neutral Europe.

With an EU consensus to reach at least 60GW of offshore wind energy generation by 2030, and 300GW by 2050, Europe's project pipeline underscores the importance of floating turbine infrastructure – a technology that will unlock the deeper waters in the Atlantic, Mediterranean and Black Sea (as it will in Australia) and harness the previously untapped wind resources with utility-scale floating wind developments. To meet these objectives, the EU Commission estimates nearly €800 billion of investment will be needed between now and 2050. Key to this is providing a uniform, clear and supportive legal framework, mobilising private investment and ensuring the stability and dependability of critical port infrastructure.

Key developments:

+ **Gode Wind Farm (Germany)**: Acquired by Ørsted in 2013, the Danish multinational power company pumped €2.2 billion into the project to raise generation capacity to almost 600MW. Lying 45km off the German mainland in the North Sea, a final investment decision on a phase 3 of the project is under consideration.
+ **Borssele 1 & 2 (the Netherlands)**: Going operational in 2020 and located approximately 20kms off the coast of Zeeland province in the North Sea, the Borssele wind farm's 752MW capacity supplies renewable energy equivalent to the annual power consumption of one million Dutch households through its framework of upwards of 90 Siemens Gamesa wind turbines. The Borssele project is the Netherlands' largest offshore wind farm and connects to the Dutch grid via a purpose-built offshore substation.

+ **Hollandse Kust Zuid (HKZ) (the Netherlands)**: With construction commencing in July 2021, Vattenfall's development of the HKZ windfarm is a turning point for the OREI industry and the commercial production of offshore wind energy. HKZ will be the first offshore wind farm globally to be developed without the use of any governmental subsidies or concessions. Vattenfall's Netherlands CEO described the project as the start of a "new chapter" and demonstrative of the maturing of the market. The proposition that offshore wind could be cost-competitive with traditional forms of power generation and the more developed clean sources (such as onshore wind and solar) whilst still in its comparative infancy highlights the rapid growth of the industry, as well as the renewable economy's forecast dependence on it.

China

Leading the world in new offshore wind installations in each of the last three years with nearly half of the entire global total in 2020, China has forged an offshore wind industry at a frenzied pace.

Propelled by the ambitious targets of reaching peak CO2 emissions by 2030 followed by carbon neutrality in 2060, local provinces and development vehicles have been engaged in a mad scramble for approval and construction with national subsidies for OREI projects set to expire at the end of 2021. Under the scheme, such developments must be commissioned and operational by the end of the year to be eligible. As it stands, China is set to overtake the UK as the largest generator of offshore wind energy by the end of 2021.

Like many other jurisdictions, China is no stranger to the increasingly commonplace pivot of established O&G companies into renewable projects as they drive to retain commercial relevance and viability in what is, in many ways, a new economy. One example is China National Offshore Oil Corporation (**CNOOC**), a state-owned oil company, which has earmarked a staggering 4.5 billion yuan (US$700 million) of its annual budget for clean investment. Like others, CNOOC is carefully observing its returns, willing to increase investment and leverage legacy assets, infrastructure and skills should their outlay generate worthwhile returns.

China's commitment to offshore wind extends into the development and deployment of an increasingly-prominent technology – floating turbines. Typically seen as a solution to unlocking prime wind resources in waters whose immense depth renders fixed-foundation turbines not feasible, China has been pioneering the use of floating turbines in offshore waters near to the coastline. The work has the potential to rapidly advance the development of the technology (potentially reducing costs) and paving the path to the economic capture of offshore wind in waters farther offshore. Advancements in floating turbine technology also have the potential to minimise the impact on marine life (and fishing), visual pollution and established shipping channels and reduce decommissioning costs.

Whether Chinese designed near-shore floating wind turbines lead the charge or play a secondary role, China is set to shape the future of offshore wind, as it has in solar PV. Significant investment by China in the design and manufacture of offshore wind turbine technology will also provide a counterpoint to the traditional global dominance in this field played by a handful of mostly European companies.

The United States

Whilst only accounting for a fraction of global offshore wind capacity (42MW as reported in the 2021 GWEC Global Wind Report), the Biden administration has charted a course of advancement for the United States' offshore wind power industry, setting bold production targets of 30GW of offshore energy (enough to meet the needs of 10 million homes annually and avoid 78 million metric tons of CO2 emissions) by the year 2030. These goals are supported by a series of stimulus measures aimed at promoting and facilitating investment in, and development of, OREI.

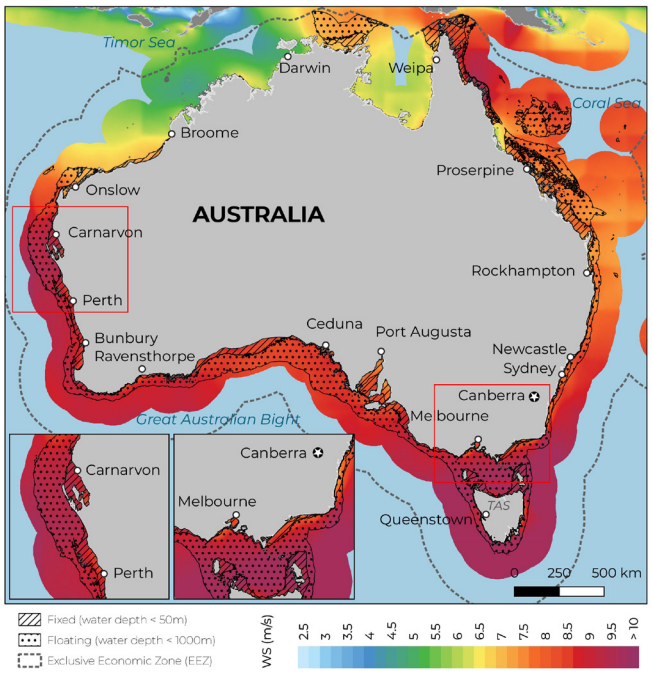
The measures are hoped to "catalyse" offshore wind energy and include granting access to US$3 billion in debt capital via the Innovative Energy Loan Guarantee Program (which has already provided over US$1.6 billion in support to onshore developments), partnering with industry (such as Ørsted) to reap the benefits of public-private R&D and data-sharing, as well as the elimination of existing fossil fuel subsidies.

Vineyard Wind, the United States' first major offshore wind farm, is the poster child of the Biden administration's efforts. Sitting just over 20kms from Martha's Vineyard off Nantucket, Massachusetts, the joint Copenhagen Infrastructure Partners and Iberdrola (via Avangrid) project is set to produce 400MW and power 400,000 American homes. Having closed a US$2.3 billion debt financing in September 2021, the project demonstrates the growing recognition of offshore wind in the books of traditional financial institutions, with majors such as Bank of America, J.P. Morgan and MUFG Bank on the funding ticket.

Whether or not the United States achieves its offshore wind and broader renewable targets remains to be seen, however one thing is clear – the current administration sees OREI as an asset of the future that must be cultivated and emboldened by directed and substantial state and private-sector support.

AUSTRALIA – OCEANS OF OPPORTUNITY

Anyone familiar with Australia's world-class shorelines can attest to the strength and intensity of its winds. The data backs this up, with a global mapping study published in June 2021 concluding that Australia's Exclusive Economic Zone boasts the 6th largest wind technical resource potential in the world – almost 5000GWs (based on current turbine generator designs).

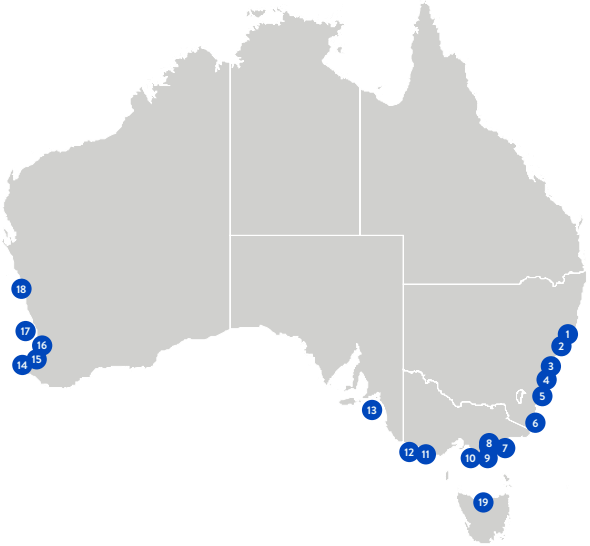


Whilst the North Sea leads the way as the global figurehead for offshore energy generation, the waters of Australia that most closely compare to that blustery passage linking the UK and Europe present a rich source of potential OREI activity. This is borne out by the curated scattering of Australia's proposed OREI projects over the eastern seaboard, across the Great Australian Bight and into Western Australia.

Crucially (and unlike many other jurisdictions), the near-shore prime development zones typically lie in grounds familiar to the established O&G industry and within arm's reach of connection infrastructure, population centres of power demand and both the needed financial and human capital (although Australia faces a shortage of skilled workers in some sectors).

As the gales of the North Sea contend with uncharacteristic timidity, Australia's offshore wind developments (both proposed and future) offer the opportunity for Australia to become a global offshore wind superpower especially if such projects underpin an Australian "green" hydrogen export industry. This opportunity will also be driven by the early closure of coal fired power plants on the eastern seaboard of Australia and the continuing transition to renewable energy sources across Australia.

Proposed offshore wind farms:



1. Hunter Coast, Newcastle NSW
2. Novocastrian, Port of Newcastle, Newcastle NSW
3. Wollongong NSW
4. Illawara, Port Kembla NSW
5. Ulladulla NSW
6. Eden Offshore, Eden NSW
7. Seadragon, Ninety Mile Beach VIC
8. Star of the South, Woodside Beach VIC
9. Greater Gippsland, Gippsland VIC
10. Great Southern, Bass Coast VIC
11. Spinifex, Portland Aluminium Smelter, Portland VIC
12. Victoria Offshore Windfarm, Portland VIC
13. SA Offshore wind project, Great Australian Bight SA
14. Leeuwin Offshore Wind Farm, Geographe Bay WA
15. Bunbury WA
16. WA Offshore Windfarm Project, Binningup WA
17. Flotation Energy offshore wind farm, Rottnest Island WA
18. Cliff Head, Cliff Head Break WA
19. Bass, Burnie Port, Burnie TAS

Victoria

+ **Star of The South:** Australia's most advanced offshore wind project, the Star of the South is a proposed A$10 billion, 2.2GW fixed-mast development with plans to connect to the Latrobe Valley, one of the strongest grid connection points in the National Electricity Market. The project plans to capitalise on the extensive existing infrastructure and experience in the region and, at full capacity, would power 1.2 million homes across Victoria – 20% of the state's energy needs. Majority-funded by Denmark's Copenhagen Infrastructure Partners, Star of the South currently holds a one-off exploration licence from the Australian Government to undertake site investigations off the coast of Gippsland.

+ **Project Gippsland:** Floatation Energy, the developer of the world's largest floating windfarm, Kincardine Offshore Windfarm off Aberdeen in Scotland, proposes to develop a 1500MW project off the Ninety Mile Beach coastline and, like the Star of the South, make use of existing infrastructure by connecting to the Latrobe Valley transmission network.
+ **Victoria Offshore Windfarm Project:** Currently in the pre-planning phase and proposed to be located approximately 5.5kms off the coast of Portland, if constructed, the Victoria Offshore Windfarm Project will have a generation capacity of up to 495MW, enough to power more than 330,000 Victorian homes. The project is owned by Australis Energy and is led by an experienced team which has been involved in the development of offshore projects such as the Thanet Wind Farm which, on completion, was the largest in the world.

New South Wales

+ **Oceanex Energy developments:** There are currently a number of proposed OREI assets slated for development off the coast of New South Wales, thus far all spearheaded by Melbourne-based Oceanex Energy. The projects are currently undergoing feasibility studies (commenced in May 2021) and envision construction and production in the early 2030s. Each project is of formidable scale, highlighting the anticipated generation capacity of the region:
  - Novocastrian Offshore Windfarm (2GW, anticipated completion in 2031);
  - Illawarra Offshore Windfarm (2GW, anticipated completion in 2031);
  - Eden Offshore Windfarm (2GW, anticipated completion in 2036); and
  - Ulladulla Offshore Windfarm (1.8GW, anticipated completion in 2033).

Western Australia

+ **Bunbury Offshore Windfarm:** One of 5 projects in development by Melbourne-based Oceanex Energy (alongside 4 New South Wales projects), the proposed Bunbury Offshore Windfarm is concurrently undergoing feasibility studies for a 2GW windfarm 50km off the coast of Fremantle. Pending completion of the feasibility study, the project could be operational by 2037.
+ **Cliff Head:** Slated as a combined offshore wind and land-based development, the offshore wind farm is proposed to be located in the area centred around the Cliff Head Offshore Oil Production Platform. Jointly owned by ASX listed Triangle Energy (ASX: TEG) and Pilot Energy (ASX: PGY), and with a forecast capacity of 1.1GW, the Cliff Head development is a perfect illustration of traditional O&G producers and assets pivoting to meet the renewable economy and expand into new and replenishing investment streams. By repurposing O&G infrastructure and connections, the Cliff Head OREI and onshore solar development is one to watch with interest, serving as a microcosm of a more universal theme.
+ **WA Offshore Windfarm Project:** Owned by offshore energy developer, Australis Energy, the proposed WA Offshore Windfarm is intended to feed into the Western Australia electricity grid within the South West Interconnector System. If constructed, the project will be located approximately 5.5km off the coast, 20kms north of Bunbury, powering up to 200,000 homes with 300MW generation capacity via a framework of up to 37 offshore turbines. The project is currently undergoing assessment by the Western Australia Environmental Protection Authority.

South Australia

SA Offshore Windfarm Project: Another proposed OREI development by Offshore energy developer Australis Energy, the SA Offshore Windfarm could service the electricity needs of up to 400,000 South Australian homes. The project would be located 10km off the coast of Kingston (230kms south of Adelaide) and generate up to 600MW of offshore wind energy.

Tasmania

Bass Offshore Wind Energy Project: Proposed for installation at either end of the Bass Strait, the stretch of water dividing the island state from mainland Australia (and renowned for its strong and unrelenting winds), the Bass Offshore Windfarm is Brookvale Energy's proposal to generate up to 2GW of offshore wind electricity and potentially feed into Tasmania's clean hydrogen and the Bell Bay Advanced Manufacturing Zone – another example of offshore wind's ability to be a driving force behind other renewable energy sources.

The proposed project complements the Tasmanian Renewable Energy Action Plan which earmarks offshore wind energy as "key" in delivering a fully self-sufficient, fully-green energy supply that can feed into the broader national energy network. Already a national leader on the renewable energy front, Tasmania's objective is to be a world leader in terms of the production and dependency of renewable energy by 2040.

THE OFFSHORE ELECTRICITY INFRASTRUCTURE BILL 2021

Until now, many commentators had expressed concern that Australia was dragging its feet in the global race to a renewable economy, with as many as 12 potential offshore wind projects in some stage of development. In fairness, this is only part of the story - until relatively recently, Australia's deep coastal waters and strong wind resource has meant that established offshore wind technology was probably not fit for purpose. However, given the advancements in large scale wind turbine capacity factors and floating turbine and cabling designs, that is no longer the case and

Australia urgently needs a regulatory framework that encourages investment in OREI. The Bill hopefully paves the way for the development of these projects and many more, headlined by the 2,200MW Star of the South offshore wind project off the coast of Gippsland in Victoria, and the Sun Cable project which aims to connect Singapore with Australia's abundant solar resources via more than 4,000km of high-voltage underground cables.

Whilst the devil, as always, will be in the detail and we are yet to see what the Bill's licensing regime will look like in practical application, it promises fertile ground for future investment in the sector and primes Australia to become a leader in the net-zero energy transition.

Following the closing of submissions on 15 September 2021, the Bill was subject to inquiry and report (discussed below) by the Senate Environment and Communications Legislation Committee. There, the Bill was met with bipartisan support and its passage was recommended. The Bill is scheduled for further parliamentary debate on 21 October 2021, after which a clearer view of the regime – and the future of OREI developments in Australia – will emerge.

The Bill introduces Australia's first licensing regime for OREI projects. Presently, OREI proponents have no defined approval and development pathway or protections – the absence of these matters has contributed to a reticence to invest in offshore electricity infrastructure. This in turn has had a broader flow-through impact on the Australian economy in terms of the opportunity costs of a less-diverse energy mix and the underdevelopment of a specialist OREI workforce and management expertise. Ultimately, project sponsors, utilities, off-takers and financiers require certainty - they need a predictable and stable permitting and regulatory regime that facilitates investment. Lack of regulation as much as over-regulation creates commercial uncertainty and risk – in Australia lack of regulation has hindered the development of OREI projects while funds have flowed freely into the North Sea and China for almost a decade.

The Bill aims to address this and strike the requisite balance, by creating a clear and secure environment for investment in, and development of, OREI projects. The Bill defers much of the detail to the regulations. Importantly, specifics around the exact application process, the financial security requirements and contents of the management plans (discussed below) are yet to be provided. Once passed, the Bill will be administered by the National Offshore Petroleum Titles Administrator as "Registrar" (**NOPTA**) and the National Offshore Petroleum Safety and Environment Management Authority as "Regulator" (**NOPSEMA**).

Investors in the OREI industry will be monitoring the passage of the Bill and the subsequent regulations with interest as the licensing regime is set to become the new regulatory OREI threshold. Given the likely transferability of late life offshore petroleum infrastructure to OREI projects and the opportunity to defer (or reduce) the cost of the decommissioning of that infrastructure, O&G companies will also be watching with interest - interestingly, such companies are likely to have existing relationships with both NOPTA and NOPSEMA, as these bodies are the traditional offshore O&G regulators. Such asset recycling is also to be encouraged given that it would allow OREI to take advantage of known environmental data for a particular site and minimise the differential impact on the marine environment of new projects. Redeploying existing O&G assets would also represent a significant reduction in the overall cost of a new OREI project, and therefore the levelized cost of the electricity it produces, as well as reducing the construction risk of a project and the safety risks to workers.

SNAPSHOT OF THE LICENSING REGIME

The base prohibition and licensing requirement

The Bill prohibits all activities relating to OREI projects unless that activity is licenced.

The parameters of the prohibition are as follows:

Geographical coverage?	3 to 200 nautical miles from Australia's shore (Australia's exclusive economic zone).
What infrastructure is covered?	Any infrastructure that has one of the following as its primary purpose: + exploring / assessing the feasibility of / exploiting a renewable energy source or storing / transmitting / conveying electricity obtained from a renewable source; or + storing / transmitting / conveying electricity, regardless if it was generated from a renewable energy source. This includes both fixed and tethered infrastructure.
What activities are prohibited?	Constructing, installing, commissioning, operating, maintaining, or decommissioning the infrastructure.
What is renewable energy source?	A "Renewable energy source" is defined broadly. It includes wind, tides, solar, geothermal etc., and can be extended further by regulation.

Unlicenced activity that contravenes this prohibition risks a monetary penalty and up to 5 years imprisonment for any person involved.

Declared areas

Before a licence can be granted, an area must first be declared appropriate for OREI.

This process includes a 60-day consultation period in which the Minister is required to consider any submissions made by the public, as well as consultation with the Defence Minister and the Minister responsible for the *Navigation Act 2012* (Cth). Once the Minister is satisfied that the area is suitable for OREI, the Minister may "declare" an area indefinitely or for a limited period. Declarations can also be conditional – for example, specifying the types of licences available in that area, or even imposing conditions on all licences granted in respect of that area).

A declaration in relation to an area can be modified or revoked – but the Minister will need to undergo a similar consultation process to do so. A declared area does not need to be contiguous and the Bill does not specify a minimum or maximum requirement in regard to the size of such an area.

Licence types

While much of the specifics will be provided for in the regulations, an overview of the different licence types is set out below:

	Commercial		Research	Transmission
	Feasibility licence	**Commercial licence**	**Research and demonstration licence**	**Transmission and infrastructure licence**
Obtaining a licence	By application The Minister can also invite parties to apply	By application	By application	By application
Purpose	A temporary licence for holders to then apply for the commercial licence	A licence for commercial OREI activities	A licence for small-scale OREI projects to research / demonstrate emerging technologies	A licence to store, transmit or convey energy to onshore users
Maximum duration (with potential for extensions)	7 years	40 years	10 years	Intended to be for the life of the asset
Key pre-requisites (or "merit criteria")	The applicant has, or is likely to have, the technical and financial capability to carry out the proposed project, and the project is likely to be viable	+ The applicant holds a feasibility licence + The applicant has a management plan approved by NOPSEMA + The project is substantially similar to the project proposed under the feasibility licence.	The licenced area may overlap with another licence already granted. If so, the Minister must be satisfied that the proposed activity does not interfere with the other licence holder(s) in the area.	The licenced area may overlap with another licence already granted. If so, the Minister must be satisfied that the proposed activity does not interfere with the other licence holder(s) in the area.

In addition to the pre-requisites described above, the Bill also imposes general requirements applying to all licence types, including that the proposed licence will need to be in respect of a declared area and must be consistent with any conditions applying to that declared area. Additional criteria may be specified in the regulations.

The Bill's Explanatory Memorandum also notes that these licenses only operate in relation to the Commonwealth offshore area and additional state or territory licences (and development approvals) may be required for connection to onshore energy infrastructure.

Applying for a commercial licence

The application process for feasibility and commercial licences is expected to be more competitive than that for research or transmission licences. In relation to feasibility licences, the Bill provides that:

+ other than directly applying for a feasibility licence, the Minister can also invite applications; and
+ the Minister may invite "financial offers" at its discretion.

As above, the Bill lacks details and defers to the regulations for the specific application process. The Explanatory Memorandum describes that these provisions may be used in situations where multiple applications of similar merit have been submitted - in this case the Minister can invite financial offers as a "tool" in deciding which applicant is successful. As the Bill continues to be considered in Parliament, this could remain a discretionary tool for the Minister, or may take the shape of a more formal tender process. At this point, the generality of the drafting leaves open what the final process could look like.

After obtaining a licence

After a licence has been obtained, and before OREI activities can commence, two further requirements must be satisfied:

1. **Developing a management plan**: Licence holders will need to have a management plan approved by NOPSEMA. Among other things, this management plan must cover environmental management, maintenance of the OREI as well as how the holder will ensure compliance with its financial security obligations (see below). The regulations can also extend content requirements to include work health and safety, emergency management, monitoring, auditing and other matters.
2. **Providing financial security**: Licence holders must at all times provide the Commonwealth with sufficient financial security to pay for decommissioning of the OREI, removal of equipment and remediation of the area. The Bill does not detail the form or quantum of this financial security. However, the Explanatory Memorandum states that the timing and amount required will be assessed and approved by NOPSEMA on a case-by-case basis. This was a key item in respect of which the Committee received many submissions and features in the Committee's Report.

Other points to note

+ **Levy:** Licence holders will be required to pay a levy, which will be established in the Offshore Electricity Infrastructure (Regulatory Levies) Bill 2021 currently also being considered by Parliament.
+ **Non-interference:** The Bill creates a strict liability offence for licence holders who interfere with other lawful users of the area in a way that is "greater than is necessary" for the exercise of their licence rights. This includes interfering with fishing operations, marine conservation and native title rights in the area. This offence poses interesting questions in relation to matters such as noise, visual aesthetics and other features of the OREI and how those impact the OREI's surroundings.
+ **Change of control and transfers:** Not unexpectedly, there are change of control and transfer restrictions under the licences. These actions will require prior approval by the NOPTA, which will depend primarily on whether the resulting licence holder will still be capable of complying with the licence conditions. (Such restrictions were the subject of numerous responses to the Committee.)
+ **Other environmental requirements: T**he licensing regime under the Bill does not replace or supersede any environmental legislation and existing environmental permit or approval requirements – these will still need to be obtained alongside any OREI licence. Importantly, the Bill does not clarify or streamline parallel Commonwealth and state level environmental approval pathways applicable to OREI as it connects to the onshore NEM.
+ **Operations and safety: I**n view of the security and logistical issues of operating offshore sites, the Bill also requires compliance with various safety regimes, including the Work Health and *Safety Act 2011* (Cth) (**WHS Act**) (with some modifications) when on OREI, and various maritime regimes when in transit to them. It also creates safety and protection zones around offshore infrastructure which prohibit certain activities from being undertaken in that area. It is noteworthy that the Bill has adopted (and adapted) the WHS Act as the safety regime to be applicable to OREI, given that the O&G industry has a bespoke regime.
+ **NOPSEMA enforcement powers:** The Bill provides NOPSEMA with wide powers relating to compliance and enforcement, including issuing fines, directions and seeking prosecutions to ensure license holders comply with licence conditions, regulations and workplace health and safety rules.

Interaction with other legislation

The Bill makes express provision for the application of state and territory legislation to Commonwealth offshore areas. However, the Bill also provides for the displacement of state and territory laws by the regulations. This has caused some disquiet among stakeholders, primarily state governments seeking a prescribed framework for consultation prior to the overriding of their legislation and also market operators concerned with the possibility of shifting goalposts and the challenge of meeting multiple (and potentially inconsistent) regulatory requirements.

Confining the displacement power to the regulations is justified in the Explanatory Memorandum as providing a suitably flexible and efficient way of identifying and tailoring the application of laws to the particular OREI and its related operations. The mechanism is intended to assist in allowing applicable existing laws to flex around the OEI industry as it develops. It can also be deployed in circumstances where a state or territory law may be appropriately applied to an activity that occurs onshore, but that may lead to an inappropriate or result were it to be imposed on projects and persons operating offshore. Whilst this approach broadly mimics that employed by the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*, it remains to be seen how the OREI regulations will interact with existing laws.

There are a number of existing laws that will continue to feature prominently and be applied by the Bill. As indicated above, the WHS Act will apply to operations on the OREI (as will certain other offshore maritime safety regulations when in transport). Moreover, Australia's primary piece of environmental legislation, the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**) will feature prominently and need to be addressed. Crucially, environmental approval for each OREI project will need to

be sought and obtained under the EPBC Act and under each applicable state-level environment and planning instruments.

It is interesting to examine the regulatory position in the United Kingdom by way of comparison. Whilst OREI in the United Kingdom requires consent under either the *Planning Act 2008* (UK) or the *Electricity Act 1989* (UK) -OREI in Australia requires both planning and electricity approvals as well as environmental approvals at Commonwealth, State and local government levels.

In the UK, OREI with more than 100MW capacity is classed as "Nationally Significant Infrastructure Projects" or "NSIP". This classification attracts the requirement to obtain a Development Consent Order (which in turn attracts other associated requirements). Notably, an environmental impact assessment is required for large OREI in the UK. This involves an assessment of all potential environmental impacts of the OREI and brings in a public consultation process.

It will be interesting to see if Australian legislation, especially the regulations made to implement the Bill, follows in the UK's footsteps to distinguish between large and small OREI projects. Doing so could reduce barriers to entry for sub-utility grade OREI, promote smaller offshore developments and create a market for private wind infrastructure (not dissimilar to solar PV and onshore wind).

An opportunity for O&G – late life assets and beyond

Offshore O&G companies may be looking to the Bill with interest in the context of what it could mean for decommissioning of late life offshore O&G infrastructure. For example, existing offshore infrastructure could become the foundations for new OREI projects and this may delay and/or reduce decommissioning liabilities as well as streamlining environmental approvals for OREI. Given the quantum of decommissioning liabilities for some offshore O&G assets, regulators may look to O&G companies to remain involved. In addition, participating in an OREI project may have the added benefit of bolstering a company's increasingly important ESG credentials.

This has become a familiar occurrence in the more developed OREI markets overseas. As governments mandate clean energy targets and push for carbon-neutrality in the not-too-distant future, established O&G companies can be certain of two things - one, that they need to take targeted action to reduce emissions from established O&G operations and two, that future profits lie elsewhere.

In what is a comparable engineering proposition (developing large-scale infrastructure in the middle of the ocean), O&G companies are the unlikely candidates to be best equipped to manage the transition and become leaders in the OREI industry. Notable examples include BP's recent bid to develop two wind farms in the Irish Sea, Norway's largest petroleum company, Equinor, which has marked itself as a leader in floating wind, as well as fellow majors Shell, Total and Chevron which have all earmarked offshore wind for prominence in their portfolios.

THE RESPONSE - WHAT DOES THE MARKET SAY?

Speaking at the group's 2021 Green Energy Conference, Macquarie Group Limited CEO, Shemara Wikramanayake, echoed the sentiments of many in declaring that governments must now prioritise renewables in their energy mix and "remove the bottlenecks that hold up project development". Wikramanayake underscored the importance of governments connecting their renewable ambitions with "plans, policies and support mechanisms".

Perhaps it is symptomatic of Australia's laboured awakening to the potential of OREI that the CEO of the world's largest infrastructure asset manager thought it apt to point out that, "with the right market environment, the private sector will invest, bringing the scale and innovation that drives down costs". Until the Bill, Australia's regulation of the OREI industry was piecemeal and decentralised – this has led to a "market environment" that has not spurred investment, but rather left multi-billion-dollar developments becalmed.

Overall, the Bill has been met with reserved optimism. Whilst there still remains a level of uncertainty – and eagerness to see the detail – the Bill is perceived as an important step in supporting the transition towards a renewable economy and a critical first step in unlocking the wealth of global investment and R&D in the offshore renewables sector.

LEGAL ISSUE AND CHALLENGES FOR OREI INVESTORS

Environmental & Fisheries Management

A common thread among OREI projects the world over is the potential impact on marine life, as well as on the fishing industry.

One matter of potential concern is the exclusion zones that will be applicable to licensed OREI. The fishing industry typically pushes for sub-100m exclusion zones and predicates this on the fact that much of the fisheries' resources reside under or close to the artificial infrastructure. In the United States, the development of Vineyard Wind, the country's first major offshore wind farm, has been hounded by similar issues, even being brought before the Court of Appeals by a fishing group alleging that the projects added "unacceptable risk" to the safety of fishermen and their vessels. However, the Senate Report describes how positive the fishing industry is about OREI in its submissions and that they see artificial reefs as being potential benefits to the fishing industry – so it seems this will be not so much an issue as a matter of striking the right balance.

Others have raised concerns regarding the impact on marine life and conservation more broadly, with conservation groups

seeking clarity on the Minister's consideration and consultation process, and whether the marine and environmental impacts will be adequately assessed for the purposes of a declaration. It has been mooted that consultation with the Minister administering the EPBC Act should be a feature of the zone declaration process rather done on a piecemeal, project by project basis.

The willingness of state environmental agencies to work in a constructive manner with OREI developers (and likewise, the willingness of Commonwealth agencies to work with state agencies) to allow projects to proceed without undue delay or onerous conditions will also be important. If OREI development are to be accelerated, 'red tape' will need to be minimised and state environmental and planning laws may need to be amended to create the necessary flexibility for addressing OREI projects. The basic framework is already in place with each State having special planning pathways available to major or significant development projects and the Commonwealth having a major projects bureau to assist major developments to cut through red tape.

Regulatory regimes

As noted above even once an OREI licence has been obtained under the Bill, it will still be necessary to navigate the energy regulatory regime applicable in the local jurisdiction – this will include obtaining the appropriate generation licence(s) from state authorities and NEM registration from AEMO for the development and operation of the OREI, securing grid connection and assessing and managing associated issues such as grid constraints and MLFs. Associated battery storage also may be required for certain projects so that energy can be stored (onshore or offshore) until required as a mitigant against grid connection issues, so it will be necessary for the Bill and importantly its regulations to be applied appropriately to storage assets.

Similarly, as the Australian OREI industry develops and multiple OREI projects are located within the same or adjacent declaration zones, the transmission arrangements between projects will need to be fairly and transparently regulated. Such inter-project connections could potentially open up much larger and further offshore wind resources as each successive OREI project could piggy-back on the then existing transmission infrastructure, provided the regulatory and liability regimes were conducive to doing so.

Given the scale of expenditure required for OREI, investors may also want to see more robust and dedicated onshore connection and transmission arrangements which may drive a need for further expenditure to replace ageing transmission and distribution assets in locations close to offshore energy projects or the development of new transmission connections in those areas. Another issue that will need to be addressed is how MLFs will be applied in the case of OREI so as not to materially disadvantage the new offshore wind projects and existing onshore projects.

Investors in electricity infrastructure will also need to become used to working with NOPTA and NOPSEMA and, when utilising offshore O&G infrastructure, understand the offshore O&G regulatory regime particularly in relation to decommissioning and trailing liabilities, indeed even existing O&G investors will need to adjust to NOPSEMA's functions in respect of OREI being different to its functions in respect of O&G.

Financing and the role of government "green" banks

Given offshore wind is a clean technology, financial support should be available from ARENA in the form of grant funding and CEFC in terms of loan finance for some projects, at least in respect of feasibility studies and the early stages of permitting.

With a growing list of overseas OREI projects as precedents and with OREI technology becoming increasingly established, lenders are increasingly willing to provide project financing to OREI projects and even to take construction risk. Finance for Australian offshore wind projects should be available from the private sector, domestically and internationally. In this regard, international banks which have had experience financing offshore wind projects in other countries will have an important role to play in bringing their capital and expertise to the Australian market and stepping up to play a lead role particularly with those international sponsors that have a successful track record in offshore wind in other markets.

Other sources of funding such as export credit agencies have a critical role to play in financing the development of offshore wind assets as they have to date in financing large scale LNG projects in Australia. Australia's major export partners (especially Japan, Korea and China) have announced policies in support of offshore wind and renewable hydrogen and their export credit agencies should therefore be able to provide support to their nation's manufacturing and trading companies involved in appropriate Australian OREI projects.

It will also be interesting to see whether state governments in Australia have any appetite to assist in the development of offshore wind projects particularly in respect of the funding of any new or upgraded transmission infrastructure required or associated infrastructure such as batteries, required for a project to be bankable.

WHAT'S NEXT?

Following its introduction, the Bill was referred to the Senate Environment and Communications Legislation Committee for inquiry and report. The Committee's report was delivered on 14 October 2021 and recommended the passage of the Bill, despite the lack of detail (such was the fervour of its support). The Committee's report noted that while there had been broad support shown for the Bill from interested stakeholders, some key

issues had been raised by stakeholders. These broadly fell into the following categories or themes:

- State governments wanted to see greater co-ordination of consultation between Commonwealth agencies and state authorities on the declaration of OREI zones and on particular project approvals.
- Many stakeholders recommended that there be a requirement for extensive environmental impact consideration at the Ministerial level before a particular zone was declared, rather than leaving it to individual projects to drive the impact assessment for their specific project within a zone, which may result in project sponsors expending significant resources on environmental studies to no avail.
- The change in control restrictions were seen by some investor parties as likely to have an adverse impact on the how infrastructure and superannuation funds could invest in OREI for the long term and therefore may limit their initial involvement.
- Reviewing the detail of the regulations was a key component to assessing the Bill.
- A number of stakeholders commented that the timing and sizing of the required financial security (or decommissioning bond) should be carefully considered by regulators, including a proposal that the quantum of a financial security given for a project ramps up over time and is therefore funded by project revenue rather than locking up significant equity during early years.
- There still remains the need for projects to navigate the parallel and sometimes contradictory Commonwealth and State environmental and planning approval regimes.

The Bill's final form is not likely to be available for some time, with the regulations (which are to implement significant parts of the OREI operational framework) not expected to be complete until well into 2022. This lead time reflects the task ahead for the legislators and regulators: to develop a regulatory framework that is well-crafted from the outset appropriate for the complexity and sophistication of the global OREI market.

Stakeholders, principally sponsors and financiers, should take this time to acquaint themselves with the Bill, given the committee has flagged its intention to consult widely with a view to presenting a framework that creates industry certainty, sufficient lead time for complex project design and financing, and workforce delivery.

G+T will continue to monitor the Bill and the development of the OREI industry in Australia.

The authors would like to acknowledge Christian Smolders' contribution in the research and preparation of this Article.

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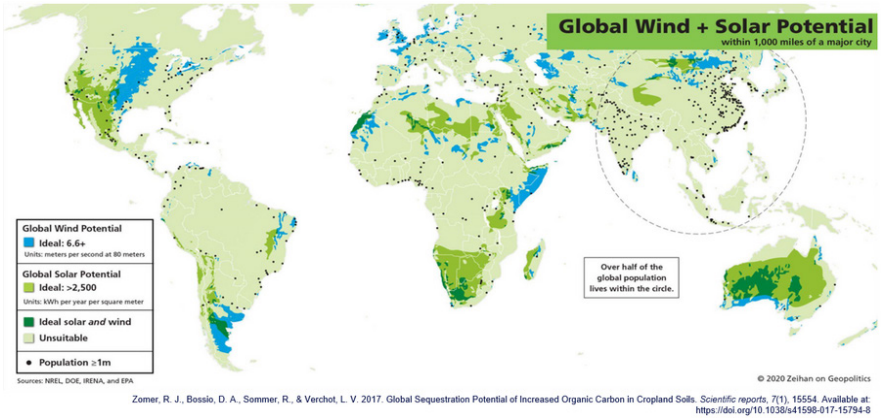
HY HOPES: WHY THE PROPOSED H2GO CERTIFICATION SCHEME MUST EMBRACE GREEN HYDROGEN

23/09/2021

Energy transition has driven every major economic and industrial development in history.

Due to Australia's access to natural and renewable resources, we are uniquely positioned to be the global leader in renewable production, use and export. The choice to seize that opportunity and become the leader in the clean energy transition poses Australia's biggest opportunity or our biggest threat if inaction is preferred over progression.



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In June 2021, the Department of Industry, Science, Energy and Resources (**DISER**) released its long-awaited discussion paper which proposes an approach to a Hydrogen Guarantee of Origin Scheme for Australia (**H2GO**). The following month, while the H2GO consultation period was still open, the Olympic flame in Tokyo was fuelled by green hydrogen, exemplifying global commercial and social attitudes towards green hydrogen.

Currently, there is no explicit plan for the H2GO to specifically certify a product as green hydrogen (hydrogen produced by green or clean methods). Currently, the H2GO scheme considers clean hydrogen as a production pathway with the output of the scheme being a certificate that states emissions per amount of hydrogen produced. However, it does not scrutinise or provide parameters that certify the manner in which the subject hydrogen has been produced and as such whether this entitles the hydrogen to be described as 'green'. While green certification may be an intended future outcome, it would be a missed opportunity to introduce a hydrogen certification scheme that has no clean production component.

The consultation period sought responses via a survey accompanying the H2GO discussion paper. Submissions closed on 30 July. Below, we set out submissions made by Gilbert + Tobin to answer certain questions of special importance, and encourage the embracing of, investment in, and capitalisation of Australia's unique green hydrogen opportunity.

The department recognises the need to extend the coverage of the scheme over time to include hydrogen derivatives and downstream products, additional production pathways and additional steps in the value chain. What additional components should be covered and when? (noting the commitment to include hydrogen energy carriers as an early next step).
An additional component of the H2GO Scheme that focusses on the certification of green hydrogen as a production pathway using renewable energy must be considered a priority. Green certification for hydrogen is an essential component for many domestic and international buyers as the international regulatory landscape takes shape in the clean energy transition. There is already widespread support for green hydrogen certification amongst industry and State governments. The legitimacy of a government-approved national scheme provides a value-add for Australian hydrogen.

URGENCY IS UTMOST

The Intergovernmental Panel on Climate Change's latest report is a grim reminder of how imminent climate change's risks are and reinforces the need for urgency across all sectors. Green hydrogen certification would provide universal benefits to be reaped in the immediate future. Implementation of these schemes takes significant time. Many companies including Fortescue Future Industries, Yara and the Asian Renewable Energy Hub consortium are already positioning themselves to lead the global green hydrogen industry on the back of Australian production and export. The H2GO scheme should consider green certification in addition to the existing scheme which includes blue hydrogen production pathways. Early adoption of inevitable green practices provides the platform for global leadership, and in turn, significant economic, environmental, and social benefits.

OUR HOME IS GIRT BY C-O2 BORDERS

While green hydrogen certification clearly has a commercial domestic audience, it can also provide crucial value for exported hydrogen. The European Union has implemented a carbon border tax that essentially imposes financial penalties relative to emissions on specific products, which will adversely impact the competitiveness of Australian exports. Green hydrogen certification cannot only help position Australian exports as compliant with international standards but can also provide a competitive advantage and unique selling point by leveraging our world-class energy and resources industry and regulation pedigree.

What should be the role of industry in co-designing a government led scheme?
Industry should play a collaborative role in designing the scheme so that the final outcome is both workable and meaningful. Industry has already shown significant leadership in developing green hydrogen certification schemes.

ECONOMIC, ENVIRONMENTAL, AND EFFICIENT

It has been predicted that implementing green resource production could inject $30bn into the national economy and green certification can facilitate this. The Smart Energy Council's green hydrogen certification scheme has attracted the interest of major industry groups including Norwegian giant Yara, and the governments of Western Australia, Victoria, Queensland and the Australian Capital Territory.

These founding partners clearly share a sense of value and an ambition to resolve the sometimes-competing tensions of regulation and commercialisation. As such, any co-designing of a government led scheme would clearly benefit from the input of industry who have already laid significant groundwork that could take years for the DISER to replicate. A consistent national framework would provide certainty and value, the former of which is naturally scarce in such fundamental transition periods.

A collaborative approach between government and industry encourages the beneficial resolution of the aforementioned competing tensions. Significant hope is placed in hydrogen as a fuel of the future. However, currently the cost of production and subsequent sale price is somewhat prohibitive. Industry input can help ensure that those costs are not needlessly or unintentionally added to and redistribute the risk and burden. This in turn ensures that clean energy is sooner able to be integrated into daily use which is beneficial for industry, government, the environment, end users and future generations.

Do you support the creation of Australia's hydrogen GO scheme as a certificate scheme?
The developers of the scheme should consider including a branding component by which quality Australian green hydrogen can be instantly recognised, providing value for government, industry and the Australian people.

IT IS TIME FOR A NEW AUSSIE ICON

As the proposal stands, the output of the H2GO scheme would be in the form of a certificate that states emissions per amount of hydrogen produced. While this is admittedly not the most pressing concern, the decision not to pursue branding seems like a missed opportunity. Some form of recognisable branded certification can not only provide benefits typically associated with branding in the present, but will also lay groundwork for the future when hydrogen makes its way into consumer networks to a meaningful degree.

We would also encourage the consideration of green certification for other energy sources and products. Green energy is an important consideration in industry and consumer decision-making. Its importance is only going to grow as the net-zero by 2050 goal edges closer.

CONCLUSION

A national approach that leads the global market is bold and distinct and is completely conformant with the Australian identity. We will continue to bring you updates as the scheme takes shape, and hope to see broader considerations come into play as the scheme develops.

G+T's clean energy and decarbonisation team is helping clients navigate the clean energy and decarbonisation transition. For a broader view of current developments and thought leadership on the clean energy transition, please visit our Clean Energy and Decarbonisation page or we would be happy to speak with you if you would like further information.

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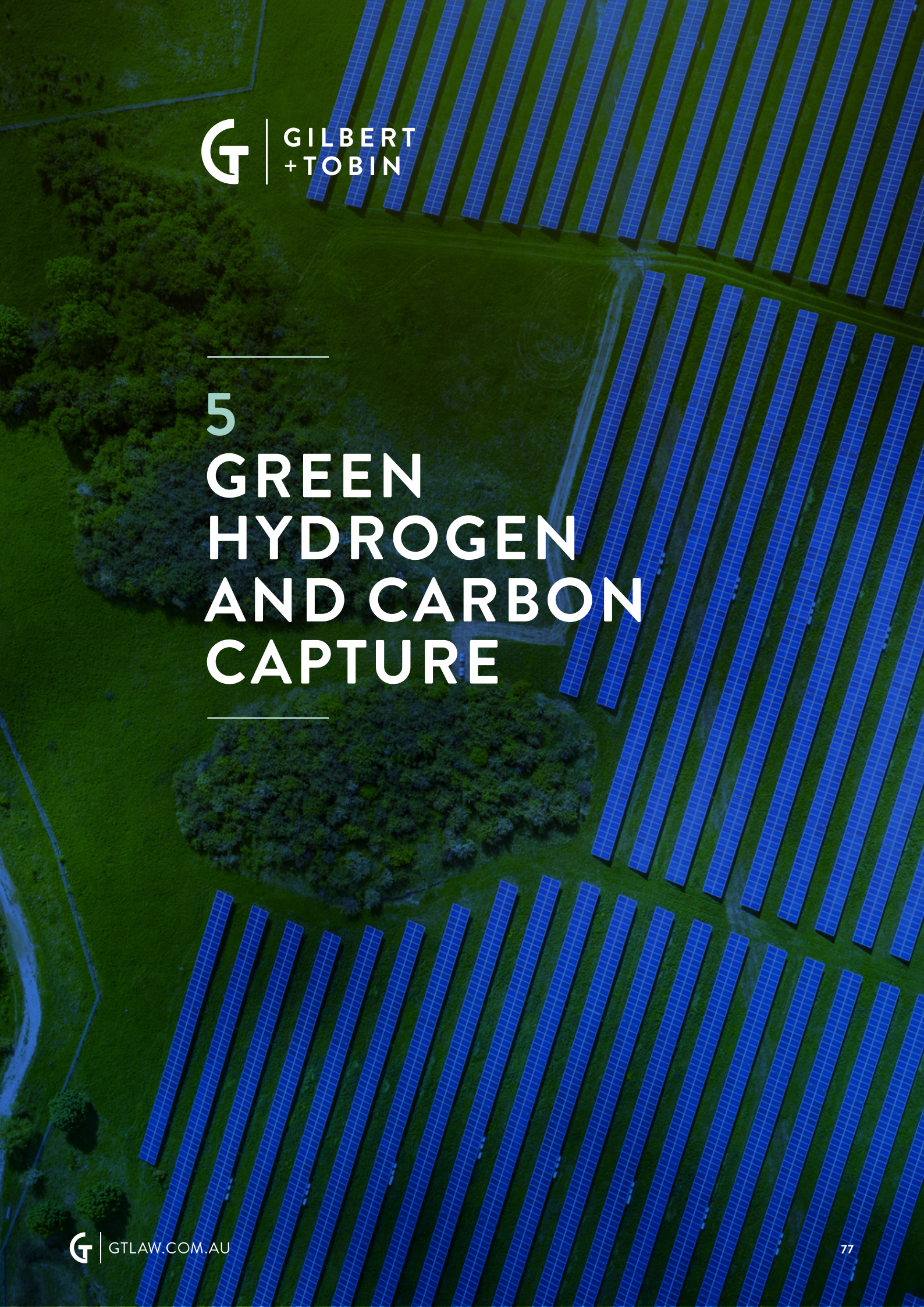

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5 GREEN HYDROGEN AND CARBON CAPTURE

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H2

GREEN HYDROGEN'S ROLE IN AUSTRALIA'S ECONOMIC AND LOW EMISSIONS FUTURE

18/03/2021

WHAT IS "GREEN" HYDROGEN?

In case we may have forgotten our high school science, hydrogen is the most abundant element in the Universe, occupying first spot in the Periodic Table. On planet earth, it combines with other elements to form compounds – mainly water (which combines hydrogen and oxygen as H2O) but it is also a component of natural gas, coal and petroleum.

Currently, nearly all hydrogen comes from coal and gas through a process that emits carbon dioxide into the atmosphere – this is commonly referred to as "grey" hydrogen. According to the International Energy Agency, the production of hydrogen globally by this method is responsible for about 830 million tonnes of carbon dioxide a year.

Can hydrogen be produced in an environmentally friendly way? One alternative is to produce hydrogen from fossil fuels but combine this with carbon capture and storage technology (i.e. to trap the carbon dioxide before it enters the atmosphere and bury it underground). This is referred to as "blue" hydrogen.

However, for hydrogen to play a role in any transition to clean energy, it must be produced without creating any emissions. The cleanest method is hydrogen generated by the use of renewable energy sources which do not create any emissions – this is referred to as "green" hydrogen. Hydrogen is made using an electrolyser to send an electric current through water to split the hydrogen molecules from the oxygen molecules. When renewable energy (i.e. electricity generated by wind or solar) is used to power the electrolyser, the hydrogen so produced is emissions free – this is so called "green" hydrogen.

As a way to store renewable energy, "green" hydrogen is not overly effective, losing between 50% and 20% of the power in the process depending on the electrolyser technology used. Battery technologies such as lithium-ion and vanadium flow offer

better efficiencies but require more mineral demand. Pumped hydro and other simpler technologies also have better efficiency than "green" hydrogen but require major engineering works to establish them. Notwithstanding these difficulties, there is a strong and growing global interest in "green" hydrogen and a number of companies are now turning their attention to this energy source.

Currently, less than 1% of hydrogen produced globally is "green" hydrogen according to an October 2020 Wall Street Journal article. However, in the 9 months to December 2020, more than US150 billion worth of green hydrogen projects have been announced globally. In total, more than 70 gigawatts of such projects are in development which could require US$240 billion of investment by 2040, the research firm Rystad Energy estimates.

WHAT ROLE CAN GREEN HYDROGEN PLAY IN AUSTRALIA?

As the push to zero-net emissions accelerates globally, electricity generation is shifting from fossil fuels to renewable sources such as wind and solar. The use of these sources to generate electricity is being supported by the construction of large-scale batteries (which can store renewable energy) and pumped hydro projects. This shift is occurring in Australia as it is in other developed countries.

There are some sectors of the economy where replacement of fossil fuel by battery technology is a clear option and the preferred way forward – the transport sector in Australia is a good example of this. Cars that run on petroleum are being replaced by cars which run on batteries charged by a low carbon power grid – this technology is being extended to buses – and can potentially extend to other transport modes such as trains and trams.

But there are a number of essential industries where the use of batteries is not possible – examples include the manufacture of steel, cement, glass or chemicals which use coal or gas either as a fuel to produce ultra-high heat or as a raw material. Another example is long haul transport modes such as aviation, shipping and long-haul trucking where battery technology cannot provide sufficient fuel for the distances involved. The appeal of "green" hydrogen is that it has the potential to clean sectors that have proved difficult to decarbonise in the past.

For a shift to "green" hydrogen to occur, it must be produced for under US$1.5 per kilogram so as to make it competitive with coal, oil and gas. The key input which has to fall to achieve that cost is the cost of renewable energy (i.e. wind and solar) and the costs of electrolysers (which are needed to split the hydrogen and oxygen comprised in water). ARENA estimates that renewable energy costs would need to fall by around 50% and the cost of electrolysers by around 75% to meet that target in Australia.

IS THE GOVERNMENT IN AUSTRALIA INTERESTED?

Support to develop a world class "green" hydrogen industry in Australia is growing at both federal and state government levels. The Federal Government in particular has articulated a clear strategy in relation to "green" hydrogen and substantial sums are now being committed for research and development initiatives.

In 2019, COAG's energy council endorsed a national hydrogen strategy that aimed to position Australia as a major global industry player and exporter of the fuel in its super-chilled liquefied form by 2030. The National Hydrogen Strategy set out the initial actions needed to support this emerging industry.

Building on this strategy, the Federal Minister for Energy and Emissions Reduction, The Hon Angus Taylor MP released the First Low Emissions Technology Statement ("Low Emissions Statement") in September 2020. This document is the first statement issued under the government's Technology Investment Roadmap. The Low Emissions Statement articulates a vision for Australia to be recognised as a global low emissions technology leader. One of the stated strategic intents is to accelerate the development of new and emerging technologies in order to make them economically competitive with established technologies, unlocking new opportunities across the country. In relation to "green" hydrogen, the Low Emissions Statement:

+ identifies "green" hydrogen as a priority low emissions technology of long-term strategic importance to the government and that Australia is well-placed to become a world leading hydrogen producer;
+ specifies, as one of the priority technology-stretch goals, a price for "green" hydrogen of under $2 per kilogram – at this price, "green" hydrogen becomes competitive in its applications (such as producing ammonia), as a transport fuel and for firming electricity; and
+ in terms of working with the private sector, states as an objective, the establishment of Australia's first regional hydrogen hub which will co-locate domestic hydrogen users with an export focus to create global hydrogen supply chain linkages.

The Low Emissions Statement notes that the government's new $1.9 billion investment package in new technologies includes new commitments that will support hydrogen. These include:

+ $1.6 billion in new funding for ARENA;
+ A $74.5 million Future Fuels package; and
+ $70.2 million to activate regional hydrogen export hubs.

The federal government sees a future "green" hydrogen industry in Australia as generating over 8,000 new jobs and $11 billion a year in GDP by 2050. Thirteen technology "clusters" will be set up around Australia to help smaller companies gain a foothold in the rapidly emerging hydrogen sector and build up national expertise in an area awash with international initiatives to support the development of the clean fuel. The federal government has also entered into a series of partnerships with Germany (to develop a hydrogen supply chain), South Korea and Japan to explore the

possibility of future hydrogen exports. Its investment plan is "technology neutral" which means that public funding is available both to "green" and "blue" hydrogen projects which has attracted some industry criticism.

At a state level:

Tasmania

In early February this year, the Bell Bay cluster (Bell Bay Advanced Manufacturing Zone or BBAMZ) in Tasmania was successful in receiving $200,000 from the Commonwealth funded National Energy Resources Australia and the Tasmanian government for research into the latest "green" hydrogen technology. BBAMZ was one of 13 clusters to share in funding as part of the National Hydrogen Supply Strategy – the only one in Tasmania. Bell Bay has access to water resources and renewable energy;

NSW

The *Electricity Infrastructure Investment Act 2020* (NSW) effects an amendment to the *Energy and Utilities Administration Act 1987* (NSW) to require the Climate Change Fund (established under that Act) to spend $50 million between 2021 and 2030 to develop the "green" hydrogen sector in NSW including the production of hydrogen energy using renewable energy and the supply, use and export of hydrogen energy produced using renewable energy.

Most recently, the NSW Government announced that it will spend $750 million to help reduce the state's industrial emissions by investing in "green" hydrogen production supporting the shift to low emissions manufacturing and funding new clean technology research. The New Zero Industry and Innovation Program was launched on 15 March 2021 by NSW Environment and Energy Minister, Matt Kean MP. The funding will be provided over the next 10 years and will target the state's emitters, which represent a substantial proportion of the state's greenhouse gas emissions and who are a major consumer of fossil fuels. The program will direct $380 million to support existing industries develop low emissions technologies, $175 million to set up low carbon industries such as "green" hydrogen and $195 million to research and develop new clean technologies;

South Australia

It was recently announced that global engineering group Worley has signed a contract with fledgling firm Hydrogen Utility (H2U) to design its $240 million electrolysis plant and ammonia production facility. The Eyre Peninsula Gateway Project in South Australia will be built in two stages. In the demonstration phase, the 75 MW electrolyser is expected to commence production of green hydrogen and ammonia in the first quarter of 2023. If the technology is considered viable, the project will later expand to the export stage with an industrial-scale facility ramping up to a 1.5 GW electrolysis plant with an ammonia synthesis plant. The project is backed by $12.2 million dollars of grants and loans from the Australian government's Renewable Technology Fund;

Victoria

In its last budget, the government pledged $108 million to the emerging renewable hydrogen industry. In recent developments, Port Anthony Renewables has signed a third binding joint venture agreement to build a hydrogen export facility at Port Anthony in Victoria. The group has signed on with GrapheneX Pty Ltd, which is leading the Victorian government-backed Clayton Hydrogen Cluster, after deals with Pure Hydrogen and Patriot Hydrogen to build two separate hydrogen production facilities at Port Anthony;

Western Australia

Horizon Energy, owned by the WA Government, plans to use solar and renewables hydrogen to generate 526 megawatt hours a year of green electricity, enough to power 100 homes; and

Queensland

The Queensland government will trial 5 Hyundai Nexos hydrogen fuel-cell vehicles powered by home grown "green" hydrogen.

"Green" hydrogen seems to be attracting the most attention from the private sector with several developments currently mooted across various Australian states. In terms of latest developments:

+ the Australian red meat and livestock industry has committed to achieving carbon neutral status by 2030 while the National Farmers Federation wants farm energy sources to be 50% renewable by 2030 and for agriculture to be trending towards carbon neutral by the same year. These bodies are strong supporters of the push to develop "green" hydrogen as it is seen as a replacement for diesel fuel given "green" hydrogen produces zero greenhouse gases;
+ the Tasmanian government has reportedly struck an agreement with Woodside Petroleum to support its application to ARENA for funding of a "green" hydrogen demonstration production plant (H2TAS) at Bell Bay targeting hydrogen for the transport sector. The H2TAS project will be powered by 10 megawatts of renewable energy and will produce 4.5 tonnes of hydrogen a day – the project has now been shortlisted for funding by AREA (out of the $70 million committed by the federal government as noted above). Woodside is also reportedly working with TasGas to explore blending hydrogen in Tasmania's gas pipeline network;
+ Blue Energy is proceeding with the Arrowsmith Hydrogen Project, north of Perth, powered largely from on-site solar power;
+ in NSW gas pipeline company, Jemena, says that its $15 million Western Sydney Green Gas Project will generate enough hydrogen to meet the energy needs of about 250 homes and businesses from mid-2021 and under a deal with Hyundai could supply hydrogen to fuel its NSW vehicle fleet;

- a NSW based company, Elvin Renewables, has announced the manufacture of scalable electrolysers which will put the ability to make hydrogen fuel into the hands of farmers and rural businesses;
- Origin Energy is proposing a "green" hydrogen production plant at Bell Bay in Tasmania for "green" ammonia exports in one project and in another, is planning an electrolyser in Townsville for "green" energy for export and local industry supply in partnership with Japan's Kawasaki Heavy Industries;
- in WA's Pilbara region, a consortium is planning the Asian Renewable Energy Hub to produce "green" hydrogen and export "green" ammonia on a large scale. Copenhagen Infrastructure Partners has launched a partnership with Hydrogen Renewables Australia to develop a 500-megawatt project in Murchison, WA;
- Woodside Petroleum also has the Badgingarra Renewable Hydrogen Project in WA's wheat belt which will produce "green" hydrogen for transport and industrial applications;
- Fortescue Metals Group (FMG) is considering an investment decision on whether to proceed with a 250 MW "green" hydrogen and ammonia production plant to be located at Bell Bay in Tasmania. Dr Andrew Forrest has also stated recently that he is interested in building a gas and hydrogen fuelled power station at Port Kembla to supply Sydney and NSW industries and households with affordable, green energy, and that work will commence as soon as approvals are obtained from the Federal and NSW state governments. According to press reports, the $1 billion power station would be developed and funded by Squadron Energy, Dr Forrest's privately-owned company. The power station would sit next to an import terminal Squadron Energy is currently building that will have capacity to handle LNG and green hydrogen exports. The power station plan is closely aligned with the push by FMG to add "green" hydrogen production to its iron ore operations. FMG has expressed confidence that technology is advancing quickly enough to clear the way for large-scale "green" hydrogen production and transport within the next few years – it foresees first "green" hydrogen production in 2023 with the Port Kembla import terminal being one of the first customers; and
- the Japanese have invested in a hydrogen liquefaction plant in the LaTrobe Valley in Victoria.

THE CHALLENGES IN THE GREEN HYDROGEN INDUSTRY

There is a global race for nations to position themselves as major players in the "green" hydrogen industry.

The European Union said in a 2020 report that clean hydrogen power is "essential" to reaching its goal of carbon neutrality by 2050. Germany has a Euro 9 billion hydrogen strategy, France has committed Euro 7 billion and the Netherlands is converting its LNG ports and facilities to cater for "green" hydrogen.

As far as Australia is concerned, in a recent report, ratings agency S&P said that Australia's hydrogen exports would have to be in liquefied form – this requires special purpose-built vessels and the retooling of ports and potentially pipelines.

"Building a liquefied hydrogen chain will likely take a long time and may not be realistic given the onerous start up costs for hydrogen versus converting cheap gas into [LNG]", the report says. "Scaling-up hydrogen production seems to be a long shot."

Other commentators have noted that Australia will need to build renewable energy supplies, hydrogen production facilities, export facilities, ports, ships, import facilities and logistics facilities to get the product to the countries where the demand exists and have pointed out that building a big supply chain takes time (for example, in LNG it took decades). Investors will want to see an investment in the supporting infrastructure before committing to invest in the development of "green" hydrogen production plants.

Some commentators see the sector as being on the verge of its critical moment – some think that Australia can grow clusters (like Bell Bay) and hubs quickly if government gets involved but that Australia will first have to develop a solid domestic market before it can develop an export market. Others point out that to export hydrogen, there must be skills developed locally and an impeccable safety record – hence development of a domestic market will help to build an industry that is vertically ready to export.

OVERVIEW OF GLOBAL DEVELOPMENTS INTO HYDROGEN

Globally, a number of countries are embracing the "green" hydrogen opportunities. A snapshot of the global position is set out below:

Chile

Chile is expected to become a key global producer of "green" hydrogen over the next 10 years with large-scale development of several gigawatts of electrolysis production set to ramp up through 2025. The Chilean Government released its National Green Hydrogen Strategy in November 2020 articulating its strong ambition to be become a key producer globally – its ambitions are supported by its robust wind and solar renewables growth outlook which will see the non-hydro renewables sector become responsible for the largest share of the country's generation mix by 2029. In this regard, the country has the highest solar irradiation levels in the world in the Atacama desert in the north and the Patagonia region in the south contains highly suitable wind speeds. The large renewables capacity in these regions, together with the expectation that costs for both renewables' developments and electrolysis technology in that country will continue to fall over the next decade support the view that Chile

will be able to produce "green" hydrogen gas that is cost competitive or even cheaper than other markets around the globe. Companies involved in pilot projects include the State owned Enap together with Porsche, Enel Green Power, Siemens Energy and ExxonMobil and Sinopec Engineering.

Scotland

Scotland will generate enough power from "green" hydrogen to heat 1.8 million homes by 2030 and add up to GBP 25 million to the economy as part of a strategy to become carbon neutral by 2045. The Scottish Government will invest GBP100 million over the next 5 years into the expanding hydrogen sector in a bid to enable the country to become a key player in the clean hydrogen industry. In recent developments, "green" hydrogen could be used to power heavy machinery at the Port of Nigg offshore wind farm fabricators after a partnership between Scottish Power and Global Energy Group was announced in February this year. The initiative will see the use of "green" hydrogen being investigated, including for high temperature processes at the producer of Scotland's biggest offshore wind farms. This follows Scottish Power launching a "green" hydrogen business in December 2020. Hydrogen is being tested in a new fleet of double-decker buses in Aberdeen and a Scottish Enterprise project to develop hydrogen powered trains. In Fife, energy firm SGN is hoping to build the world's first 100% "green" hydrogen network.

Oman

DEME Concessions, a Belgium based dredging, environmental and marine engineering group and OQ Alternative Energy, the green energy unit of Oman's integrated energy firm, OQ announced in December 2020 the start of a joint project to develop a world leading, "green" hydrogen plant in the Special Economic Zone at Duqm. This zone provides a strategic and competitive location to develop large-scale "green" hydrogen projects, given its centrality to global trade, the favourable wind and solar resources, the existing large port facilities and the proximity to a booming industrial zone. The objective is to place Duqm as the hub in the hydrogen value chain.

China

In January this year, it was announced that fossil fuel energy giant China Petrochemical Corporation (Sinopec Group) has sought to join with four of the nation's biggest solar energy players to wok on "green" hydrogen projects to help China achieve carbon neutrality. The objective is to become the nation's largest hydrogen energy supplier. Sinopec is investing in the whole supply chain, spanning hydrogen production, fuel cell manufacturing and refuelling stations.

Canada

Ottowa has released a hydrogen strategy to achieve a "green" hydrogen economy by 2050. However, critics have noted that the strategy is short on detail as to how this will be achieved.

Philippines

The Department of Energy in the Philippines has entered into a MOU with Australian based research and development firm, Star Scientific Limited, to look into the potential of "green" hydrogen in the Philippines' energy portfolio. Star Scientific is known for its breakthrough technology dubbed Hydrogen Energy Release Optimizer (Hero) which coverts hydrogen into heat without combustion. The MOU has been signed with the support of the federal government.

South Africa, India, Germany, Italy, the United Kingdom and the United States

Various "green" hydrogen projects are underway in these countries with different private sector companies and government agencies – in a number of cases, the countries or states involved are focused on developing green energy hubs and using "green" hydrogen to decarbonise energy intensive industries and sectors (including local public transport, steel production and freight transport and logistics).

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GREEN HYDROGEN IN AUSTRALIA – OUR PROGRESSES TOWARDS A NEW INDUSTRY

17/08/2021

AUSTRALIA'S PLAN TO LEAD THE GREEN HYDROGEN INDUSTRY

Australia is part of a global race for nations to position themselves as major players in the "green" hydrogen industry. Industry experts forecast a massive future demand for "green" fuels from multiple sectors, including in co-firing in power generation, the shipping sector, heavy industry such as steel, chemicals and mining, as well as the heavy transport and aviation sectors and for industrial feedstocks and heating. Some commentators predict the "green" hydrogen industry will become a USD2.5 trillion market by 2050.

In a recent report, Standard & Poor's has commented that it expects clean hydrogen to emerge as a fuel for buses and heavy trucks possibly in the second half of this decade, but for cars it would lose out to batteries which are "significantly more energy-efficient". S&P has also voiced doubts about the pace that hydrogen would emerge in sectors such as steelmaking, noting that net zero commitments imply the full decarbonisation of hard-to-abate sectors which cannot be easily electrified such as steel, but using hydrogen to do so would be extremely costly. According to S&P, it expects existing end markets for hydrogen such as oil refining, chemicals and later on possibly fertilisers to be among the early adopters of hydrogen. It also sees hydrogen playing an important role beyond 2030 in power generation to provide storage and firm back-up power as the share of electricity generated through renewables increases.

To become a global player, Australia will need to build renewable energy supplies, hydrogen and ammonia production facilities, large scale and import export facilities suitable for bulk hazardous liquids, ports, ships and logistics facilities to get the product to the countries where the demand exists. It will also need to demonstrate that a domestic market exists for hydrogen.

In an article published earlier this year, we noted that the Federal Government sees "green" hydrogen as a key industry of the future in Australia capable of generating over 8,000 new jobs and A$11 billion a year in GDP by 2050.

In this regard the Federal Government proposed that thirteen regional hydrogen technology "clusters" be set up around Australia to help smaller companies gain a foothold in the rapidly emerging hydrogen sector and build up national expertise in an area awash with international initiatives to support the development of the clean fuel. The development of a national hydrogen cluster was identified by the 2019 National Hydrogen Strategy as an important component to scale up Australia's domestic industry to become a global hydrogen competitor.

National Energy Resources Australia ("**NERA**") has now formed a network of hydrogen technology clusters across Australia, providing seed-funding in partnership with governments and industry to build the skills, capability and commercialisation opportunities in the emerging hydrogen industry. NERA is facilitating connections and knowledge sharing between the cluster network to lead the formation and early development of an overarching industry-led Australian Hydrogen Technology Cluster — Hydrogen Technology Cluster Australia (H2TCA) — that will expedite rapid development of the hydrogen supply chain and drive market activation, establishing a global identity and recognised brand for Australian hydrogen technology and expertise.

The Federal Government has also entered into a series of partnerships with Germany (to develop a hydrogen supply chain), South Korea, Japan and the United Kingdom to explore the possibility of future hydrogen exports.

Since our last article in March this year, a number of important further developments have occurred which we describe and comment on in this article.

ARENA GRANT FUNDING

In May this year, the Australian Renewable Energy Agency ("**ARENA**") announced that it plans to grant A$103.3 million (USD79.1 million) to three projects, as part of its Renewable Hydrogen Deployment Funding Round as follows:

- up to A$42.5 million to a 10 MW electrolyser project being developed by Engie Renewables Australia ("**Engie**") and Yara Pilbara Fertilisers ("**Yara**") in Karratha, Western Australia ("**WA**");
- A$28.7 million to ATCO Australia's 10 MW electrolyser for gas blending at ATCO's Clean Energy Innovation Park at Warradarge, WA; and
- A$32.1 million to Cheung Kong Infrastructure subsidiary Australian Gas Networks Limited ("**AGIG**") for a 10 MW electrolyser being developed in AGIG's Murray Valley Hydrogen Park in Wodonga, Victoria.

Engie and Yara will use "green" hydrogen to produce ammonia while ATCO and AGIG will use "green" hydrogen for gas blending in existing pipelines. Blending of hydrogen into the local gas grid provides a ready-made market for the fuel as there is a use for the hydrogen and a customer from day one. We comment further on this development below.

The parties which have been granted ARENA funding must now satisfy a number of development conditions and achieve financial close before funding is released. The successful applicants can also apply for debt and equity finance from Clean Energy Finance Corporation ("**CEFC**"), a sister agency of ARENA, which manages the A$300 million Advancing Hydrogen Fund.

Darren Miller, the CEO of ARENA, has stated publicly that

"We're excited to have chosen three projects we believe will help kickstart renewable hydrogen production in Australia at a large scale. Our hydrogen industry in Australia is in its infancy, so the lessons learned from these three projects – and the entire funding round – will be important in driving our future hydrogen economy."

The ARENA funding rounds are designed to help spur commercial production of hydrogen under the Federal Government's H2 under A$2 strategy, which aims to make hydrogen cost competitive with other fuel sources such as gas by bringing the cost of hydrogen to below A$2 per kg. Since 2016, ARENA has committed over A$57 million to hydrogen projects including A$22.1 million towards 16 R&D projects, as well as to feasibility studies into large scale projects and smaller scale demonstrations.

A number of companies which were unsuccessful in this ARENA funding round are now reportedly reviewing their options. In particular:

- Gas pipeline company, APA Group, and partner Woodside Petroleum Limited ("**Woodside**") announced that they have dropped their proposed renewable hydrogen project in WA after being unsuccessful in obtaining ARENA funding. APA and Woodside had sought funds for a proposed project in WA's Central West, powered by APA's Badgingarra wind and solar farm.
- Woodside, which has a large LNG export business and has stated publicly that it wants to capture a foothold in the emerging hydrogen market in Asia, was unsuccessful in the ARENA funding round for its Tasmanian project but has announced that it will still pursue that project on a slower schedule. The company is of the view there is strong support among community and government stakeholders for a phased approach that starts with a Tasmanian market. Woodside and partner Countrywide Renewable Energy will now review the concept and schedule of their Tasmanian project (which is planned for the same industrial park as separate projects planned by Fortescue Future Industries Pty Ltd ("**FFI**") and

Origin Energy). FFI is the wholly-owned "green" energy vehicle of Fortescue Metals Group ("**FMG**").

+ BHP has said *it will continue to study the potential to trial the use of an electrolyser* alongside renewable power at its Kwinana nickel refinery in WA despite failing to secure ARENA funding for its project.
+ Macquarie Group has made no comment on the plans for its hydrogen project with Anglo American at the Dawson coal mine in Queensland, after its bid for ARENA funds was also unsuccessful.

AUSTRALIA'S CLEAN HYDROGEN HUBS INITIATIVES

In April this year, Prime Minister Scott Morrison pledged A$275.5 million to accelerate the development of four additional clean hydrogen hubs in regional Australia and implement a clean hydrogen certification scheme.

This was supported in the 2021-22 Budget by a commitment of A$61.8 million over 4 years for the development of these additional clean hydrogen hubs. This builds on A$70.2 million provided in the 2020-21 Budget to support the development of a technology-neutral regional hydrogen export hub. These new measures are for "clean" hydrogen which the 2019 Hydrogen Strategy defines as being "produced using renewable energy (green hydrogen) or using fossil fuels with substantial carbon capture and storage (CCS) (blue hydrogen)".

WHERE ARE THE HYDROGEN HUBS IN AUSTRALIA?

The number of announced regional hydrogen hubs in Australia is currently 7 and are located in:

+ Latrobe Valley (Victoria);
+ Darwin (Northern Territory);
+ Pilbara (Western Australia);
+ Gladstone (Queensland);
+ Hunter Valley (New South Wales);
+ Bell Bay (Tasmania); and
+ Eyre Peninsula (South Australia).

WHAT IS THE PURPOSE OF THE HYDROGEN HUBS?

The objective of these hubs is to crystallise billions of dollars of investment pledged by major ASX-listed companies, private investors and international energy investors. Australia is pinning its hopes on the hydrogen hubs – backed by some of the nation's biggest renewable investors – as part of a technology-led solution to reach net zero emissions, without yet providing a timeline for reaching that goal.

New South Wales

Following this announcement, a consortium of international energy companies has formed to investigate the potential for a fully renewable hydrogen supply chain in the Hunter Valley coal mining region in New South Wales.

As noted above, the Hunter Valley is one of four hydrogen hubs in regional areas that may be eligible for A$275 million in funding over 5 years. The Hunter Valley is primarily a coal mining region that supplies thermal coal for export to Asian markets from the Port of Newcastle and to three coal power plants (which are all earmarked for closure) and is also home to thoroughbred horse breeding and wine growing industries.

Global commodity traders Trafigura and Idemitsu, AGL Energy (an Australian utility provider) and APA Group (a gas infrastructure provider), RES (a clean energy company) and Walcha Energy have joined a partnership led by renewables developer and advisor EnergyEstate. The A$2 billion (US$1.56 billion) Hunter Hydrogen Network (H2N) proposal would involve using renewable energy generated near the Hunter Valley to create "green" hydrogen, which would be transported via a dedicated pipeline to manufacturers based in the region and onto Port of Newcastle for export. The partners will jointly work on a feasibility study for the proposal.

Stage 1 would involve the production of hydrogen at an electrolyser at the site of Idemitsu's repurposed Muswellbrook coal mine and a 10km hydrogen pipeline to Liddell, near the site of a coal power plant due to close in 2023. A much larger second stage would involve more electrolysers built around Liddell between 2022 and 2026, and a 100km extension of the pipeline to the Port of Newcastle that would allow hydrogen to be used by manufacturers there and exported to Japan and Korea. Larger volumes of renewable electricity would be generated from wind and solar farms planned for the Walcha plateau, west of the Hunter Valley. A potential third stage would involve extending the hydrogen pipeline westwards to the proposed New England and Central West renewable energy zones being developed by the New South Wales government over the next five to 10 years. New electricity transmission infrastructure would be required to connect the renewable generation from Walcha and the two REZs to the proposed electrolysers at Liddell.

According to Energy Estate, the exact scope and size of the network of projects would be determined based on discussions with off-takers which would include manufacturers interested in using hydrogen or ammonia. These may include the Tomago Aluminium Smelter, chemicals manufacturers and proposed gas-fired power stations at Kurri Kurri and Newcastle which could convert to hydrogen-powered turbines. Underwriting from an agency such as the CEFC for the hydrogen-related infrastructure is an option but the partners have stated that they would not seek financial assistance until the feasibility study determines the optimal scope and size of the various project components. EnergyEstate said it would consult stakeholders in all three industries as well as local community groups on the potential to develop a hydrogen supply chain while the technical feasibility studies are underway.

Western Australia

In terms of recent developments:

+ An A$100 billion renewable energy hub producing "green" hydrogen and ammonia has been proposed in WA, with the facility having the potential to be one of the world's largest clean fuel projects should it proceed.

  The Western Green Energy Hub would cover 15,000 sq km across the Goldfields-Esperance region in the state's south-east and could produce up to 50 gigawatts of wind and solar power, nearly equal to the entire capacity of Australia's national electricity market. The project is estimated to cost close to A$100 billion. The Western Green Energy Hub will be built in phases and will aim of ultimately producing up to 3.5m tonnes of "green" hydrogen or 20 million tonnes of "green" ammonia each year, with first production scheduled for around 2030.

  The project is sponsored by InterContinental Energy ("**InterContinental**") and CWP Global ("**CWP**"). The Mirning Traditional Lands Aboriginal Corporation (a special purpose vehicle used by traditional owners) is also a partner with InterContinental and CWP in the consortium. Hydrogen would be supplied both domestically and also for overseas customers.

  InterContinental and CWP had a A$48 billion wind and solar powered green hydrogen project proposed for WA's Pilbara rejected by federal Environment Minister, Sussan Ley, earlier this year. The Asian Renewable Energy Hub project, which would have covered an area 10 times the size of Singapore, was rejected on concerns the facilities and brine from a desalination plant would pose a "catastrophic" risk to one of the world's most important migratory bird habitats near Eight-mile Beach. The project was designed to include 1753 wind turbines and up to 10,800 megawatts of solar capacity, spread over a total area of more than 660,000 hectares.

+ British energy major BP recently announced that it regards WA as "ideally positioned" for the large-scale production of "green" hydrogen and "green" ammonia, but that development will require significant investment in ports, energy and water networks and infrastructure. This results from a A$4.42 million feasibility study by the company in relation to a renewable hydrogen and ammonia facility near Geraldton. BP is one of several companies which see the opportunity to develop renewable energy-based hydrogen and ammonia projects in Australia, with the aim of targeting clean energy exports to Asia.

  The prospects for scaled-up green hydrogen look "particularly promising" in WA's mid-west, according to BP, as the region has existing infrastructure, access to land and "world class wind and solar resources with high diurnal complementarity (i.e. solar by day & wind by night)". The company's study also confirmed strong demand from potential customers in the hard-to-abate industrial sectors which cannot be easily electrified, and for both local and export markets.

  The study, carried out by GHD Advisory, BP's renewables venture Lightsource bp and with A$1.7 million of funding from ARENA, examined both the potential for a pilot-scale plant of 4,000 tonnes a year of hydrogen to make 20,000 tonnes a year of ammonia, and a much larger commercial scale plant of 200,000 tonnes of hydrogen to make up to 1 million tonnes of ammonia. It considered three hydrogen production technologies, using a mix of power sources comprising solar and wind, with grid connection and some battery support. The study examined potential economic returns but found that to be properly analysed and understood, the domestic and export markets for renewable hydrogen and ammonia needed to be further advanced. The study also found that significant scale will be required for general hydrogen fuel use to be commercially viable but that project economics become more favourable at large commercial scale.

  BP has stated that it will work with key stakeholders to develop plans for "green" hydrogen projects in WA and to define infrastructure needs, customer demand and appropriate business models, but its statement did not refer to any specific plan to move forward with a project.

  The feasibility study also found that the success of the hydrogen industry will rely on government support moving forward in the form of government decarbonisation incentives (such as a carbon price and/or clean fuel subsidies and requirements for gas blending into gas networks). In WA, the State Government shares this view following a recent announcement that it is considering legislating their commitment to net zero by 2050, highlighting support of an energy transition to net zero where they have identified the hydrogen industry as being key to the success of the transition. The Western Australian Renewable Hydrogen Strategy and the Western Australian Renewable Hydrogen Roadmap outline the WA government's vision for WA to become a significant producer, exporter and user of renewable hydrogen and then how the government will support private enterprise in pursuit of this vision.

+ Alongside large-scale hydrogen projects such as those already mentioned, the appeal of the WA hydrogen market has attracted players of all sizes. Recently, Province Resources Limited (PRL) announced the progression of the scoping study of its central "green" hydrogen project, the HyEnergy Project. Despite being a relatively small market cap ASX-listed corporation, PRL has managed to attract the attention of some of the largest players in energy because of the unique potential opportunity that the WA landscape provides. Total Eren, a major French organisation in the renewable space, and PRL signed an MOU relating to this "green" hydrogen project that looks to capitalise on wind and solar resources in the Gascoyne region on WA's coast. PRL also has the backing of

various government bodies, having received funding from the Western Australian Renewable Hydrogen Strategy, ARENA and the Australian Government Advancing Hydrogen Fund.

+ In May, Horizon Power, the State government owned vertically integrated electricity provider to remote and regional WA, commenced construction on Australia's first renewable hydrogen energy plant in a remote microgrid, in the Gascoyne town of Denham. The community hydrogen project will feature a dedicated 704kW solar farm to power its innovative hydrogen plant and will feature a 348kW electrolyser, hydrogen compression and storage and a 100kW fuel cell allowing the production and storage of hydrogen. The remote microgrid project will deliver electricity into the Denham hybrid power system and will generate 526 MWh of renewable electricity per year, which is equivalent to the energy required to power 100 residential households in Denham annually. This project has received A$2.6 million funding from the ARENA, as part of ARENA's Advancing Renewables Program. A further A$5.7 million has also been provided by the WA government.

Other private sector initiatives

In terms of other announced private sector initiatives in the "green" hydrogen sector:

+ AGIG and Engie are aiming for a final investment decision by early 2022 for their A$44 million Murray Valley Hydrogen Park in Wodonga, Victoria, where hydrogen will be produced for blending into the local gas network, starting in mid-2023;
+ ATCO and AGIG are targeting December 2021 as the date for a final investment decision on a separate project by them at the Warradarge wind farm in WA's Mid-West which will produce up to 4 tonnes of hydrogen a day for the gas network; and
+ a separate project by Engie and Yara Fertilisers at Karratha is part of a large project aiming at export-scale "green" ammonia expects within a decade.

Each of these three projects will use 10MW electrolysers to split water into hydrogen and oxygen.

In addition:

FFI is aiming for a final investment decision this year for its 250MW "green" hydrogen plant at the Bell Bay industrial precinct in Tasmania. The plant will have the capacity to produce 250,000 tonnes of "green" ammonia for domestic use and international export. Industry experts have estimated it will cost upwards of A$500 million to build the 250MW plant.

FFI has entered into arrangements for access to portside land required for the project and has signed an option agreement with Tasmanian Ports Corporation to exclusively negotiate all land and operating access requirements for the proposed plant.

In addition, it has been announced that FFI has entered into MOUs with Japanese corporations to investigate supply chains between Australia and Japan in relation to ammonia produced at this project.

FFI has also reportedly signed development agreements around major hydro power projects in Africa with a view to supplying "green" hydrogen to Europe and it has been announced that FFI has entered into a framework agreement with JSW Future Energy Limited, a wholly owned subsidiary of JSW Energy Limited, to explore opportunities to develop "green" hydrogen projects in India.

FMG is set to invest more than A$1 billion a year into FFI under a pledge by the company to allocate 10% of the annual profits generated by its core iron ore mining operations. FFI's "green" hydrogen project in Tasmania could be one of the world's largest green hydrogen plants when commissioned, creating a significant export market for "green" hydrogen from Australia. FFI has said it would soon call for expression of interest around the skills and jobs required for the project.

FMG has stated publicly that FFI has already produced "green" iron and "green" cement in trials that are part of the company's plans to become a major player in "green" energy and to make its mining operations carbon neutral by 2030. The company has also announced that it has met deadlines around trials using batteries, "green" ammonia and "green" hydrogen across its iron ore mining operations including in running locomotives and powering drill rigs, haul trucks and ships and that it had completed design and construction of a combustion testing device for ship engines and it had finalised design for a next generation ore carrier ship that would consume ammonia.

+ Origin Energy, which already exports LNG, is conducting a A$3.2 million study into the feasibility of building a plant twice the size of the FFI plant at Bell Bay, Tasmania – the study is due to be completed by December this year. In recent developments, Origin has announced a collaboration with shipping giant Mitsui OSK Lines to develop a supply chain for the export of "green" ammonia, including from its proposed plant in Bell Bay. Origin Energy and Mitsui OSK will investigate the potential to transport "green" ammonia to key downstream markets starting in 2026. Origin has singled out transport as one of the biggest opportunities globally to reduce emissions through the use of "green" fuels such as hydrogen and ammonia. Origin Energy is also studying the potential for "green" hydrogen and ammonia opportunities at a plant which would be located in the port of Townsville.
+ Both EnergyAustralia's Tallawarra B gas power project in NSW, which was confirmed in May this year, and a power plant planned by Andrew Forrest's Squadron Energy in Port Kembla will be designed to use a combination of gas and hydrogen.

A number of other commercial opportunities are under consideration despite the absence of an established market for "green" hydrogen in Australia. Of note:

+ Separate to ARENA's announced plans to grant up to A$42.5 million (US$33.2 million) to a 10 MW electrolyser project being developed by Engie and Yara in Karratha, WA, Japan's JERA has agreed to a memorandum of understanding with Yara International to manufacture "blue" and "green ammonia" – "blue" ammonia is created with fossil fuel by-products whilst "green" ammonia is manufactured without any fossil fuel inputs.

The companies plan to explore improvements to the Yara Pilbara Fertilizer plant in WA to allow it to create "blue" ammonia and also plan to work together on developing new "blue" and "green" ammonia projects, on optimizing ammonia shipping, and on exploring new sources of demand for ammonia in Japan (including in power generation).

While ammonia has been used mostly as a fertilizer so far, it is increasingly being seen as a potential "green" fuel because it is a compound of nitrogen and hydrogen, which burns without generating CO2, and is relatively easy to transport given it is a liquid. The aim of this initiative is to decarbonize JERA's power production and provide Yara with a footprint in the strategically important Japanese hydrogen market.

+ Ampol, a petrol and diesel supplier, has announced its involvement in a "green" hydrogen energy start-up that will target the A$1.5 billion a year remote diesel power generation market by offering the potential for reliable energy that is clean and affordable. It is taking a 20% stake in CSIRO-backed Endua in a commercial partnership which is developing renewables-based hydrogen power units that can be used at mines, farms and residential communities that are not connected to the grid. Envisaged somewhere between the size of a large cabinet and a small shipping container depending on its size and application, an Endua unit would act as a "power bank", using renewable energy available on-site to power an electrolysis process to create "green" hydrogen, then store it until it was required for delivery as clean electricity. There is about A$1.5 billion spent on diesel to generate power in Australia alone which emits 200,000 tonnes of carbon into the atmosphere.

Ampol's 20% stake will be paid for in kind by it providing both expertise and customer access to the venture, as well as its Coopers Plains facility south of Brisbane which will be Endua's base. Ampol's involvement is part of that company's decarbonisation strategy which it unveiled earlier this year – Endua fits well with Ampol's strategy of developing low-emission alternatives for customers as Ampol is already involved in remote power generation through its commercial diesel sales. The company has stated that it expects to invest in the future as Endua develops its commercial product.

Interestingly, Endua is a product of the "venture science" model of business creation pioneered by the CSIRO's technology and science investment fund Main Sequence Ventures – the model starts with identifying a major challenge that offers a commercial opportunity to be solved, then assembling the science capability to tackle it from CSIRO, and introducing a pathway to market through a leading industry player which is involved from the start.

HYDROGEN GAS BLENDING INITIATIVES IN AUSTRALIA

As the momentum and commitment to reach net zero emissions accelerates, companies that distribute gas to households in Australia face significant challenges. On one view, the only option is to adapt or face a slowly dwindling business as new gas connections are halted and the gas companies are left with only existing customers. Some experts are of the view that it is up to the gas industry to demonstrate that supplying renewable gas through the network is viable in the face of an increasing push towards electrification to meet emissions targets. Prompt action is required given the early stage of "green" hydrogen development compared to the mature electricity industry, where electrical appliances can already be bought to replace the functions of gas in the home.

AGIG aims to have a 100% "green" hydrogen product available for new housing subdivisions by 2025, as part of a push into renewable gas to avoid losing out to electrification in the rush to net zero emissions.

AGIG owns distributors Multinet and Australian Gas Networks and is Australia's biggest natural gas distributor. It is reportedly targeting all of its gas network to be on at least a 10% renewable gas blend by 2030, to pave the way towards its new stretch target of net zero emissions by 2040 (being scope 1, 2 and 3 emissions including the product that the company delivers as well as its own emissions from its operations). By 2040, the company plans to transition from natural gas to renewables gases – mostly hydrogen but also biomethane. Developing options to supply customers with hydrogen and biomethane is seen by AGIG as essential as both a way forward to align with its own corporate net zero targets and also those of governments and stakeholders.

While home appliances can run on a 10% hydrogen blend without adjustments, AGIG's 100% "green" hydrogen product will require hydrogen appliances that are not available currently in Australia but are on the market in Britain and Europe. The company intends to bring hydrogen cooktops, ovens, boilers and space heaters in from Europe by the year-end to use in demonstration homes and is in talks with manufacturers with the aim of locally produced appliances being available by 2025.

As well as adjustments to home appliances once the blend exceeds 10%, Australia's National Hydrogen Strategy identified that further research and reforms are needed before widespread

hydrogen blending in gas distributions networks can occur. One issue that has been identified is the extent to which the existing regulatory framework applies to blended gas – the implications of this for blending activities are uncertain. Due to the embrittlement or degrading effect of hydrogen on steel pipelines that were originally designed for natural gas transportation, the extent of blending will be limited until there is further evidence that safety issues can be addressed.

South Australia

Hydrogen based on renewable energy is being fed into the gas distribution grid for the first time in South Australia. AGIG has developed the $14.5 million Hydrogen Park South Australia (HyP SA) facility and views this initiative as part of building credibility in "green" hydrogen and a track record.

The landmark project in Adelaide will also result in "green" hydrogen replacing fossil fuel-based hydrogen at the Whyalla steel works. This is a first for Australia in terms of clean fuel being used in heavy industrial applications.

The project has reportedly attracted interest from Japan, Korea and the UK. Before Japanese and Korean customers will sign up for hydrogen imports, a domestic capability must exist as this demonstrates credibility – essentially, there must be a three-stage development of the hydrogen market, starting with domestic gas blending then using hydrogen in local industries and transport and finally exports.

Although a number of much larger "green" hydrogen projects have been proposed, the 1.25MW electrolyser at HyP SA is the largest operating in the country so far. The plant uses low-carbon power sourced from the grid during the day when renewables are plentiful to split water into oxygen and hydrogen gas. The hydrogen is mixed into the gas stream at a proportion of 5% and supplied to households in the Adelaide suburb of Mitchell Park – users are not expected to notice any difference in their gas supply. Regular audits of the power bought will determine its exact carbon intensity, with any residual CO2 to be offset through renewable generation certificates. While so far only 700 households are involved, AGIG expects the number to grow to thousands by the end of 2022 and to increase the proportion of hydrogen in the distribution system to 10%. Any proportion beyond that would require modified or new appliances.

The South Australian state government injected A$4.9 million into the project and is committed to supporting the growing industry. This is seen as an important component of South Australia achieving its goals of reaching 100% net renewable energy and cutting emissions by more than 50% by 2030.

The cost of hydrogen at HyP SA runs into the double figures per kilogram, well beyond the target of A$2 per kg in the Federal Government's Low Emissions Technology Road Map. AGIG's two projects that secured funding from ARENA will produce green hydrogen for A$5-A$6/kg with costs expected to fall further in later projects. AGIG has stated that it is very confident it can get below A$2 per kilogram by 2030.

Victoria

The Victorian state government has issued a consultation paper on a road map for the substitution of natural gas as part of its pledge to reach net zero emissions by 2050, and Infrastructure Victoria has a consultation ongoing on the future of gas infrastructure.

New South Wales

As noted above, another AGIG project planned for Albury-Wodonga, which has secured ARENA funding will supply a 10% "green" hydrogen gas blend to 40,000 customers, coming online in 2023-24.

Queensland

AGIG is also building a hydrogen project in Gladstone that will involve 10% blending into the gas stream for the entire town, including industrial customers.

THE CHALLENGES OF BUILDING A SUSTAINABLE HYDROGEN INDUSTRY IN AUSTRALIA

The development of a sustainable hydrogen export industry in Australia faces a number of challenges.

The first challenge is to build a domestic market for hydrogen. There are a number of factors which suggest that this is achievable including:

+ the need for large gas distributors to find an alternative to gas to supply to customers – gas blending is being trialled now with large distributors such as AGIG seeing this as a necessary path for gas distributors to remain relevant and viable. The attractiveness of gas blending is that there is a day one customer and application for the hydrogen produced. The challenge is that once the amount of hydrogen blended into the gas exceeds 10%, modified or new appliances will be required by consumers and impacts on pipeline integrity and safety will need to be better understood;
+ the interest in development of "green" and "blue" ammonia manufacturing capacity which can be used in a number of applications including in fertiliser production. Hydrogen projects which involve an in-built source of demand, such as fertiliser maker Yara's "green" ammonia project in WA, Strike Energy's "Project Haber" in WA and FMG's plans for "green"

ammonia to be used in its mining fleet and its other industrial processes, arguably have a higher prospect of success;

+ the innovative use of hydrogen as a part of a renewable energy and storage grid in remote locations such as the units being developed by Ampol and Endua; and
+ the willingness of major listed ASX companies (such as FMG, Origin Energy, Woodside and BHP) to investigate and commit funds to hydrogen projects (and associated infrastructure) even in the absence of access to government grant funding. This commitment is a reflection of the potential which these companies see in hydrogen delivering their own carbon reduction or net zero emissions goals.

Assuming that a domestic market for hydrogen is created, the challenge remains to build a viable export industry. Once again there are some factors which suggest this can be achieved including:

+ the interest of overseas utilities in the use of "green" ammonia in the manufacture of fertiliser who see this as a way of both reducing their carbon footprint and having a ready market in their home economies; and
+ the innovative use of hydrogen in the steel manufacturing industry in Australia as a way of lessening the carbon footprint of such industries. The success of AGIG's landmark project in Adelaide which will result in "green" hydrogen replacing fossil fuel-based hydrogen at the Whyalla steel works and FFI's successful "green" iron production trials in WA will be an important indicator of what can be achieved. These are a first for Australia in terms of clean fuel being used in heavy industrial applications and will be important "road tests" as to whether the replacement of fossil fuel with hydrogen can be done in a cost-effective manner.

However, Australia is in a global race and other countries are also committed to becoming global players in the hydrogen industry. Unless the cost of hydrogen production can reach a level of A$2 per kg (the target set by the Federal Government), an export industry will not be competitive globally.

In addition, the scale of capital required to build a viable hydrogen export industry in Australia is significant – billions of dollars of investment will be required. The availability of ARENA grant funding and CEFC debt and equity funding will be important in the early stages but ultimately these projects which receive ARENA and CEFC funding will need to be economically viable and be able to attract private sector finance. The selectiveness of the Federal Government's approach to grant funding whereby grant funding will not be available to all applicants (as reflected in the latest round of ARENA funding) is likely to have the result that not all hydrogen projects proceed. The appetite of governments to continue to provide such funding and commence other government decarbonisation incentives to the developing hydrogen industry is also likely to be tested.

Ultimately, it may fall to the major ASX-listed companies and global developers to invest significantly in the hydrogen industry for a successful export industry to be developed. Whilst there is a powerful driver now for companies to move to a net-zero emissions position, there are different pathways to achieving that outcome and development of hydrogen production facilities and individual hydrogen use cases will be costed against other low emissions alternatives to determine their viability.

It is difficult to see private sector finance being available in the short-term in the absence of a defined and accessible market(s) for hydrogen and committed offtake arrangements to support debt repayment. Private sector finance will also want to see that there exists a clear supply chain pathway from the hydrogen production facility to the end user – for exports, this will include access to transport infrastructure and port facilities and appropriate shipping arrangements. This may mean that companies need to fund such developments themselves (e.g. by raising equity) and look to introduce private sector debt once economic viability has been established.

It will be interesting to watch the green hydrogen industry in Australia as it develops and compare the country's progress to that of other countries seeking to be global players.

OUR EXPERTS

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GREEN HYDROGEN: THE NEW COMMODITY OF THE 21ST CENTURY

13/10/2021

Webinar – Green Hydrogen and Ammonia in Australia - Webinar Video

Green Hydrogen and Ammonia in Australia - Webinar Slides

Gilbert + Tobin together with leading international law firm Shearman & Sterling hosted a webinar exploring how green hydrogen is set to be the new commodity of the 21st century in Australia.

So why is green hydrogen so exciting? As Gilbert + Tobin's Chris Marchesi said:

"as a means to decarbonise the hardest to abate sectors, green hydrogen promises to make the energy transition an energy and decarbonisation revolution".

Gilbert + Tobin and Shearman & Sterling, together with Cameron Kelly from the Australian Renewable Energy Agency (**ARENA**), Rupert Maloney from the Clean Energy Finance Corporation (**CEFC**), PingYang Li from ENGIE Hydrogen, and Mike McKensey from Macquarie Capital, explored:

+ Australia's potential to position itself as a major global player in the green hydrogen industry; and
+ the current barriers to capitalising on Australia's potential.

THE FUTURE: ALL EYES ON AUSTRALIA

With an increased demand for climate change action and companies feeling the pressure to set ambitious emission reduction targets, the energy sector is undergoing a rapid transformation.

Gilbert + Tobin's Peter Doyle, reflecting on the Australian Government's policy settings, noted that:

"The Australian Government's policy settings are clear. "Green" hydrogen is a priority low emissions technology of long-term strategic importance to the Australian Government and securing a position as a global player in this developing sector is critical to the future economic prosperity of the nation.

Although we have the basic ingredients to succeed, the challenge for the government at all levels and the private sector is to stay the course over the long term and work together to achieve a commercially viable, resilient and sustainable industry and an optimal outcome for the nation as a whole."

While the hydrogen market is nascent, key leaders in the industry believe that the development of the hydrogen industry in Australia has the potential to mirror the success of the LNG boom. Australia has a history of being a reliable supplier and a key component of this is its ability to establish and operate a world class supply chain.

Australia must act now to capitalise on its abundance of renewable energy resources and its potential to produce hydrogen at a competitive price for global export to where the demand exists, including to Asian and European markets.

CHALLENGES OF TRANSITIONING TO GREEN HYDROGEN

While the importance of green hydrogen in Australia's decarbonised future is widely accepted, challenges remain.

Technical and commercial challenges relating to supply and demand

To play a significant role in the hydrogen market, Australia needs to meet a number of technical and commercial challenges both on the supply and demand side of the industry. ARENA considers the key to developing the Australian hydrogen industry is to increase the supply of hydrogen at a significantly lower delivered cost, while also building a viable demand, by proving and scaling use cases.

A key issue facing Australian companies relating to supply is the high cost of electrolysis, the process of using electricity to split water into oxygen and hydrogen gas. With respect to demand challenges, building enabling infrastructure for transport and export as well as regulation are key (discussed below). Further, the complex nature of hydrogen projects also brings its own suite of challenges – while the technology is known, substantial optimisation is required.

Investment in enabling infrastructure

A key barrier to the development of hydrogen production projects in Australia is the lack of enabling infrastructure. Australia must invest in building new infrastructure, including special purpose-built vessels, and retooling existing infrastructure, including ports, to ensure they are equipped to export hydrogen in liquefied form. Before committing to investment in the development of green hydrogen production plants, investors will want to see more money put into the necessary infrastructure.

Addressing regulatory uncertainty is key

Regulatory uncertainty in the hydrogen space will hinder the development of a commodity market. At an international level, the absence of consensus on the definition of what constitutes "green" hydrogen has created a chilling effect on the development of the market.

The development of Australia's clean hydrogen certification scheme, the Hydrogen Guarantee of Original Scheme for Australia (**H2GO**), has the potential to provide certainty. However, the urgency of the scheme to be introduced needs to be balanced against the priority for the scheme to appropriately align with international standards that also remain under development. For more information on the H2GO, see G+T's article Hy Hopes: Why the proposed H2GO certification scheme must embrace green hydrogen.

It is clear that there is a gap between where the nascent Australian hydrogen industry is now and where it needs to be in 2030 – 2050 to be truly and globally competitive with other key players. However, if both the public and private sectors act now to meet the present challenges with open arms, Australia will secure its position as a global hydrogen superpower.

OUR EXPERTS

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"GREEN" HYDROGEN - AUSTRALIA'S RACE TO BE A GLOBAL PLAYER

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The race is now well and truly on for countries to build their "green" hydrogen industries so that they can compete in this new global industry – several countries are seeking to capture a share of the emerging market, with Australia up against powerful competitors in the Middle East, Russia and Canada. Within Australia, companies and state governments are racing to position themselves in this developing industry.

Global consulting firm, Wood Mackenzie has expressed the view that Australia stands at the head of the pack of nations chasing the opportunity in the export of hydrogen, whose demand may climb as much as sixfold by 2050 as the world seeks to limit global warming. According to that firm, global demand for low-carbon hydrogen could reach as high as 530 million tonnes by mid-century under the 1.5 degree warming scenario, with almost 150 million tonnes of that involving cargoes shipped by tanker. According to a recent report by that firm, imports of hydrogen by north-east Asia – Australia's primary market for LNG exports – could account for more than half of the seaborne trade in hydrogen, or about 80 million tonnes, with Europe taking 23 million tonnes.

Deloitte Consulting estimates the global hydrogen market could be worth about US$2 trillion by 2050. At that point, hydrogen is expected to account for 24% of the global energy market, backing up the high usage of renewables. In Deloitte's view, hydrogen is the only hope of achieving decarbonisation as the gas, which emits no carbon when burnt, can be used in hydrogen fuel-cell buses, trucks and other heavy vehicles and in power generation and industrial processes that have few options to cut their carbon footprint.

Green hydrogen is one of the Federal Government's priority technologies to help reach net zero emissions by 2050. It has set a stretch goal for green hydrogen production at less

than A$2 per kilogram, a level at which it would be competitive with traditional fuels for industry and transport. The hope is that, if it is successful, the hydrogen industry could contribute A$11 billion a year to GDP by 2050. The Federal Government sees "green" hydrogen as a key industry of the future in Australia and has already entered into a series of partnerships with Germany (to develop a hydrogen supply chain), South Korea and Japan to explore the possibility of future hydrogen exports.

Since our last article in August this year (*Green hydrogen in Australia – our progresses towards a new industry*), a number of important further developments have occurred which we describe and comment on in this article.

WHAT IS DRIVING THE BELIEF IN A GREEN HYDROGEN INDUSTRY?

There are a number of factors contributing to the belief that Australia can become a major player in the green hydrogen industry.

Government support

There is strong support from the Federal Government for the development of a green hydrogen industry in Australia both from a policy perspective and in terms of funding initiatives. A number of States have also moved to announce their hydrogen strategies and provide funding by way of grants for feasibility studies and to provide funding for the development of necessary infrastructure to support that industry.

Whilst questions may remain as to the adequacy of funding to kick start this new industry, the policy settings are clear.

Asia's push to renewable energy

There is a clear and growing demand for green hydrogen and green hydrogen products – importantly, a number of major Asian economies are accelerating their push towards renewable energy development.

In particular, Japan has moved to shore up Australia as a secure source of renewable energy amid warnings from Tokyo about the threats posed by an increasingly "assertive" China in the Asia Pacific. Some commentators see Australia as set to become a major supplier of hydrogen to Japan as it moves to a carbon-neutral economy by 2050 – hydrogen shipments from Australia to Japan could eventually rival the post-war boom in coal trade between the two countries. Japan's energy supply has become less certain following the 2011 Fukushima nuclear disaster that made it more reliant on imports of fossil fuels such as oil, gas and coal.

In October this year, at an Australia-Korea Business Council meeting, the Federal Minister for Trade, Tourism and Investment also foreshadowed announcements on joint initiatives between Korean and Australian partners in hydrogen. Korean steel giant Posco has singled out Australia as a regional strategic base for hydrogen. In the next phase of its energy relationship, Australia is positioning itself to be Korea's partner of choice as a supplier of sustainable, competitively priced clean hydrogen.

World class port facilities

Australia enjoys a number of large-scale world class port facilities, some of which are already exporters of coal, LNG and other materials and a number of which are well positioned to become part of a green hydrogen supply chain to customers in Asia.

A number of ports in Australia have already taken steps to position themselves as players in the hydrogen industry including the Port of Newcastle and the state-owned Queensland ports, North Queensland Bulk Ports, Port of Townsville and Gladstone Ports Corporation and the privately-owned Dalrymple Bay Infrastructure. The Government of Western Australia (**WA**) has also recently pledged funding to upgrade port facilities in the areas of proposed hydrogen hubs.

Several major companies are looking to develop hydrogen facilities in Bell Bay in Tasmania and some have signed arrangements with the local ports corporation already.

Cleaning up the "dirty" industries

At some point, hydrogen produced from renewable energy has been touted as a possible replacement for coal as a fuel to power steel production and other industries which are hard to decarbonise. As green hydrogen becomes more cost competitive, the expectation is that steel manufacturing companies and other hard to decarbonise industries will turn to green hydrogen to reduce their carbon footprint.

Earlier this year, the world's first customer delivery of green steel was made in Sweden by Hybrit to truck maker Volvo – Hybrit is a Swedish venture involving steelmaker SSAB, state-owned utility Vattenfall and miner LKAB. This was a trial run before full production ramps up in 2026. Volvo has said that it will start production in 2021 of prototype vehicles and components from green steel. Interestingly, SSAB accounts for 10% of Sweden's and 7% of Finland's CO2 emissions. Another green steel venture, H2 Green Steel, is planning to build a renewable energy powered steel plant in the north of Sweden including a sustainable hydrogen facility, with production starting in 2024.

In Australia, the Grattan Institute has observed that moving Australian steelmaking towards lower-emissions technologies in the next decade would build the domestic skills and capabilities needed to create an export-oriented green steel industry in the following decades. In that context, federal funding for a steel "flagship" project would be a worthwhile investment, given the size of the opportunity. While the export opportunity is the longer-term prize, a flagship project in the near term and using gas in the interim, could also help sustain existing steelmaking jobs in Whyalla in South Australia or Port Kembla in NSW or facilitate the creation of a new green steel industry in iron ore rich states such as WA.

FEDERAL GOVERNMENT'S GREEN HYDROGEN STRATEGY

Building on its announcement in April this year, where the Federal Government pledged A$275.5 million to accelerate the development of four additional clean hydrogen hubs in regional Australia and implement a clean hydrogen certification scheme, the Federal Government, in September this year, committed to investing an additional A$150 million (US$108 million) to develop clean hydrogen industrial hubs at two further locations although this additional funding will not be limited to any particular sites. The Federal Government plans to look for areas where hydrogen production and industrial hydrogen use can be co-located. .

The Federal Government has already identified Bell Bay in Tasmania, Darwin in the Northern Territory, Eyre Peninsula in South Australia, Gladstone in Queensland, Latrobe Valley in Victoria, Hunter Valley in New South Wales, and the Pilbara region of WA as particularly promising areas for hydrogen investment. The seven locations have been identified based on strong industrial interest and activity and each location's existing capabilities, infrastructure and resources.

Project consortia seeking to develop hydrogen projects can seek A$3 million grants for initial feasibility and design work and up to A$70 million to roll out projects from an A$464 million grant program.

The Federal Government also recently announced that Australia was entering into a further partnership with Germany to undertake research into technology critical to reaching new zero emissions by 2050.The two countries will create a research "incubator" for trials and pilot schemes. The initiative known as Hy-GATE is backed by funding of A$50 million from Australia and Euro50 million from Germany. This follows the release of the first report from Hy-Supply, the Australian-German hydrogen supply chain study.

AUSTRALIAN HYDROGEN COUNCIL RESPONSE

Some commentators, such as energy "think" tank Beyond Zero Emissions, think more support is needed for renewables generation and transmission networks to power the "green" hydrogen plants, and for the local manufacture of electrolysers. This is a view shared by the Australian Hydrogen Council ("**AHC**").

In September this year, the AHC called on the Federal Government to create a $19 billion Net Zero fund, aimed at cutting emissions and speeding up the fuel's rollout to the steel and heavy transport industries and in the nation's gas sector by 2030. The AHC wants this commitment to ensure Australian business can become a global hydrogen player by 2030 and a top-three exporter of the fuel to Asian markets. The new fund would be managed by a newly established Net Zero Authority, covering research through to commercialisation, grants and finance and ensuring the right policy settings are in place. Some of the country's biggest investors and developers – including ANZ, NAB, Woodside Petroleum, Origin Energy, Wesfarmers and Fortescue Metals Group – are members of the AHC.

AHC's blueprint calls for A$10 billion in seed funding and a top-up of A$1 billion annually through to 2029, to be allocated to business through grants and loans. It wants the Australian Government to set a goal of 10% hydrogen in the gas network by 2030 and target sectors that face challenges to cut emissions, such as steel and aluminium. Under the AHC's proposal, the Net Zero Authority could fold in both the Australian Renewable Energy Agency ("**ARENA**") and the Clean Energy Finance Corporation ("**CEFC**"), according to the AHC. The AHC wants the Australian Government to prioritise project funding to increase hydrogen demand in industries such as steel, aluminium and heavy transport fleets.

The AHC's view is that a grander vision is required – in its white paper, the AHC observes:

"The hydrogen industry is not yet commercial and considerable investment is required. It is likely that capital investments to produce hydrogen alone could run to tens of billions of dollars. Until the industry has reached commercial scale, grant funding is essential. Public investment will unlock several times its value from the private sector….Investors are increasingly recognising that they have both an ethical and fiduciary duty to play an active role in transitioning to a decarbonised economy. The global financial system is already valuing the risk. There may be different views on when and how fossil fuels will demonstrably decline; however, markets are responding now….. It appears that we need to have locked down a great deal within the next year or so if we are to achieve objectives such as the National Hydrogen Strategy's 'Australia as a top three exporter to Asian markets by 2030' or getting hydrogen to less than $2/kg by then…Windows of opportunity need to be aligned as far as possible if we are to get to scale and do so competitively.

ARENA'S ROLE IN SUPPORTING GREEN HYDROGEN

Recently, ARENA has been given an expanded brief to invest in hydrogen.

Hydrogen along with carbon capture and storage have been identified as among the top investment priorities for ARENA after the Federal Government redrafted regulations opposed by Labour and the Greens to allow low emissions technologies to be funded by that agency. The *Australian Renewable Energy Agency (Implementing the Technology Roadmap) Regulations 2021* came into effect on Friday 30 July following the earlier disallowance of the *Australian Renewable Energy Agency Amendment (2020-21 Budget Programs) Regulation 2021*.

ARENA's funding will be directed towards the two technologies of hydrogen and carbon capture alongside energy storage, soil carbon management and projects that support the transition to low emissions aluminium and steel and cut the cost of renewable energy generation.

ARENA has expressed the view that rolling out hydrogen at scale in Australia could take up to 10 years with its CEO, Darren Miller, stating at an industry forum that:

"It depends what side of the bed you wake up on any given day as to how optimistic you're feeling. But I think at the very minimum it's going to take five years before we get real confidence that these costs are coming down to the levels we want, and probably more realistically a decade".

However, ARENA has conceded that the industry had a poor forecasting track record and technology leaps could easily change the timeline – by way of example, contrast the big technology leaps that have slashed the cost of solar, wind and batteries in the last decade.

In November, ARENA and CEFC announced funding for an initiative to fuel heavy transport trucks with green hydrogen. The joint commitment provides up to A$15.52 million to help Ark Energy Corporation, the Australian subsidiary of the world's leading zinc, lead, and silver producer, Korea Zinc Co Ltd, produce green hydrogen to power fuel cell electric trucks (to be supplied by Hyzon Motors) and construct hydrogen production and refuelling infrastructure. The funding will enable the deployment of five 140 tonne rated fuel cell electric trucks and a 1 MW electrolyser with storage and refuelling infrastructure which will be located at the Sun Metals zinc refinery in Townsville, owned by Ark's sister company Sun Metals Corporation. The trucks are expected to become the largest road-going fuel cell electric trucks in the world at the time of their deployment and avoid 1,300 tonnes of CO2 emissions each year. ARENA's funds will be paid upon the commissioning of the refuelling facility and delivery of the five trucks, which are expected to arrive in December 2022.

ARENA previously funded two hydrogen light vehicle transport projects, but this is the first hydrogen project to be jointly supported by CEFC and ARENA.

ARENA has now funded 612 projects to date, investing A$1.81 billion in various green hydrogen feasibility studies across Australia, demonstration projects such as the Horizon Power Denham Hydrogen Demonstration in WA (as well as the Jemena feasibility study discussed below) and the establishment of the Australian Hydrogen Centre to assess the feasibility of blending renewable hydrogen into gas distribution networks in Victoria and South Australia.

CEFC'S ROLE IN SUPPORTING GREEN HYDROGEN

To date, CEFC's involvement in hydrogen has been limited to a A$750,000 investment through its Innovation Fund to Wollongong University start-up Hysata to commercialise innovative electrolyser technology, but it is likely that the types of hydrogen ventures backed by the organisation will broaden this year. CEFC has stated publicly that green hydrogen is a priority area of focus for it over the next 12 months.

The CEO of CEFC, Ian Learmouth, has commented that:

"We've got a number of hydrogen-related projects we hope to bring to market over the next 12 months, both on the transport side and in the production of green hydrogen, and taking that and introducing it to the gas networks. So hydrogen projects are a priority for us…."

Mr Learmonth said the focus in the green hydrogen space was on uptake in the domestic market, through the gas network, in transport in the resources sector and in heavy haulage, where the fuel already potentially has a competitive edge. Whilst large-scale, export-focused production is "an exciting prospect", this is further down the track according to CEFC.

CURRENT STATE INITIATIVES AND DEVELOPMENTS

New South Wales

Like other state governments, NSW has a target to reach net zero emissions by 2050.

Whilst the NSW government had already committed at least A$70 million to develop hydrogen hubs in the Hunter and Illawarra regions as part of its Net Zero Industry and Innovation Program, it had been slow to lay out specific ambitions and initiatives for green hydrogen.

This prompted the Clean Energy Council to warn NSW in February that a specific hydrogen plan for NSW was vital for it to attract private investment in the sector and avoid ceding economic growth opportunities to states such as South Australia, Western Australia, Queensland, Tasmania and Victoria, which have each released plans and established hydrogen deployment funds. In August this year, the NSW State Government moved to accelerate the development of its green hydrogen sector with the launch of a market platform intended to facilitate the matching up of potential producers with customers and act as a catalyst to get projects off the ground.

This was followed in October this year by the release of NSW's green hydrogen strategy. Under the announced strategy, the NSW Government plans to:

+ establish hydrogen hubs close to industry, renewable energy and water to facilitate the development of new hydrogen projects. Locations such as Parkes, the Illawarra, and the Upper Hunter are seen as uniquely placed to take advantage of these opportunities, with existing supply lines, access to transport links and a skilled workforce;
+ provide up to A$3 billion in incentives for the hydrogen industry, which it hopes will generate A$600 million annually by 2030. This will include the funding of infrastructure assessments for large-scale production and the building of a hydrogen refuelling station network. Businesses were invited to submit expressions of interest to participate in the hubs by the end of October; and
+ exclude green hydrogen production from government charges – this would include a 90% reduction in electricity network charges for green hydrogen producers who connect to parts of the network with spare capacity and a state-wide hydrogen refuelling station network.

In November this year, the New South Wales Parliament approved the *Energy Legislation Amendment Bill 2021* which will underpin the State's hydrogen strategy. Of note is that the Bill:

+ introduces a new section 192 into the *Electricity Supply Act 1995* which provides that regulations made under that Act may (i) provide for limitations on the recovery by a network service provider of charges from a person who buys electricity to produce green hydrogen where that network service provider is otherwise entitled to recover such charges under a determination and (ii) modify the application of, or disapply, a provision of the National Electricity (NSW) Law or the National Electricity Rules to the extent reasonably necessary to give effect to such regulations;
+ amends Schedule 4 of the *Electricity Supply Act 1995* (which deals with the energy savings scheme) and in particular inserts new clauses 22(3) and (3A) which provide that the Minister may grant an exemption from the scheme only if satisfied electricity is used in connection with an industry or activity that is both emissions intensive and trade exposed or to produce green hydrogen and a new clause 24 which provides that the regulations may make further provision with respect to the determination of whether an industry or activity is emissions intensive or trade exposed and electricity is taken to be used to produce green hydrogen and, subject to the Regulations, allows the Minister to determine the basis on which an industry or activity is considered to be emissions intensive or trade exposed, and electricity is taken to be used to produce green hydrogen; and
+ amends the *Energy and Utilities Administration Act 1987* by inserting a new section 34N dealing with exemptions for electricity used by green hydrogen producers – the new section provides that the Minister can grant an exemption for electricity used by a specified person or class of persons or used in connection with a specified activity or class of activities and that the Minister may grant such an exemption for electricity only if satisfied that the electricity is used to produce green hydrogen. A licensed distributor to which a contributions order applies then cannot recover charges from a person who buys electricity so exempted for the purpose of paying the annual contributions under a contributions order.

In other key developments:

+ Macquarie Group, Snowy Hydro and Chinese-controlled pipeline owner Jemena are involved in a consortium that will examine a potential green hydrogen hub in Newcastle that could have a capacity of 1 gigawatt by 2030. An A$3 million feasibility study into the hub, led by Port of Newcastle and Macquarie's Green Investment Group (MGIG), will be 50% funded by a grant from ARENA. The hub would initially use a 40MW renewables-powered electrolyser to split water into hydrogen and oxygen, with the hydrogen to be used initially in the Hunter region, in agriculture, transport and energy generation. It could later lead to hydrogen exports from Newcastle, which is the world's largest thermal coal terminal and the largest port on the east coast of Australia.

  The project would incorporate a green ammonia plant, a green hydrogen plant and grid-connected renewable energy. The initial 40MW project would generate enough hydrogen to power 900 buses for a year.

  According to sources at Macquarie Group, the port has the scope to produce green hydrogen at the scale needed to make it price competitive internationally and the feasibility study would better define domestic and export opportunities. Macquarie CEO Shemara Wikramanayake has been a vocal advocate for Australia to capitalise on its natural advantages in abundant wind and solar resources and seize the opportunity in green hydrogen, which is expected to become a major globally traded commodity. Port of Newcastle CEO Craig Carmody said it made sense for the port to play a key role in Australia's bid to become a significant exporter of renewable energy in the form of hydrogen.

  Japan's Idemitsu, tram and rail operator Keolis Downer and Lake Macquarie City Council have also agreed to participate in the feasibility study, as has Macquarie's agriculture platform, Macquarie Asset Management Agriculture, which has a focus on green ammonia for fertiliser production. Idemitsu's interest is focused on the feasibility of exporting green hydrogen and ammonia to Japan. The project will supplement the Federal Government-owned Snowy Hydro's renewables generation portfolio with dispatchable capacity to help meet customer demand when it is at its highest. Snowy's new Hunter gas power plant will be designed to run partly on hydrogen;
+ two new gas power stations proposed for NSW, EnergyAustralia's Tallawarra plant to be built in the Shoalhaven region and Snowy Hydro's Kurri Kurri plant, will both be able to use hydrogen in the fuel mix. Dr Andrew Forrest's Australian Industry Energy also plans to use "green" hydrogen in a power station proposed to be built near its LNG import terminal under development in Port Kembla;
+ Jemena is developing an A$18 million demonstration hydrogen project at Horsley Park, with the aim of injecting a blend of green hydrogen into the gas network;
+ private firm Energy Estate is leading a group of businesses, including AGL Energy and APA Group, whose aim is to develop a large-scale green hydrogen production, transportation and export project in the Hunter region; and
+ emerging renewables player and legacy sawmill operator Sweetman Renewables is understood to have signed a $15 million joint venture with Singapore's CAC-H2 to establish a hydrogen production centre of excellence in NSW's Hunter Valley. As part of the joint venture with CAC-H2, Sweetman will provide 30,000 tonnes of wood biomass per annum. Sweetman will own 20% of the new venture in exchange for providing biomass feedstock, engineering services and land access, while CAC-H2 will own 80% and is providing the initial investment for the establishment of the first two production lines at its new centre of excellence, which will be called Hunter Valley One.

Western Australia

In September this year, the WA Government announced plans to invest A$61.5 million (US$45.3 million) in growing the State's green hydrogen industry, which includes the creation of a new A$50 million fund to stimulate demand and drive investment, A$7.5 million for the construction of a road and related infrastructure at the Oakajee Strategic Industrial Area ("**Oakajee SIA**") and A$4 million to boost the WA Government Renewable Hydrogen Unit. The WA Government sees hydrogen as having the capacity to sit alongside iron ore or LNG as a major export commodity.

That vision led the WA Government to announce up to A$17.5 million (US$8.4 million) in investment to set up two hydrogen hubs in the state's Pilbara and Mid-West regions. The Pilbara project involves the development of a hydrogen pipeline to connect the Maitland and Burrup strategic industrial areas, creation of a Clean Energy Training and Research Institution based out of Karratha and Port Hedland and port upgrades to enable export opportunities. The Mid-West project is proposed to be based at the Oakajee SIA.

The State lodged applications through the Commonwealth Government's Clean Hydrogen Industrial Hubs program for matching Commonwealth funding to develop these hubs.

The WA Government has signed a Memorandum of Understanding with the Port of Rotterdam, Europe's largest seaport, to collaborate on renewable hydrogen and keep WA in Europe's sights as the exporter of choice. The announcement confirm that the parties will "*work together to investigate the renewable hydrogen export supply chain between WA and the Port of Rotterdam, including production, storage, transport and the use of renewable hydrogen…and collaborate on opportunities for knowledge sharing relating to policy, regulation and technology developments.*"

Transport is one of four strategic focus areas outlined in the Western Australian Renewable Hydrogen Strategy. In line with that focus, the WA Government has opened expressions of interest for its $10 million Hydrogen Fuelled Transport Program which aims to ramp up local hydrogen production and the use of hydrogen-fuelled transport in WA, with successful applicants to be announced in 2022. The Program will provide finance to a project that includes the procurement and operation of hydrogen or green ammonia-fuelled transport, and the installation of one or more refuelling stations.

Alongside these developments, the WA Government is investing A$900,000 on three green hydrogen feasibility studies, supported by the A$15 million Renewable Hydrogen Fund as follows:

+ A$300,000 to BP Australia to help develop a green hydrogen facility at BP's Kwinana refinery facility to be used for green hydrogen and clean fuel production;
+ A$300,000 to APT Management Services to study converting the Parmelia gas pipeline into a 100% hydrogen pipeline; and
+ A$300,000 to Global Energy Ventures to explore the commercial feasibility of exporting green hydrogen to the Asia-Pacific from Gascoyne.

The WA Government has engaged GHD Group (to the value of A$1 million) to investigate the viability of sustainably producing iron ore as green steel or the inputs necessary to create green steel. The investigation is expected to assist WA, as the world's largest supplier of iron ore, to position itself as a preferred supplier to global markets and complement the trials undertaken by iron ore heavyweights BHP, Rio Tinto and Fortescue Future Industries ("**FFI**").

The WA Government has also awarded A$2 million from its Renewable Hydrogen Fund to ATCO Australia for a project to blend green hydrogen into the gas network. The A$2.6 million project will involve blending renewable hydrogen produced by ATCO at its Jandakot innovation hub into isolated sections of the Western Australian gas distribution system, with the blend being delivered to about 2500 customers.

Woodside has led the charge in WA-based hydrogen projects in announcing the A$$1 billion project named "H2Perth". The first phase of the project would produce mostly "blue" hydrogen and approximately a third "green". The project is partly considered green because it would use electricity generated by renewable energy through the South West Interconnected System, which includes rooftop solar power. H2Perth is touted to provide a flexible and stabilising load to the electricity grid that "*benefits uptake of intermittent renewable electricity by households and local industry*".

To support the growth of the state's clean energy industry, the WA Government has also announced a suite of land tenure reforms headlined by a new form of tenure – the diversification lease – which is considered in detail in our recent article (*Renewable energy and reusable reforms: WA's land tenure amendments are familiar but exciting*). The WA Government has stated that the new diversification lease provides a form of tenure that can support the establishment of clean energy projects and the expansion of carbon farming to capitalise on the burgeoning offsets industry. The WA Government's announcement also promises to reduce red tape and streamline approval processes to 'unlock land for renewable energy and economic diversification'.

Queensland

In October this year, FFI announced plans to build an A$1 billion electrolyser factory in Gladstone in Central Queensland – hydrogen electrolysers use power to split hydrogen from water. The aim is for the plant to start producing its first electrolysers in early 2023, and then to expand to other green industry products needed for decarbonisation. As part of the first stage of the project, FFI will commit A$114 million to build a 2GW green energy manufacturing facility, which would be the largest in the world. Apart from being used for proposed hydrogen projects in Australia, the electrolysers will create a new export industry.

The production cost of electrolysers is a major factor driving the overall cost of green hydrogen, now several times more expensive than producing hydrogen from natural gas but expected to boom in the race towards net zero emissions. Shortages in manufacturing capacity for electrolysers have been identified by the International Energy Agency ("**IEA**") as a serious risk that could hinder the development of the many green hydrogen production projects in the pipeline. The IEA puts global electrolysis manufacturing capacity in 2020 at about 3 gigawatts a year, almost all of it in Europe and China. Europe had about 60% of existing production capacity and China 35%, the IEA said, while noting plans by several major companies such as Thyssenkrupp and Cummins to expand capacity to take global capacity up to about 20 gigawatt a year. The IEA has stated that a dedicated supply chain for the sector would be essential to meet demand for capacity this decade and beyond. Increased production of electrolysers will affect demand for nickel and platinum group metals depending on the technology used.

Bernstein Research has suggested that investors looking to profit from the decarbonisation trend may be better off investing in leading equipment makers such as electrolyser manufacturers rather than producers of renewable energy, following the philosophy that it is "better to invest in shovels than mines". But it has also noted that Chinese producers have significant cost advantages over Western manufacturers and were the lowest cost worldwide thanks to cheaper raw materials, lower labour costs and high factory utilisation rates.

There have been a number of other key developments in Queensland as follows:

+ Coal export terminal owner Dalrymple Bay Infrastructure ("**DBI**") announced in August this year that it had signed an agreement with part-owner Brookfield, North Queensland Bulk Ports Corp and Itochu to explore a potential green hydrogen production, storage and export facility. Stage 1 of a feasibility study into the facility is expected to start this year.

  Government-owned North Queensland Bulk Ports Corp is the port authority that oversees the Port of Hay Point where DBI is located, about 1,000km north of Brisbane. The terminal is arguably well placed to develop a green hydrogen facility due to its deep-water port, the established Mackay industrial zone, the availability of land and water and position within one of Queensland's Renewable Energy Zones. North Queensland Bulk Ports is also involved in plans to develop a hydrogen production and export facility at another of its ports, the Abbot Point Port near Bowen, further north up the Queensland coast from the Port of Hay Point.

  The DBI facility currently ships mainly metallurgical coal for steel production. At some point, hydrogen produced from renewable energy has been touted as a possible replacement for coal as a fuel to power steel production. The coal terminal is reportedly exploring the possibility of building a green hydrogen plant and exporting the energy source to reassure investors that it will not become a stranded asset. But it will need to secure take-or-pay contracts with parties in Asia willing to take green hydrogen before proceeding.

+ Japan's Sumitomo Corp and Rio Tinto also announced plans in August this year to explore hydrogen production in Queensland. The companies intend to study the building of a hydrogen pilot plant to help power Rio's Yarwun alumina refinery in Gladstone. The industrial city in central Queensland has been flagged as a future hydrogen export hub as Asian countries such as Japan seek to reduce their reliance on fossil fuels. The two companies will explore the use of hydrogen not only for the refinery but to supply industry more broadly in Gladstone.

  Reducing the carbon intensity of alumina production is seen as key to meeting Rio's 2030 and 2050 climate targets and may enable the company to ultimately access cheaper power. Sumitomo is the second major Japanese company to announce plans for a hydrogen plant in Gladstone. Itochu Corp in June signed a memorandum of understanding with Australian Future Energy, which is developing the $1bn Gladstone Energy and Ammonia Project.

  Hydrogen shipments from Australia to Japan could eventually rival the post-war boom in coal trade between the two countries – some commentators see Australia as set to become a major source of hydrogen for Japan as it moves to a carbon-neutral economy by 2050. Japan's move to shore up Australia as a secure source of renewable energy comes amid warnings from Tokyo about the threats posed by an increasingly "assertive" China in the Asia Pacific. Japan's energy supply has become less certain following the 2011 Fukushima nuclear disaster that made it more reliant on imports of fossil fuels such as oil, gas and coal. Sumitomo views the plant as part of that company's vision to achieve carbon neutrality by 2050. The objective is to be exporting hydrogen to Japan by 2032.

+ Earlier this year Sumitomo, Gladstone Ports Corporation, Gladstone Regional Council, the Australian Gas Networks and CQUniversity Australia announced plans for a "hydrogen ecosystem" in Gladstone to initially pursue domestic use before moving to exports. The Port of Townsville has already signed a memorandum of understanding with Origin Energy to facilitate hydrogen exports to Japan.

+ APA Group, Queensland state-owned power company Stanwell and Japan's Iwatani Corp., Kawasaki Heavy Industries, Kansai Electric Power Company and Marubeni are conducting a feasibility study into establishing a large-scale green hydrogen project in central Queensland. Stanwell and Iwatani had previously announced their cooperation on the project – the other partners are new. The partners, who combine expertise in renewable energy, hydrogen production, liquefaction, shipping and offtake, will provide in-kind and financial contributions towards the A$10.4 million (US$7.62 million) feasibility study, plan to sell green hydrogen to Japan

and to supply hydrogen to industrial customers in central Queensland. If it proceeds, the project is planned to start producing gas mid-way through this decade and grow to over 3GW of electrolysis capacity in the early part of next decade. The feasibility study will partially be funded by ARENA and the Japanese Ministry of Economy, Trade and Industry.

+ In September this year, the Queensland government announced plans for Ark Energy to ship up to 120,000 tonnes of green hydrogen out of the Port of Townsville to South Korea. The parties plan to explore the feasibility of developing a green hydrogen facility at Sun Metal's zinc refinery at Townsville, as well as hydrogen export facilities at the port. Ark and Sun Metals are both parts of Korea Zinc Co. The Queensland Government has provided Sun Metals with a A$5 million Hydrogen Industry Development Fund. Initially, Ark plans to persuade North Queensland transport fleet owners to transition from diesel-fuelled vehicles to green hydrogen-fuelled vehicles which it will refuel. Ultimately, the goal is to export green hydrogen to customers in Asia, starting with Ark's parent company in South Korea whose hydrogen demand could be as high as 200,000 tonnes per annum.
+ As mentioned above, the Ark Energy project which is supported by ARENA and CEFC and based in Townsville, is expected to build the domestic hydrogen economy of North Queensland. The project was also recently awarded A$5 million from the Queensland State Government's Hydrogen Industry Development Fund.

Tasmania

In October this year, it was reported that the final investment decision for Fortescue Metals Group ("**FMG**") large-scale green hydrogen project in Tasmania's Bell Bay Industrial Zone may come as early as November – the project is being undertaken by FFI, a related company of FMG. Construction work on FFI's Tasmanian project, which is planned for 250MW but could be scaled up to 1000MW after four years, could start in February 2022 if a positive final investment decision had been made in November. In late October, FMG CEO Elizabeth Gaines said that a final go-ahead for the project would be pushed out to early 2022 as discussions continued with the Tasmanian Government over access to hydropower generation at Hydro Tasmania.

Origin Energy is due to finish its feasibility study on a separate 300MW green hydrogen project in the Bell Bay Industrial Zone by the end of December. Origin has also announced a collaboration with shipping giant Mitsui OSK Lines to develop a supply chain for the export of "green" ammonia, including from its proposed plant in Bell Bay. Origin Energy and Mitsui OSK will investigate the potential to transport "green" ammonia to key downstream markets starting in 2026. Origin has singled out transport as one of the biggest opportunities globally to reduce emissions through the use of "green" fuels such as hydrogen and ammonia. Origin Energy is also studying the potential for "green" hydrogen and ammonia opportunities at a plant which would be located in the port of Townsville

Woodside is also studying a 300MW plant in the Bell Bay Industrial Zone.

All the projects are looking to convert hydrogen to green ammonia for export, with possibly some domestic sales of hydrogen.

South Australia

South Australia's Sparc Technologies is working on a hydrogen project with its strategic partner, the University of Adelaide – Sparc is understood to be looking to enter an ultra-green hydrogen project with the University of Adelaide that improves on the traditional method of using electrolysis of water to produce the fuel.

HYDROGEN GAS BLENDING INITIATIVES IN AUSTRALIA

Australian Gas Infrastructure Group ("**AGIG**"), which owns distributors Multinet and Australian Gas Networks, is targeting all of its gas network to be on at least a 10% renewable gas blend by 2030, to pave the way towards its new stretch target of net zero emissions by 2040 – that target includes scope 1, 2 and 3 (i.e. it includes the product that it delivers as well as its own emissions from operations). By 2040, the company plans and expect to transition from natural gas to renewables gases - mostly hydrogen but also biomethane. AGIG, sees developing options to supply customers with hydrogen and biomethane as the essential way forward to align with both its own corporate net zero targets – approved by its board in early June - and those of governments and stakeholders.

This is in the context of the Victorian government having issued a consultation paper on a road map for the substitution of natural gas as part of its pledge to reach net zero emissions by 2050 – also, Infrastructure Victoria has a consultation ongoing on the future of gas infrastructure. The momentum and commitment to reach net zero emissions gives the companies that distribute gas to households a strong incentive to adapt.

In May this year, AGIG became the first utility in Australia - possibly worldwide - to operate a green hydrogen blending project that supplies hydrogen into the gas distribution grid, in a business-as-usual operation rather than as an innovation project. That 5% blend of hydrogen in the gas flow supplies 700 customers in the Adelaide suburb of Tonsley Park – AGIG wants to expand to a 10% blend supplying thousands of homes. A larger project planned for Albury-Wodonga, which in May secured funding from ARENA will supply a 10% green hydrogen gas blend to 40,000 customers, coming online in 2023-24.

While home appliances can run on a 10% hydrogen blend without adjustments, AGIG's 100% green hydrogen product would require hydrogen appliances that currently are not available in Australia but are on the market in Britain and Europe. The company intends to bring hydrogen cooktops, ovens, boilers and space heaters in from Europe by the year-end to use in demonstration homes and is in talks with manufacturers with the aim of locally produced appliances being available by 2025.

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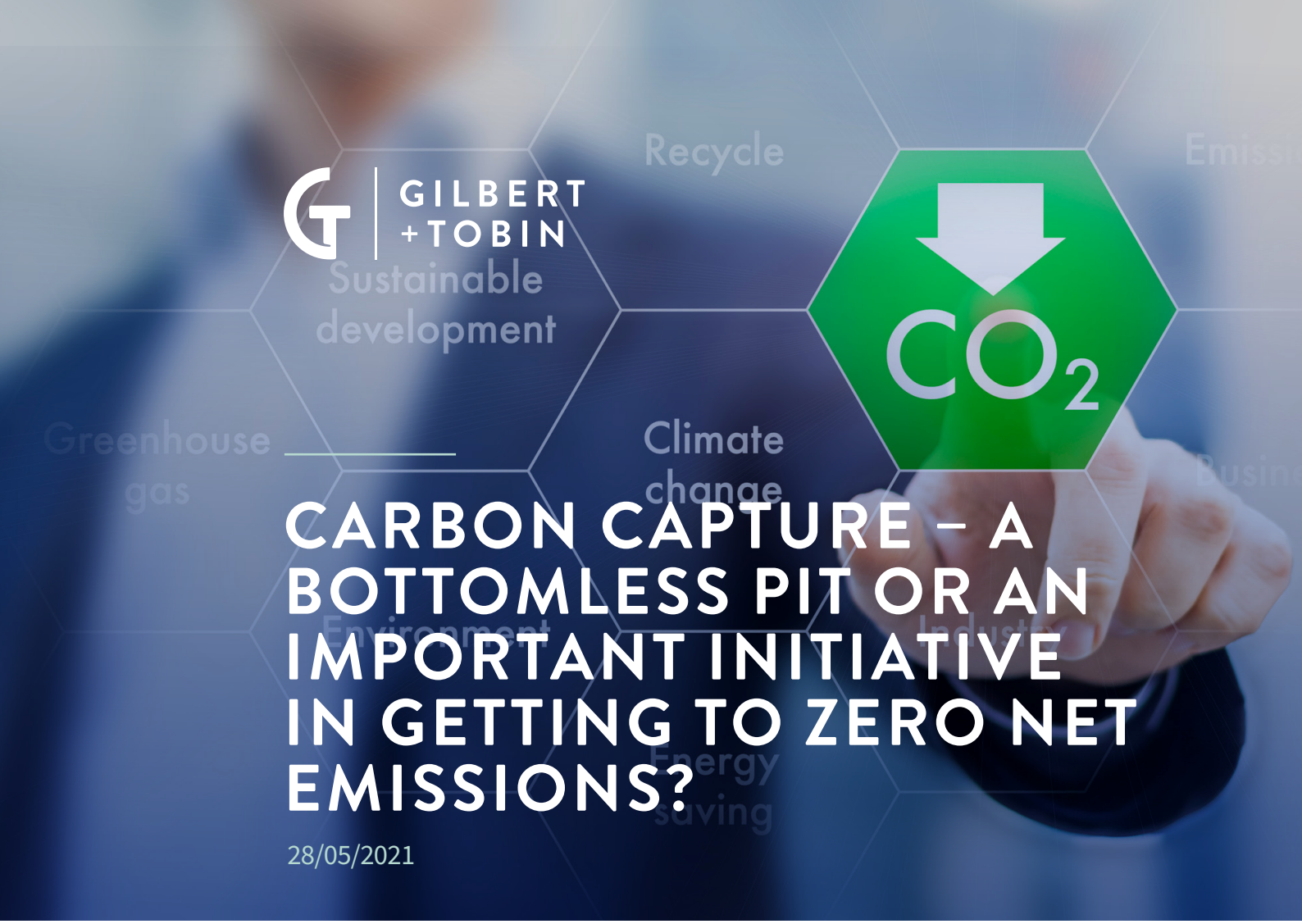

CARBON CAPTURE – A BOTTOMLESS PIT OR AN IMPORTANT INITIATIVE IN GETTING TO ZERO NET EMISSIONS?

28/05/2021

We all know that carbon dioxide is a key "villain" as the world moves towards a more environmentally sustainable future and seeks to arrest the ever-increasing effects of climate change on our planet.

The science around capturing carbon and storing it before it is emitted into the environment and storing it underground has been around for some time but there has been relatively little global appetite for embracing this technology. Challenges in making carbon capture and storage ("**CCS**") economic have been a major obstacle.

In 2020, there were only twenty CCS projects in commercial use globally. A major setback occurred in 2020 when one of the flagship CCS projects, Petra Nova in Texas, was mothballed. Interestingly, Australia has one of the leading CCS facilities in the world established by Chevron in connection with its Gorgon LNG project in Western Australia.

The political and commercial landscape, however, seems to be shifting in Australia in relation to the desire to further embrace and utilise this technology as part of an overall strategy to achieve a zero emissions economy.

This has been driven by:

+ international bodies such as the Intergovernmental Panel on Climate Change which announced in 2018 that technologies capable of removing carbon from the atmosphere (of which CCS is one) will be required to meet the goals of the 2015 Paris climate agreement. This was followed by the International Energy Agency stating in 2020 that it would be virtually impossible for the world to achieve the Paris agreement's 2050 targets without capturing and storing emissions generated from factories, power generation, transport and other sources because the transition to renewable energy will not cut emissions in time;

+ industry bodies such as the Global CCS Institute which point out that CCS is the only technology able to address emissions across major difficult-to-decarbonise industrial sectors, such as steel, chemicals and fertilisers; and
+ the European Union, which has the world's largest carbon trading system, including CCS on the list of technologies eligible for funding through its €10 billion emissions reduction "innovation fund.

RECENT OVERSEAS DEVELOPMENTS

Most recently in 2021, the Northern Lights CCS project received the green light from the Norwegian government with final state support agreements being signed in March 2021 with the project's commercial partners. The project is a partnership between Shell, Norwegian energy company Equinor and the French company Total. The project will initially capture carbon dioxide (CO2) from industrial sites in Eastern Norway. CO2 will be transported by ship to a plant on Norway's west coast, and then sent 110 kilometres by pipeline to be permanently stored 2,600 meters below the seabed at a site on the continental shelf in the northern part of the North Sea. Estimated total investment under the development plan is said to be close to US$700 million with annual operating costs at around US$43.6 million.

The Norwegian Parliament has approved the development of carbon capture technology at a cement factory which will provide the initial carbon for storage. Norway also proposes to fund carbon capture at an energy-from-waste plant in Oslo provided the plant secures further financial support. Northern Lights is part of Norway's full-scale CCS project. Significantly, it aims to become the first carbon storage facility with capacity to transport and store CO2 from industrial facilities in Norway and potentially from across Europe. It also proposes to use shipping as a way of widening access to a carbon storage market. In its first phase, expected to start operations by 2024, Northern Lights will transport and store up to 1.5 million tonnes of CO2 a year increasing to 5 million tonnes a year as demand grows.

Also, in October 2020, oil major BP announced that it had, formed a partnership with Eni, Equinor, Shell, Total, and National Grid (the Northern Endurance Partnership),to develop offshore CO2 transport and storage infrastructure in the UK North Sea. This project will serve the proposed Net Zero Teesside (NZT) and Zero Carbon Humber (ZCH) projects that aim to establish decarbonized industrial clusters in Teesside and Humberside (two of the UK's largest industrial clusters). Both projects are expected to be commissioned by 2026 with pathways to achieve net-zero as early as 2030 through a combination of carbon capture, hydrogen, and fuel-switching. According to BP, the Northern Endurance Partnership has submitted a bid for funding through Phase 2 of the UK government's Industrial Decarbonisation Challenge, aiming to accelerate the development of an offshore pipeline network to transport captured CO2 emissions from both NZT and ZCH to offshore geological storage beneath the UK North Sea.

WHAT IS THE TECHNOLOGY

CCS involves capturing carbon dioxide emitted from an industrial process and permanently keeping it out of the atmosphere by storing it in some manner. Examples of the types of industrial processes which generate carbon dioxide emissions include burning gas or coal to generate electricity and processes for manufacturing cement or steel. Usually large-scale storage of carbon involves pumping it underground, typically into geological formations from which oil or gas have been extracted.

Australia has been a world leader in the use of CCS with one of the largest facilities having been developed by Chevron in connection with its Gorgon LNG project. Chevron is Australia's sixth largest emitter of greenhouse gases and its Gorgon project is Western Australia's second highest emitting project. The Gorgon project was granted approval on the condition that it capture and stored an average of 80% of the carbon dioxide that existed in the gas it extracted. The company is reported to have invested A$3.1 billion into efforts to capture a portion of its emissions and permanently store them underground. According to Chevron, since August 2019, more than 4 million tonnes of CO2 have been injected into permanent underground storage in oil traps under Barrow Island in Western Australia's north-west.

For those interested in the process itself, in the case of the Gorgon project, the gas extracted contains 14% CO2 which is too high to meet the requirements of the regional gas market – so, a large part of that CO2 needs to be stripped from the gas. The gas and CO2 must first be separated. The CO2 then needs to be pressurised and cooled to the point where it has properties between a gas and a liquid. Then it has to be transported or piped to the place where it is to be injected underground. The geological structure into which the carbon dioxide is injected contains water which needs to be pumped out first and then injected somewhere else. The process is complex and faces a number of ongoing challenges.

HOW DOES THE FEDERAL GOVERNMENT VIEW THE USE OF CCS?

Energy and Emissions Reduction Minister, Angus Taylor announced in 2020 that CCS would be one of five key technologies that the Federal Government would support in its efforts to reduce emissions. This is contained in the Federal Government's so-called Technology Investment Roadmap released in 2020. The objective of the roadmap is to provide an enduring strategy to accelerate the development and commercialisation of new and emerging low emissions technologies. One of the announced stretch targets for CCS is CO2 compressions, hub transport and storage for under $20 per tonne of CO2.

The Federal Government also committed to a carbon capture and storage fund worth $50 million to support emissions reduction from power generation, heavy industry and natural gas production with potential sites identified in Moomba, South Australia, the Surat

and Bowen Basins in Queensland and offshore sites including the Browse and Carnarvon Basins in Western Australia. The Carbon Capture, Use and Storage Development Fund was established to provide businesses with grants of up $25 million for pilot projects or pre-commercial projects aimed at reducing emission – applications for fund grants closed on 29 March 2021.

Part of that strategy was also to expand the mandates of both the Clean Energy Finance Corporation (CEFC) and the Australian Renewable Energy Agency (ARENA) to include an ability to support CCS. In August 20202, the Clean En*ergy Finance Corporation Amendment (Grid Reliability Fund) Bill* ("**Bill**") was brought before Parliament to change CEFC's investment rules to enable it to use its $1 billion Grid Reliability Fund for gas and infrastructure projects and remove a rule that prevents it from investing in loss-making projects - the Bill has not been passed as yet.

Of note, the Bill establishes a $1 billion Grid Reliability Fund ("**GRF**") through a new Special Account to be administered by the CEFC and permits for regulations to expand this appropriation in future. It establishes a new category of GRF investments which are to be funded from this GRF Special Account and clarifies the definition of low-emissions technologies to ensure the CEFC is able to invest in the technologies described in the GRF announcement that support the achievement of a low-emissions energy system in Australia. It also amends the definition of an "investment" to allow for additional types of investments to be prescribed by regulations for the purposes of the GRF (including activities that may not make an investment return) and quarantines all GRF investments from the general requirement for the CEFC to invest at least 50 per cent of its funds in renewable energy projects.

In April this year, the Prime Minister, Scott Morrison, made announcements in relation to the development of four hydrogen hubs under a $275.5m federal program and the provision of a further $263.7 million towards projects including CCS.

While these announcements show commitment at the Federal policy level to CCS, the other part of making the technology economic – namely generation of Federal carbon credits- has not yet been addressed. The Morrison government has indicated that the Clean Energy Regulator is progressing work on this at the moment but nothing has been announced. Carbon credits are important to the economics of CCS as, once earned, the credits can be sold to third parties seeking to offset their carbon emissions thereby generating a revenue stream for the parry who has earned the credits.

The other important issue to be addressed is the making of changes to the Climate Solutions Fund so that CCS can qualify as an eligible technology. The Climate Solutions Fund was set up in 2015 with $2.5 billion funding under the Abbott government as an alternative to a carbon tax. It was topped up with a further $2 billion by the Morrison government in 2019. The Fund pays polluters to employ cleaner technologies and funds carbon capture through tree planning, soil carbon sequestration on farms and energy efficient systems in commercial properties as well as methane capture from landfill and waste management.

THE INDUSTRY RESPONSE

There are at least two major CCS projects on the drawing board in Australia.

South Australia

Santos, one of Australia's major gas producers, has a CCS project under development at Moomba in South Australia as part of its commitment to decarbonize its business by 2040 and grow its clean fuels capability. It was reported in October 2020 that the final field trial for the project – the injection of 100 tonnes of CO2 into a depleted gas reservoir in the Cooper Basin – had been completed. Once fully developed, the initial project will store up to 1.7 million tonnes of CO2 per annum. These depleted fields in the Cooper Basin have held natural gas and oil for 85 million years and can provide for safe, low-cost and permanent storage of carbon. In the long term, carbon storage in the Cooper Basin could store 20 million tonnes a year from other industrial emitters for more than 50 years.

A final investment decision on the $210 million CCS project at Moomba is reportedly going to be made by the company in the second half of 2021. The major hurdle at the moment is an approved methodology for CCS projects to generate carbon credits as, according to the company, this is required to make the project economic – again according to company sources, the cost of abatement is still at $25 - $30 per tonne. If the project proceeds, it will be the second largest in the country behind Chevron's Gorgon CCS project. Santos was also reported in early 202 to have entered into an agreement with BP to store 20 million tonnes of carbon each year in the Moomba gas fields.

Queensland

Glencore's CTSCo arm also has a $230 million CCS project under development in the Surat Basin in Queensland. This project will capture circa 5% of the CO2 from the Millmerran Power Station and store it underground in the Surat Basin. The project has been part funded by LET Australia and the Australian National Low Emissions Coal R&D. According to the company, the storage component of the CTSCo project (which is a demonstration plant) will provide a potential pathway to an industrial-scale storage hub in Queensland capable of servicing multiple industrial users including coal, natural gas and hydrogen.

Other potential players include CarbonCure Technologies, a Canadian "cleantech" company that has developed technology that stores carbon captured in the cement making process. Local venture capital firm Taronga Ventures (which is backed by Dexus and CBRE) was reported to have taken a stake in this company in 2020 with the intention of bringing its technology to the Australian market.

FINANCING CHALLENGES

From a financing perspective, the difficulty with CCS projects is that, generally speaking, the project does not itself generate revenue - rather the CCS project represents a cost which a company bears as a means of addressing the emissions from its revenue generating business.

However, there is a developing market in Australia and globally for "green bonds" and ESG loans where lower pricing of capital markets and debt products is available to companies which can commit to achieving specified environmental or sustainability targets. These types of products might in future be available to companies who adopt CCS as a means of capturing and storing emissions from their revenue generating business (such as gas production or fossil fuel fired power generation) or storing emissions produced by other emitters.

At a forum in September 2020, the managing director of HSBC's sustainable finance business was reported as commenting that there was a need to develop a "transition bond" mechanism or similar equivalent loan product to assist high carbon emitters to demonstrate that they are taking steps, through CCS, for example, to lower their emissions footprint – this would assist in the development of a robust business model that would enable companies developing CCS projects to raise this form of debt and repay it. It remains to be seen as to whether the capital and debt markets are prepared to extend the "green" bond and ESG loan concepts to include these types of "transition" debt products.

Other commentators have suggested that CEFC loans and ARENA grants should be made available to companies investing in CCS as a means of providing low-cost capital to the development of CCS initiatives on a predictable and sensible basis. Such an approach would recognise that CCS projects have large capital requirements but can deliver big numbers in terms of abatement.

On the revenue front, large scale CCS projects with significant storage capacity may also be able generate revenue by offering to take CO2 from other emitters and bury it underground for a fee and, once a suitable carbon credit scheme is in place, sell carbon credits to other emitters.

OPPORTUNITIES

As the global market for CCS develops, with the resultant opportunities for developers and investors to make a commercial return from CO2 storage facilities (i.e. by offering to store waste from other emitters), it is interesting to consider who might be in a position to benefit by achieving economies of scale in CO2 storage.

The large multi-national oil companies are obvious candidates to invest in this sector as they have access to depleted oil and gas fields which may be suitable for long term CO2 storage. As noted above, several of the major oil companies are already investing in the development of these facilities. Those companies also have access to drilling and seismic data relating to those fields which will be important in determining their suitability for CO2 storage. Governments will often require such data before approving the use of such fields for CO2 storage.

In addition, there are a number of companies (such as Schlumberger, Weatherford and Baker Hughes) which may also have valuable data (e.g. in the form of test drilling and seismic survey results) which may be of interest to investors who want to develop CO2 storage facilities. There may be opportunities for those companies to partner with financial investors (such as or sovereign wealth funds) to monetise that data by making it available to developers/investors for a commercial return.

REGULATION OF CCS IN AUSTRALIA AND OTHER STATE LED CCS INITIATIVES

Offshore waters

Greenhouse gas storage in Australia's offshore waters is regulated by the *Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth)* ("**OPGGS Act**").

By agreement between the Commonwealth, the States and the Northern Territory, it has been agreed that Commonwealth offshore petroleum legislation should be limited to the area that is outside the coastal waters of the States and the Northern Territory. For this purpose, the outer limits of each State's and the Northern Territory's coastal waters starts 3 nautical miles from the baseline of the territorial sea.

The OPGGS Act is supported by four Regulations:

+ Offshore Petroleum and Greenhouse Gas Storage (Greenhouse Gas Injection and Storage) Regulations 2011;
+ Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011;
+ Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009; and
+ Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009.

The Regulatory guiding principles for CO2 capture and geological storage set a consistent national approach to CO2 capture and geological storage.

The National Offshore Petroleum Safety and Environmental Management Authority ("**NOPSEMA**") assess and accept environmental plans and the Offshore Petroleum Titles Administrator manages day-to-day administration of petroleum and greenhouse gas titles in Australian waters. All greenhouse gas activities must have an environment plan assessed and accepted by NOPSEMA before an activity can take place

The OPGGS Act describes how the petroleum (oil and gas) industry and the GHG industry coexist. In some circumstances, one activity

could impact the other. To manage this, the legislation distinguishes between pre-commencement petroleum titles and post-commencement petroleum titles. All petroleum exploration permits awarded after November 2008, including titles directly derived from these titles, are considered post-commencement titles. If there is no agreement between a petroleum titleholder and a GHG titleholder, and the two activities cannot co-exist, the responsible Commonwealth Minister can decide which activity should proceed in the public interest. Once granted, the significant impacts test protects the post-commencement petroleum production licence.

The Commonwealth Government releases offshore areas for greenhouse gas assessment via the offshore GHG acreage release. The release provides an opportunity for companies to apply for a GHG assessment permit over an area of interest. The releases are only held when there is sufficient interest, and they usually run for 12 months. There have been 2 greenhouse gas storage acreage release processes to date as follows.

+ in 2012, the Victorian government was awarded a greenhouse gas assessment permit for the CarbonNet project. The permit covered 4,400 km2 off the Gippsland coast; and
+ in 2015, the Victorian government was awarded 3 greenhouse gas assessment permits.

Companies granted a GHG assessment permit in an acreage release, can undertake exploration and appraisal activities in their permit area. If they find a suitable site for permanent greenhouse gas storage in their area, they must apply for a declaration of GHG storage formation. Companies with a declared GHG storage formation who are not in a position to inject, can apply for a GHG storage holding lease. Companies wanting to commence permanent injection and storage in a declared storage formation, must apply for a GHG injection licence. .

Victoria

CCS in Victoria is regulated by the *Greenhouse Gas Geological Sequestration Act 2008* (Vic) ("**GGGS Act**").

The GGGS Act facilitates and regulates the injection of greenhouse gas substances into underground geological formations for the purpose of permanent storage of those gases, including the facilitation and regulation of the exploration for suitable underground geological storage formations. It does not apply to an underground geological storage formation that is within the area defined as the offshore area in the Offshore Petroleum and Greenhouse Gas Storage Act 2010 (Vic).

The GGGS Act is both comprehensive and prescriptive – some features of note are as follows:

+ The Crown owns all underground geological storage formations below the surface of any land in Victoria (except land (other than Crown land) to the extent that the underground geological storage formation is within 15 24 metres of the surface of the land). If a greenhouse gas injection and monitoring licence is cancelled or surrendered, the Crown becomes the owner of any greenhouse gas substance that has been injected into an underground geological formation under that licence.
+ A person must not carry out (i) any greenhouse gas sequestration formation exploration activity in Victoria except under, and in accordance with, an authority or as otherwise permitted by the Act or (ii) any greenhouse gas substance injection and monitoring in Victoria except under, and in accordance with, an injection and monitoring licence or as otherwise permitted by the Act.
+ If there is a native title holder in relation to land that is subject to an application for an authority under the Act, the Minister must not issue the authority in respect of that land unless the Minister is satisfied that the relevant procedures under the Native Title Act have been followed.
+ The Act deals with circumstances where an underground geological storage formation that is likely to be geologically suitable for the injection and permanent storage of a greenhouse gas substance extends over a number of areas in a way that legally entitles more than one holder of an injection and monitoring licence to carry out greenhouse gas substance injection and monitoring and also where part of the underground geological storage formation is outside Victoria (or the Minister reasonably believes that part of the formation is outside Victoria).
+ The holder of an authority has a duty to consult with the community and relevant municipal councils throughout the period of the authority.

The *Offshore Petroleum and Greenhouse Gas Storage Act 2010* (Vic) deals with the issue of permits, leases, licences and authorities relating to injection and storage of greenhouse gases in offshore areas (i.e. coastal areas within 3 nautical miles from the baseline of the territorial sea). Notably:

+ It is an offence to explore in the offshore area for a potential greenhouse gas storage formation, or a potential greenhouse gas injection site, except under a greenhouse gas assessment permit or as otherwise authorised or required by the Act.
+ The Minister must have regard to the impact (if any) that any of the key greenhouse gas operations to which an application for approval relates could have on petroleum exploration operations, or petroleum recovery operations, that are being, or could be, carried on under other petroleum permits, leases or licences issued under the Act.
+ If the Minister is satisfied that a "serious situation" exists in relation to an identified greenhouse gas storage formation specified in a greenhouse gas injection licence, the Minister can give directions to the licensee including to take all

reasonable steps to ensure that operations for the injection or storage of a greenhouse gas substance into the identified greenhouse gas storage formation are carried on in a manner specified in the direction; or to cease or suspend the injection of a greenhouse gas substance at a site or sites specified in the direction or to cease or suspend operations for the injection of a greenhouse gas substance into the identified greenhouse gas storage formation.

+ A greenhouse gas injection licensee may apply to the Minister for a site closing certificate in relation to a particular identified greenhouse gas storage formation specified in the licence. The Act also provides for surrender and cancellation of greenhouse gas tenures. The Minister may give site closing directions to greenhouse gas injection licensees. The Minister may give remedial directions to greenhouse gas titleholders or former greenhouse gas titleholders about the removal of property, the plugging or closing off of wells; the conservation and protection of natural resources or the making good of damage to the seabed or subsoil.

Queensland

CCS is regulated in Queensland by the *Greenhouse Gas Storage Act 2009 (Qld)* ("**GGS Act**").

The main purpose of the GGS Act is to help reduce the impact of greenhouse gas emissions on the environment principally by facilitating the process called greenhouse gas geological storage, also called greenhouse gas storage (GHG storage). It facilitates GHG storage by providing for the granting of authorities (called 'GHG authorities') to explore for or use underground geological formations or structures to store carbon dioxide, or carry out related activities and creating a regulatory system for the carrying out of activities relating to GHG authorities. The Act applies to the coastal waters of the State as if the coastal waters of the State were part of the State but does not apply to the adjacent area under the Petroleum (Submerged Lands) Act 1982.

The *Petroleum and Gas (Production and Safety) Act 2004* (the **P&G Act**) also facilitates the operation of the GGS Act by providing for survey licences under that Act to be able to be granted for potential GHG stream pipelines; providing for pipeline licences under that Act to be able to be granted for GHG streams; applying chapter 9 of that Act (the **P&G Act safety provisions**) to particular authorised activities for GHG authorities and applying its provisions about investigations and some of its provisions about enforcement to authorised activities for GHG authorities.

As is the case with the Victorian legislation, the GGS Act is both comprehensive and prescriptive - some features of note are as follows:

+ All GHG storage reservoirs in land in the State are and are taken always to have been the property of the State - a person does not acquire any property in a GHG storage reservoir or petroleum in it only because the person creates or discovers the reservoir.
+ The types of authority available under the GGS Act are a GHG exploration permit (also called a **GHG permit**) as initially granted, continued in force or renewed and a GHG injection and storage lease (also called a **GHG lease**) and a GHG injection and storage data acquisition authority (also called a **GHG data acquisition authority**). The granting of a GHG authority does not create an interest in any land.
+ A GHG lease does not have a fixed term and continues until it is surrendered or otherwise ends under the Act. The lease must cover a single parcel of land and must not include any unavailable land (as defined). Mandatory conditions are specified for GHG leases. A lease holder must pay the state an annual rental as prescribed by regulation.
+ A GHG lease holder can surrender a lease only if an application for surrender has been made and the surrender has been approved. Any GHG stream injected into a GHG storage reservoir in the former GHG lease's area becomes the property of the State.
+ The GGS Act:
  - contains a detailed regime dealing with circumstances where a GHG authority overlaps with an exploration authority, a geothermal lease, a mining lease or a petroleum lease;
  - provides for general mandatory conditions for all GHG authorities, dealings with a GHG authority, lodgement of caveats and extinguishment of GHG interests;
  - contains requirements for entry onto private land and for the carrying out of both preliminary and certain advanced activities on that land, entry into of conduct and compensation agreements for certain advanced activities and resolution of disputes between GHJG authority holders and private land owners (including the jurisdiction of the Land Court);
  - empowers the Minister to require, from time to time, the holder of a GHG authority or a person who has applied for a GHG authority to give the State security for the authority or proposed authority. Security or part of security given for a GHG authority may be kept for 1 year after the GHG authority has ended; and
  - contains a regime for dealing with so called "serious situations" being a situation where a GHG stream injected into the reservoir has leaked, there is a significant risk that a GHG stream injected into the reservoir will leak from it or a GHG stream injected, being injected or to be injected into the reservoir has behaved or is behaving otherwise than as predicted in a relevant work program or development plan.

Western Australia

In terms of the Gorgon project noted above, CCS activity is regulated by the *Barrow Island Act 2003* (WA). That Act ratifies, and authorises, the implementation of, an agreement between the State and the Gorgon joint venturers relating to a proposal to undertake offshore production of natural gas and other petroleum and a gas processing and infrastructure project on Barrow Island. That State agreement was entered into having regard to the need to minimise environmental disturbance on Barrow Island (which is a class A nature reserve) and to provide for the support of conservation programs relating to Barrow Island and other parts of the State.

The Act makes provision for inter alia enabling land on Barrow Island (but no more than 332 ha in total of uncleared land) to be used, under the Land Administration Act 1997, for gas processing project purposes and the conveyance and underground disposal of carbon dioxide recovered during gas processing on Barrow Island.

New South Wales

There is no specific legislation dealing with CCS. However, a number of initiatives are underway relating to CCS.

The NSW Government's Mining, Exploration and Geoscience website notes the following developments:

+ The NSW Government, Commonwealth Government (under National Low Emission Coal Initiative (NLECI) funding) and Australian Coal Association Low Emission Technology Limited (ACALET) signed a funding agreement with Delta Electricity to initiate an assessment stage for the Delta Demonstration Project. The project was officially announced on 25th March 2010 and ceased in 2014. The aim of the Delta Carbon Capture and Storage Demonstration Project was to demonstrate the feasibility of Post Carbon Capture (PCC) technology in the NSW context. The website notes that "***Overall, the results gathered from Stage 1 of the Delta Carbon Capture and Storage Demonstration Project have proved crucial to understanding the many complex planning requirements of enabling PCC technology in the NSW context***".
+ Coal Innovation NSW (CINSW) is coordinating the NSW CO2 Storage Assessment Project which aims to 'make NSW CO2 storage ready'. To achieve this, CINSW is exploring regional NSW to identify safe and secure sites for potential geological storage of CO2. Compared to most other states in Australia, NSW's deep sedimentary basins are virtually unexplored. To address this knowledge gap, CINSW, through the NSW CO2 Storage Assessment Project, is undertaking a state-wide assessment to identify potential storage opportunities in NSW. The Carbon Storage Taskforce identified the Darling Basin and Sydney Basin as national priorities for exploration in 2009. In terms of work to date:
  - In Stage 1A, four stratigraphic wells were drilled in the Sydney Basin. Work was completed in 2012 and the wells showed limited CO2 storage potential, hence looking further west to the Darling Basin.
  - In Stage 1B, which commenced in 2014, two stratigraphic wells were drilled in the Darling Basin in western NSW, near Wilcannia. The Tiltagoonah-1 well is in the Nelyambo trough and the Mena Murtee-1 well is in the Pondie range trough. Data from the Mena Murtee-1 well in the Pondie Range trough indicated a potential storage site. Analysis and modelling of this area identified multiple porous sandstone reservoirs with the potential to store 555 million tonnes of CO2. This is equivalent to all NSW industrial emissions (non-electricity) created over a forty-year period;
  - Stage 2 aims to verify and build on the early results from the Darling Basin (stage 1B) and improve understanding of the stratigraphy, geological structure, reservoir and seal properties, and hydrogeology of the targeted sub-basins - Pondie Range and Poopelloe Lake troughs. The first part of the Stage 2 program is a low-impact seismic survey over four weeks from May 2021 (weather permitting). The survey will be carried out along approximately 200km of seismic lines north of Wilcannia.

South Australia

There is no specific legislation dealing with CCS.

However, in 2018, the SA Government published a paper entitled "*South Australia's Carbon Sequestration Strategy*". That document notes that the South Australian Government has made a co-investment of $5.3 million with research partners for new research into carbon project opportunities across South Australia. This includes the mapping and assessment of the carbon sequestration potential of coastal wetlands and seagrass habitats, soil carbon and valuing the co-benefits of carbon projects.

The Department of for Energy and Mining – Energy Resources' website notes that:

+ South Australia has a large endowment of onshore storage reservoirs suitable for CCS, particularly in the depleted oil and gas fields of the Cooper and Otway basins;
+ CCS gives South Australia the opportunity to create a new industrial 'hub' for competitive abatement of emissions – especially in sectors with difficult to abate process emissions such as cement, steel and iron manufacturing; natural gas processing; and biofuel production. Furthermore, CCS can also enable new technologies such as low carbon hydrogen production from natural gas, enhanced oil recovery and direct air carbon capture and storage; and
+ the Department is involved in the development and implementation of policies, international standards, and

leading practice regulation to facilitate CCS projects. One of these projects is that proposed by Santos for CCS at Moomba (as noted above).

Tasmania, Australian Capital Territory and Northern Territory

Again, there is no specific legislation dealing with CCS in any of these jurisdictions.

In Tasmania, *Climate Action 21* set the Tasmanian Government's agenda for action on climate change through to 2021 and is due to conclude in June 2021. The Tasmanian Climate Change Office is currently developing Tasmania's next whole-of-government action plan, which will build on the themes and actions from Climate Action 21.

The ACT has published its *ACT Climate Change Strategy 2019 - 2025* and the NT has published its *Norther Territory Climate Change Response: Towards 2050* but neither document contains any CCS initiatives (other than carbon farming being and the promotion of carbon sequestration (or storage) from plants and soils).

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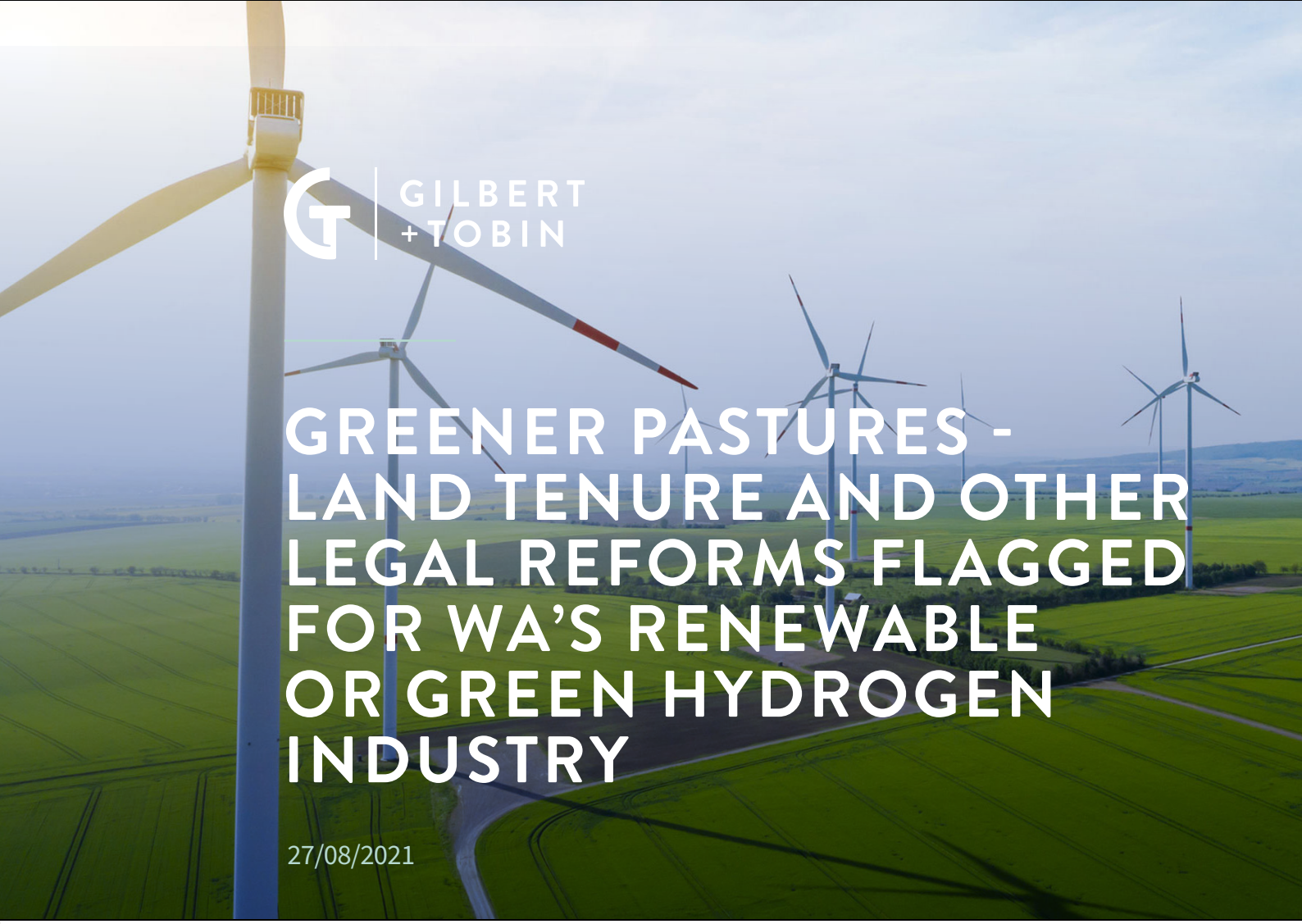
6 LAND TENURE AND NATIVE TITLE



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GREENER PASTURES - LAND TENURE AND OTHER LEGAL REFORMS FLAGGED FOR WA'S RENEWABLE OR GREEN HYDROGEN INDUSTRY

27/08/2021

At the recent Committee for Economic Development of Australia (CEDA) conference in Perth the Western Australian Government (**State Government**) indicated that there were 240 pieces of legislation that would be infringed or incompatible in the development of the largescale renewable energy projects required to produce green hydrogen. To address this, the State Government has flagged regulatory reform in both the land tenure and gas pipeline regimes in the pursuit of establishing Western Australia (**WA**) as a mass green hydrogen producer:

+ **land tenure reforms:** the need to reform land tenure laws to implement a mechanism for land to be converted from pastoral land into tenure for green hydrogen production, inclusive of renewable energy sites; and
+ **gas pipeline reforms:** reforming the pipeline regulatory regime to enable the blending of green hydrogen into existing gas infrastructure.

This article reviews the State Government's approach in establishing WA as a leader in the green hydrogen space and then comments on the shape that potential reforms might take.

In our view, the introduction of land tenure and gas pipeline reforms will be fundamental steps towards WA being able to capitalise on the full potential of large scale hydrogen production.

STATE GOVERNMENT'S HYDROGEN STRATEGY

Part of developing a green hydrogen industry is having an established bureaucracy, together with licensing and regulatory bodies, to advise and direct the establishment of this new industry and administer an appropriate regulatory framework. Initially the State Government's hydrogen strategy came under the ambit of the Department of Jobs, Tourism, Science and Innovation (**DJTSI**) and its Minister the Hon Alannah MacTiernan MLC and was developed with the support of the Western Australian Renewable Hydrogen Council (**ARHC**) which was formed in 2018.

In the State Government cabinet reshuffle, post the landslide 2021 state election, the Premier, the Hon Mark McGowan, created the Hydrogen Industry portfolio and appointed the Hon Alannah MacTiernan MLC as minister (Minister of Hydrogen Industry). The introduction of the new portfolio is the State Government's recognition of how instrumental hydrogen has become in WA's energy future – an acknowledgement that hydrogen is an economically realistic and tangible green energy source and one that provides a major opportunity for WA to establish itself as a leading player in a global market.

In conjunction with the ARHC, DJTSI released both the Western Australian Renewable Hydrogen Strategy (**Strategy**) and the Western Australian Renewable Hydrogen Roadmap (**Roadmap**) in July 2019 and November 2020 respectively. The State Government's hydrogen vision is set out in the Strategy and the Roadmap: **for Western Australia to become a significant producer, exporter and user of renewable hydrogen with its share in global hydrogen exports similar to its share in LNG today**. Whilst the Strategy undertakes a high level analysis into why WA provides a suitable environment for the hydrogen industry, outlines the State Government's hydrogen goals and explains the benefits of using hydrogen, the Roadmap addresses the practicalities of the Strategy – what mechanisms and timeframes will apply to ensure the Strategy is fulfilled. The Strategy was updated in January 2021 (**Updated Strategy**) to align the State Government's original goals with advancements in the hydrogen industry. Throughout both the Roadmap and the Updated Strategy are hints at prospective land tenure and gas pipeline reforms.

LAND TENURE REFORMS

As is now well-understood, the 'green' aspect of green hydrogen is not based on the molecular structure of the hydrogen, rather it is an acknowledgement that the electrolysis process used to produce the hydrogen is powered solely by renewable energy. Due to the high energy intensity of hydrogen production, the renewable energy facilities (such as the wind and solar farms) require expansive land tenure areas in addition to the areas required for the hydrogen production infrastructure. Large-scale renewable energy projects are therefore central to the burgeoning green hydrogen industry and not only do the solar and wind resources need to be available, but the land also has to be available and accessible for that purpose.

Under WA's current land tenure regimes, there is no fit for purpose or one size fits all tenure option for renewable facilities. The options include tenure under *Mining Act 1978* (**Mining Act**), the *Land Administration Act 1977* (**LAA**) or contractual arrangements with existing land holders. The availability of and the preference between the current land tenure alternatives in WA will depend on a range of factors, including:

- whether the renewable project has an appropriate connection with mining;
- an analysis of underlying tenure or interest holders in the relevant locations, including an assessment of whether existing land uses are compatible with the preferred tenure option and proposed new land use;
- the stage of the project for which the tenure is required (such as investigative, feasibility, construction or operational phase);
- the nature of infrastructure to be constructed at a particular location (ie hydrogen production infrastructure, renewable energy facilities or ancillary areas such as access areas); and
- whether exclusive or non-exclusive tenure is required in light of the infrastructure to be constructed,

and it may be that the solution will not be limited to one type of tenure, with a matrix of rights and interests being appropriate over the life-cycle of the project and for different aspects of infrastructure depending on the actual land use associated with the infrastructure.

An issue that the State Government has identified and is seeking to address is that pastoral leases over Crown land cover rough 36 percent of WA (90 million hectares), with these pastoral leases located in regional and remote areas of WA where WA's best solar and wind resources are located.

Under the LAA, pastoral leases only allow the land to be used for pastoral purposes. Large scale renewable facilities are therefore not permitted pastoral purposes.

Despite this, the State Government has indicated in the Updated Strategy that WA land will be accessible for renewable energy:

"With an area of 2.5 million km2 (one-third of the Australian continent), low intensity land use combined with low population density, Western Australia is well placed to develop large-scale renewable energy generation."

The implication is that pastoral leases will be available for such projects. As a result, what appears clear is that the pastoral lease regime will undergo reform. What is unclear is how the State Government will legislate the reforms and whether pastoral lease holders will be entitled to compensation.

The Minister of Hydrogen Industry has flagged the shape these reforms might take, "we need to legislate a mechanism whereby land can be taken out of the pastoral estate and put into a tenure that is appropriate for large-scale hydrogen production." The statement suggests that whatever mechanism the State Government opts for, it may involve a conversion of the pastoral lease to an alternative form of tenure.

Of course, project proponents and pastoralists could reach a commercial agreement that involves a pastoral lease or portions of it being surrendered and replaced with a more appropriate grant of replacement tenure. Instead, the position taken by the State Government so far suggests that the incoming reforms will likely take a similar shape to those introduced by the same Labor Party almost five years ago when it proposed to legislate for a new type of lease, the rangelands lease. Under the previous reforms, pastoral leases could be converted into a new rangelands lease that allowed for a greater variety of permitted land uses. In the pending reforms, the State Government could:

+ re-introduce the rangelands lease and include renewable energy projects as a permitted land use; or
+ legislate conversion to a Crown lease, or a new type of 'fit for purpose' hydrogen tenure, to be used for the purpose of largescale renewable hydrogen projects.

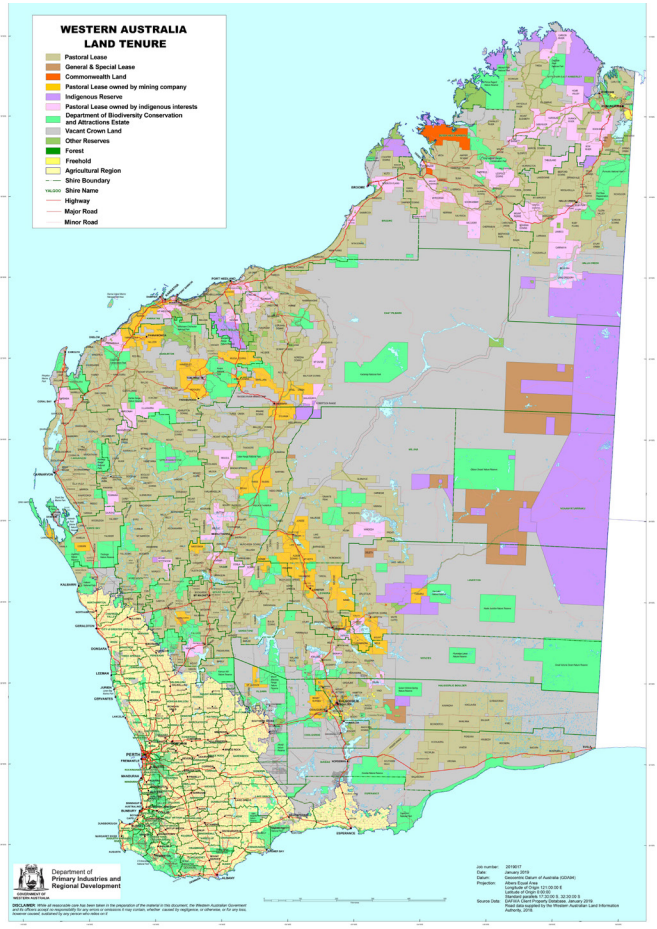
The conversion of pastoral leases has obvious benefits to increasing diversification and intensity of land use. Legislating for a new 'fit for purpose' hydrogen tenure could also recognize that the continuation of low intensity land uses is not necessarily inconsistent with the operation of certain aspects of largescale renewable hydrogen projects (such as in areas surrounding wind turbines that may be sparsely located over vast distances); this provides a unique opportunity to consider a land tenure mechanism that may benefit a wider range of stakeholders.

What will be unavoidable are the native title implications; expectedly, the State Government has already flagged that the conversion will be a future act for native title purposes that will trigger the standard notification, consultation and/or other relevant processes under the native title legislation.

Security of land tenure is one of the top issues facing potential hydrogen producers in WA. We will be following developments closely as access to land with the strongest renewable resources will be key and 'fit-for-purpose' hydrogen tenure may provide the best long-term solution to address the issue.

In considering any land tenure reforms, the rent to be charged for the use of the land may provide a lead indicator of the State Government's thinking about how it intends to monetise the value of Crown land in clean energy projects. For further information on this topic, please review our article Decarbonisation: is zero-emission energy a zero-sum game for governments?.

WESTERN AUSTRALIA LAND TENURE



amended image source - https://researchlibrary.agric.wa.gov.au/gis_maps/3/

PIPELINE REFORMS

The State Government's vision for producing and exporting hydrogen is contingent on increasing the demand for hydrogen. The ability to transport hydrogen via existing pipeline infrastructure in WA is an essential part of driving demand. In the Updated Strategy, the State Government brought forward its 2040 goal of having WA's gas pipelines and networks contain a 10% renewable hydrogen blend (**Hydrogen Blend**), now aiming to achieve the blend by 2030 (**Hydrogen Goal**).

In the Updated Strategy, the State Government flagged the need for relevant licensing and regulatory bodies to assess and implement regulatory changes to facilitate demonstration projects. The demonstration projects are the first substantive steps the State Government is taking towards the Hydrogen Goal. The Minister of Hydrogen Industry indicated at the CEDA conference that the State Government's approach has been to look at the specific regulatory needs of a number of demonstration projects (and to create a "sandbox" for each project) by way of grant of temporary exemptions or relaxing of regulatory requirements and approvals rather than wait until the whole regulatory environment is reformed.

For instance, the State Government is co-funding a feasibility study alongside Australian Gas Infrastructure Group (**AGIG**), who is conducting the study, into incorporating hydrogen into the feedstock mix of the Dampier-Bunbury natural gas pipeline (**DBNGP**). Extending for roughly 1,600 kilometres and delivering 90 percent of WA's domestically used natural gas, the DBNGP is essential to the WA gas landscape. The feasibility study is one of seven feasibility studies funded by the State Government and is due to complete its findings in 2021. There is currently an open question regarding the extent to which the regulatory framework lawfully enables the blending of the hydrogen into the existing pipeline and it has been stated by AGIG that an outcome of the study will be the development of a roadmap to assist in the development of regulations for the Hydrogen Blend in WA.

WA gas regulations cover safety and technical aspects of the transmission, distribution and downstream use of the gas itself alongside other regimes that affect or are affected by the vast network of gas pipelines. Underpinning an assessment of regulatory reform is the understanding that the Hydrogen Blend comprises a gas that is a blend of both natural gas and hydrogen is not naturally occurring.

For example, key legislation in WA deals with naturally and non-naturally occurring gas in different ways. Some pieces of legislation have wide definitions for gas with terminology that applies to *any gas or mixture of gases*, with no discrimination between naturally occurring or manufactured gas.

This is in contrast to other legislation in WA which define petroleum as a substance that is *naturally occurring* and does not take into account hydrogen blends. As it stands, hydrogen blends are not lawfully capable of being transported via some existing pipeline infrastructure because of the strict definition found in the legislation.

Limitations under existing gas legislation in respect of hydrogen blends has a potential knock-on effect in both environmental and planning regulations which provide exemptions where activities are covered by the existing gas legislation, such as under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* which provides exemptions to activities authorised under certain legislation meaning the exemption may not apply to activities undertaken as part of a hydrogen project.

As part of the State Government's investment in hydrogen gas blending, $2 million in funding was recently awarded to ATCO Australia to support capital works associated with blending hydrogen into isolated sections of the natural gas distribution network. Due to the embrittlement or degrading effect of hydrogen on steel pipelines that were originally designed for natural gas transportation, the further investment should assist to optimise the extent of blending for the safe transportation of hydrogen.

This collaboration between the State Government and industry, as highlighted by the demonstration projects of hydrogen blending in WA's gas networks and the early stage funding being provided by the State Government, will be essential in the transition to a hydrogen economy as the full scope of the required regulatory changes are determined and demonstration projects seek to move from the sandbox to full-scale commercial implementation.

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KNOWLEDGE ARTICLES YOU MAY BE INTERESTED IN:

Decarbonisation: is zero-emission energy a zero-sum game for governments?

The Next Frontier – Clean Energy and Decarbonisation

Green hydrogen in Australia – our progresses towards a new industry

RENEWABLE ENERGY AND REUSABLE REFORMS WA'S LAND TENURE AMENDMENTS ARE FAMILIAR BUT EXCITING

24/11/2021

WA'S LAND TENURE AMENDMENTS: KEY TAKEAWAYS

+ The reforms facilitate the expansion of carbon farming, with pastoralists set to benefit from the extension of pastoral leases for up to 50 years and associated security of tenure benefits to attract carbon farming capital investment.
+ The reforms are seeking to strike a balance of risk and reward between the conflicting land uses associated with the nascent green hydrogen industry and biodiversity conservation. At this stage, the reforms appear to be weighted in favour of the latter and questions remain how the reforms will 'unlock land for renewable energy', such as green hydrogen projects, because:
  - the best wind and solar energy resources in the State exist in coastal areas and, outside of the freehold areas of the south west, is predominated by existing pastoral leases;
  - the grant of the new 'diversification lease' (in the 'switch' from a pastoral lease) will still require agreements to be reached with pastoral lease and native title holders. As such, key hurdles for clean energy projects remain given the location of many existing pastoral leases coincide with the best wind and solar energy resources in the State;
  - more carbon farming will potentially create more conflicting land uses for clean energy projects and mining to contend with;
  - the conflicting pastoral land use is perpetuated by extending pastoral leases for up to 50 years; and

  - more sweeping tenure reform to 'unlock land for renewable energy' and green hydrogen projects will still be needed, and possibly require large-scale acquisition of existing rights and interests (such as pastoral and native title rights) which are outside of the scope of the current reforms.
+ Accordingly, given the geographic distribution of wind solar resources and pastoral tenure, it appears the amendments unlock pastoralists' ability to market and monetise their tenure for clean energy development, rather than unlocking the land for development itself.
+ Apart from this, mining companies that also hold underlying pastoral leases may be able to capitalise the fastest on the opportunities presented by the proposed diversification leases.

STATE GOVERNMENT AIMS TO UNLOCK LAND FOR RENEWABLE ENERGY AND ECONOMIC DIVERSIFICATION

Last week, the Western Australian Government announced a suite of land tenure reforms headlined by a new form of tenure – the diversification lease. The announcements suggest the reforms will be a welcome and necessary development for prospective renewable energy developers seeking to harness the unique opportunity WA's natural resources offer.

The Government stated the new diversification lease provides a form of tenure that can support the establishment of clean energy projects and the expansion of carbon farming to capitalise on the burgeoning offsets industry. The Government's announcement also promises to reduce red tape and streamline approval processes to 'unlock land for renewable energy and economic diversification'.

Many aspects of the reforms to the *Land Administration Act 1997* (WA) (**LAA**) are distinctly familiar to those who followed the mooted Rangelands leases in 2016 as we predicted in 'Greener Pastures – Land tenure and other legal reforms flagged for WA's renewable or green hydrogen industry'. At this stage, the Government has only announced a summary of the proposed reforms noting the amendment Bill is currently being drafted and is intended to be introduced into Parliament early in 2022.

We eagerly await the Bill and further information to assess the extent to which it will meet the Government's objectives and industry demands to support the wind, solar and nascent green hydrogen market. We set out below some key points to consider from the information released last week.

DIVERSIFICATION LEASES

What are diversification leases?

Diversification leases are undoubtedly the headline act as the apparently new form of land tenure was positioned as the key to unlocking WA's renewable energy potential to allow diversification of WA's economy.

Under the LAA, pastoral leases only allow the relevant land to be used for pastoral purposes and large scale renewable facilities are not permitted pastoral purposes. The Government has previously identified this issue given pastoral leases over Crown land cover roughly 36 percent of WA (90 million hectares), predominantly located in regional and remote areas where WA's best solar and wind resources are located.

Diversification leases are an alternative to the existing pastoral leases, allowing for a more diversified range of clean energy related land uses to coexist with existing pastoral and mining land uses. Such uses clearly contemplate solar and wind farms, which provide the renewable energy required to give green hydrogen its colour.

Conversion to the new leases is not mandatory, and there is currently no new conversion mechanism that is proposed by which a pastoralist can be compelled to agree to diversified activities over existing tenure or to surrender their lease in favour of a diversification lease.

In this way, there is naturally a limit to the extent to which land covered by pastoral leases can be 'unlocked' by these reforms as it will remain incumbent on clean energy project developers to reach agreement with pastoralists regarding the grant of a diversification lease.

Pastoral leases in Western Australia

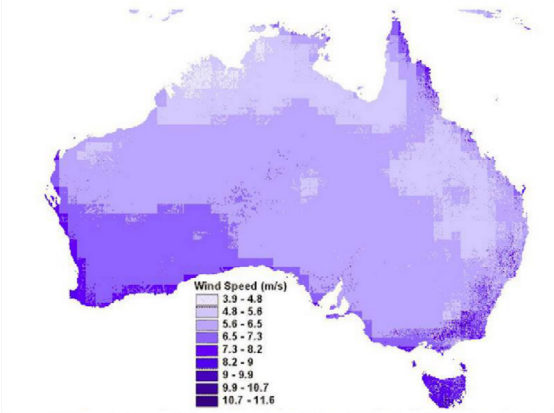
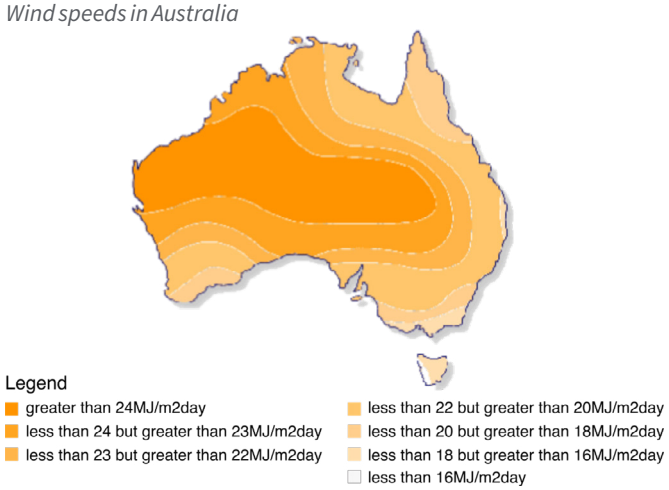


Figure 7 70m wind speeds for the period of May 1997 - April 1999 (from Mills, 2001)

Wind speeds in Australia



Solar energy availability in Australia

How are diversification leases different?

Those familiar with pastoral leases will be aware of the existing diversification permit. This permit is not transferrable, requires approval after application to the Pastoral Lands Board and may allow for any non-pastoral purposes if the land has been enclosed or improved. The changes brought by the diversification lease are substantively procedural but increase efficiency. The tenure removes the need to obtain a pastoral lease and then a permit, the approval of which is not guaranteed. Renewable energy developers may now obtain a diversification lease from the outset or convert pastoral leases instead of seeking permits approving certain uses. The leases provide increased operational certainty as opposed to permits, and the legal characterisation as a lease rather than a licence provides greater security of tenure. Diversification leases will also be transferrable making them overall a far more commercially-friendly tenure. The 'conversion' of a pastoral lease into a diversification lease looks set to occur by way of surrender and regrant. Given the geographic distribution of resources and pastoral tenure, it appears the amendments unlock pastoralists' ability to market and monetise their tenure for clean energy development, rather than unlocking the land for development itself.

Evidently, the substance of what a diversification lease allows is not too different, but the new framework is aimed at commercial efficiency and viability. However, other amendments allow for more competitive reviews of rent amounts, which we expect the government to leverage by monetising tenure to compensate for the revenue inevitably lost from the transition away from carbon-intensive resources. For more information on what to expect read 'Decarbonisation: is zero-emission energy a zero-sum game for governments?' in which we discuss potential areas of monetising green energy, including leases and rent.

Will the reforms streamline the land tenure approvals pathway?

There is no quick-fix tenure option for renewable energy facilities in WA. Potential options include tenure under the *Mining Act 1978* (**Mining Act**), the LAA or contractual arrangements with existing land holders. The availability of and the preference between the current land tenure alternatives in WA depends on a range of factors, including:

+ whether the renewable project has an appropriate connection with mining;
+ an analysis of underlying tenure or interest holders in the relevant locations, including an assessment of whether existing land uses are compatible with the preferred tenure option and proposed new land use;
+ the stage of the project for which the tenure is required (such as investigative, feasibility, construction or operational phase);
+ the nature of infrastructure to be constructed at a particular location (ie hydrogen production infrastructure, renewable energy facilities or ancillary areas such as access or laydown areas); and
+ whether exclusive or non-exclusive tenure is required in light of the infrastructure to be constructed.

The solution may not be limited to one type of tenure, with a matrix of rights and interests being appropriate over the life-cycle of the project and for different aspects of infrastructure depending on the actual land use associated with the infrastructure.

At this stage, it is not clear whether the diversification lease will be suitable across the life-cycle of a clean energy project or whether it is intended to simply be the ultimate form of tenure related to construction and operation of a facility.

In theory, the diversification lease could be seen as a form of tenure to replace existing mechanisms under the LAA for authorising early access for investigative or feasibility works (namely, the 'section 91 licence'). This could overcome limitations of a section 91 licence, namely their short-term nature and that they do not typically permit construction or operational activities. However, this may be unlikely given the native title processes to be followed for the grant of a diversification lease as discussed below.

Assuming that the diversification lease is therefore intended for the construction and operation of a clean energy facility, this would necessarily mean that the diversification lease is to be utilised in conjunction with other forms of existing tenure under the LAA (such as a section 91 licence) and other rights and interests in the earlier stages of a project. It remains to be seen if the reforms will address transitioning between different stages of the project and different forms of tenure to streamline and provide increased certainty to the land tenure approvals pathway.

Of course, being a non-exclusive form of tenure, a diversification lease may not be appropriate where exclusive tenure is required given the nature of the infrastructure to be constructed. For example, exclusive tenure such as a Crown lease may be required for the hydrogen production infrastructure (such as the electrolyser) or even a solar field where other diversified activities may be incompatible. This lends weight to our initial views that a diversification lease may not be intended as a one size fits all tenure option, but an additional tenure option forming part of the matrix to be used at certain stages or for certain types of infrastructure or land uses.

Other procedural improvements

Whilst the Government's announcements provide little context, it appears a number of other changes are proposed to overcome legislative limits or deficiencies that may benefit clean energy projects:

+ Reserved land limits: Under the LAA, the Minister may reserve Crown land for one or more purposes in the public interest (such as for 'recreational and cultural purposes', 'satellite communications' or other environmental or community benefits). It appears additional flexibility will be introduced to allow for the partial revocation, cancellation or change of reserve land in recognition that alternative, potentially compatible, low intensity renewable energy related land uses could also be carried out on reserved land.
+ Transferability of easements in gross: The LAA enables easements to be granted without a dominant tenement and these so called 'easements in gross' have a fundamental limitation that they cannot be transferred. This limit on transferability creates a key bankability issue for any project financing. It is proposed that easements in gross will be transferrable, suggesting easements in gross may play a key role in clean energy projects that may not require a dominant tenement in the form of a Crown lease. For example, an easement in gross seems particularly well suited to the 'hub and spoke' model of developing green hydrogen projects which comprises numerous interconnected wind or solar farms that connect to a remote or isolated grid and may not be directly connected to the hydrogen production facility itself.
+ Clarification of compulsory acquisition powers: The definition of a 'public work' and 'work' under the *Public Works Act 1901* (WA) will be amended to include '[p]ower generation, transmission distribution and storage infrastructure from gas, electricity and any other form of energy source' and '[r]eclamation of land for any public work.' We expect these amendments will operate to clarify that the Crown's power to take interests in land under Part 9 of the LAA extends to renewable energy developments. This clarification may be important where land cannot otherwise be 'unlocked' by commercial agreement or the Crown exercising its administrative powers to grant LAA tenure for a renewable energy project.

IMPACT OF WA'S LAND TENURE AMENDMENTS ON NATIVE TITLE

The Government has confirmed that the reforms will not impact existing native title requirements and that the conversion to or grant of a diversification lease will constitute a future act under the *Native Title Act 1993* (Cth) that will most likely require an indigenous land use agreement (**ILUA**) with the relevant native title holders.

Until the carbon farming market develops, the time and cost in negotiating an ILUA will present difficulties or a barrier to diversified land uses associated with carbon farming.

The fact that renewable energy projects can, in theory, continue indefinitely has created a new dynamic in ILUA negotiations for the first green hydrogen projects that are emerging. These reforms do not alter this dynamic as project proponents and native title holders seek to quantify the scale of opportunity presented by this new industry.

There is also now a statutory requirement for the Pastoral Lands Board to have a member appointment by the Minister for Aboriginal Affairs "from among Aboriginal persons with experience in pastoral leases" in addition to a "person with expertise in the field of flora, fauna or conservation land management". These appointments would make a valuable contribution to the Pastoral Lands Board in its role going forward.

The information released so far is relatively limited, as expected at this stage. G+T's Clean Energy and Decarbonisation lawyers will be attending information sessions to further discuss the amendments and will continue to bring you updates and new information as it becomes available.

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KNOWLEDGE ARTICLES YOU MAY BE INTERESTED IN:

Greener Pastures - Land tenure and other legal reforms flagged for WA's renewable or green hydrogen industry

CLEAN SLATE: SETTING THE STANDARD FOR NEGOTIATING RENEWABLE ENERGY PROJECTS WITH NATIVE TITLE HOLDERS

03/12/2021

The "clean energy" movement is rapidly developing at a rate that is outpacing legislators and regulators. According to the Clean Energy Council, there are 89 renewable energy projects in construction or due to start construction soon across Australia. The transition to renewable energy represents the biggest shift in our lifetime, affecting all aspects of the global economy, and native title agreements are no exception. A new era of energy and commerce requires a new era of native title negotiations and relationships.

Over 62.8% of Australia's land mass is now subject to native title claims or determinations, which encompasses the location of a large portion of Australia's richest renewable resources. Traditional Owners recognise the opportunity in leading the clean energy revolution and negotiating agreements which set the standard for generations. Negotiating native title agreements for renewable energy projects has seen a change in focus. Traditional Owners are taking a more active role to facilitate participation and collaboration with proponents and developers. Renewable energy projects present a huge opportunity to create lasting, intergeneration benefits for Traditional Owners. However, renewable energy imposes a cost on country that is often forgotten in the well-intentioned race to net zero.

For the above reasons, Traditional Owners are key stakeholders in any project conducted on native title land and companies, now more than ever, need a social licence to operate. From a native title perspective, this means:

+ early engagement;
+ a better standard of negotiation; and
+ respecting discussions with Traditional Owners and the positions that they come from.

The First Nations Clean Energy Network (**Network**) was established on 17 November 2021 to encourage and facilitate partnerships between Aboriginal communities and renewable energy developers and construct renewable projects which in turn provide reliable power and end energy insecurity for Aboriginal communities. The Network, which is backed by the National Native Title Council, the Australian Council of Trade Unions and the Clean Energy Council, will also provide resources, educational training and support to empower Traditional Owners in negotiations with companies in respect of renewable energy projects.

KEY THEMES

Balancing bargaining power: participation and collaboration

There are a number of key "themes" we have seen arise during native title negotiations for renewable energy projects. One central theme is enhanced empowerment for Aboriginal people through a mutual redistribution of bargaining power. Traditional Owners at the negotiating table are experienced, commercially aware and focussed on sufficiently protecting country and their rights to ensure meaningful participation and collaboration between the parties.

We consider best practice for negotiations is that the agenda, nature and timeline of negotiations should be developed between the Traditional Owners and the company in a way to ensure that Traditional Owners have sufficient time and resources to meaningfully negotiate. In particular, it is best practice to ensure that Traditional Owners have access to qualified and independent experts to provide advice for negotiations. For this reason, it is often beneficial for companies to enter into a Negotiation Protocol or Negotiation Funding Agreement with the company they are engaging with, particularly in respect of large projects and agreements such as Indigenous land use agreements.

Negotiations must take place in a respectful manner and in good faith. Many renewable energy companies are supported by infrastructure funds (including from offshore) that have never entered into native title agreements and may require guidance to ensure that they are engaging in a productive and culturally appropriate manner.

The cost of decarbonisation: the role of Aboriginal heritage and environmental protection

As Tony McAvoy SC, founding member of the Network and Australia's first Indigenous Senior Counsel, rightly stated "*the clean energy boom, while necessary, is not cost free*". Renewable energy projects have a different impact on country than traditional mining projects, however, this impact is still serious and in many cases, will continue for an indefinite period of time. Renewable energy projects can tie up huge expanses of land and, at the very least from a visual and amenity perspective, have a large impact on country. Traditional Owners are the custodians of the land and have a duty to maintain and protect their country. Adherence to the protection of Aboriginal heritage and the environment is a part of every renewable energy company's social (and potentially legal) licence to operate.

Protection of and access to sites of cultural significance on country is of key importance to Traditional Owners. The sheer scale of renewable energy projects risks interrupting this access. Early engagement with the Traditional Owners is key in this respect, as Traditional Owners can provide advice about their country's landscape and key areas of significance so the project can be developed with appropriate respect paid to those areas.

While the environmental impacts of traditional mining projects and their duration is widely known and understood, the impacts of renewable energy projects are less certain. From a certain point of view, the development of a renewable energy project involves developing technology being used for an unknown period in circumstances where tenure solutions and regulation are being developed by the States (apparently independently of each other). Renewable energy companies and Traditional Owners should work together to ameliorate uncertainty in this respect.

Recent events, such as the destruction of the caves at Juukan Gorge and subsequent Federal inquiry have thrown the importance of protecting Aboriginal cultural heritage sites into the spotlight. Now, more than ever, companies are being held to account for their actions in respect of Aboriginal heritage. We expect that Aboriginal heritage will continue to be an increasingly significant focus of native title agreement negotiations.

Opportunity and stability

Renewable energy projects present an opportunity for long-term, stable income for Aboriginal corporations. In light of the long term nature of these projects, Aboriginal corporations are looking to generate inter-generational wealth through economic participation and commercial involvement. However, they each present difficulties and issues which must be overcome.

Native title agreements for renewable energy projects present an opportunity to be creative in the ways that economic benefits are shared. The economic benefits shared can range from an equity ownership stake, management positions, royalty streams and break fees if there is uncertainty as to whether the project will proceed. There is no "one size fits all" solution and each individual agreement should be tailored to factor in the circumstances of that specific project and the priorities of the local communities affected. Similar to the industry itself, companies should look to get ahead of this and foster positive relationships with the communities they are working with to develop innovative and meaningful ways for those communities to participate, collaborate and derive benefit from renewable energy projects.

Social cohesion and inclusion

A key opportunity for collaboration between Traditional Owners and renewable energy companies is through forward planning for training and education. Renewable energy projects often have long project lead up times. These time periods provide community and companies the opportunity to establish training and education programs and scholarships. Such programs to enable the inclusion of Aboriginal skilled workers to contribute to the project upon commencement.

There are different phases of renewable energy projects, with different workforces required for construction, as opposed to operation. Early engagement with Traditional Owners and a clear and open dialogue about the needs of the project in each stage enables the company and community can work together to ensure an inclusive, diverse and efficient allocation of employment opportunities.

Besides employment, training and economic benefits, renewable energy projects can provide other benefits such as energy security to remote communities. Energy security is a basic right, yet many Aboriginal people living in remote communities still do not have access to reliable and inexpensive energy sources. In lieu of meaningful State and Federal programs, we foresee native title agreements for renewable energy projects clearly moving towards this trajectory and this is a key aim for the Network.

OPPORTUNITIES, NOT OBSTACLES

Given the importance of land to the viability of renewable energy projects, Traditional Owners are integral stakeholders. Traditional Owners are the custodial protectors of their country and bear a huge amount of the risk by allowing renewable energy projects of large scale to be constructed on country over an indefinite and uncertain timeline. As such, their rights to participate and have their say and share of the benefits of the project should be protected and representative of the risk assumed.

Renewable resources are indefinite by nature. Renewable energy projects may span generations so it is key that Traditional Owners are provided an opportunity to collaborate and set the parameters of their relationship with such projects. When commencing engagement with Traditional Owners, renewable energy companies must ensure there is a whole company commitment to upholding these principles, especially from the company leadership.

Negotiations and drafting can take a similar form to traditional mining native title agreements, however, these principles and examples should only be used as a guide or a starting point, as renewable energy projects should go further in the empowerment of Traditional Owners and the creative opportunities and benefits offered, in recognition that this is a new frontier, and that decisions now will have effect in generations to come.

If you have a renewables project being constructed and would like tailored and strategic advice as to how to engage and commence negotiations in a culturally appreciative and sensitive way, please contact Amelia Arndt, Arabella Tolé or Marshall McKenna.

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7 GLOBAL PERSPECTIVES

COP26 PROMISES AND PROBLEMS FOR NET ZERO AMBITIONS

23/09/2021

In just under a month, the UN Climate Change Conference will begin in Glasgow, Scotland, heralding the 26th Conference of the Parties (**COP26**). For well over two decades, the UN has brought together nearly 200 countries for the climate conference, representing every geographic area on Earth. In that time, climate change has moved from a fringe issue to one of the most pressing global challenges in recent human history.

In the lead up to COP26, the UK and Italy, as co-hosts, are working with nations to reach agreement on how to tackle climate change through international collaboration and standards. COP26 will focus on agreeing changes to countries' existing emissions reduction targets, climate change adaptation, climate action funding and international collaboration. However, most experts believe that COP26 has a unique urgency, given the increasingly dire outlook for the Earth's climate. The Sixth Assessment Report by the Intergovernmental Panel on Climate Change (**IPCC Report**) has only added fire to the flames, finding that Earth could well exceed warming of 1.5 degrees Celsius by the early 2030s. Countries are also coming under pressure from within, with climate change-related litigation and investor activism gathering pace around the globe. Societies are beginning to demand real change, and COP26 has the ability to bring countries together on key climate change mitigation initiatives and act as a catalyst for that change.

In this article, we set out two key issues that will be addressed at COP26 that are relevant to Australia's efforts to lower emissions: the promise of Article 6 in creating international cooperation in the quest for net zero emissions and the problems posed by increasing scrutiny of coal-fired power generation.

KEY TAKEAWAYS

+ There is hope that COP26 is the conference that finally resolves the long-standing issues with Article 6. The key challenge ahead is for all countries to agree on the rules and processes for the three emissions reduction mechanisms envisaged under Article 6. The international carbon market under Article 6 is the mechanism most likely to have an immediate effect on Australian companies, as it will allow companies to trade "internationally traded mitigation outcomes" (**ITMOs**) on an international scale.
+ Coal will be in the spotlight at COP26. Coal-generated power and the move away from it has been a sticking point for international negotiations in the lead-up to COP26. It is possible that the coal supply chain, from producers to suppliers and power station owners, will buckle as international pressure builds to move away from coal, leaving the Australian coal industry at risk of being left with stranded assets and limited offtake options. However, we do not expect this risk to eventuate for some time, given the current high levels of reliance on coal both domestically and internationally.

WHAT TO WATCH AT COP26

There are two issues to be discussed at COP26 that will directly affect Australia:

+ Emissions reduction activities and trading schemes under Article 6 of the Paris Agreement: Article 6 establishes three mechanisms for the mitigation of greenhouse gas emissions, covering concepts from trading schemes through to direct investment in emissions reduction activities. This lays the basis for a global emissions trading exchange in which Australian companies could participate.
+ The future of coal as a source of power generation. There is growing international pressure for countries to move away from coal reliance in generating power. This poses challenges for Australia given it primarily relies on coal for energy production.

Emissions reduction mechanisms under Article 6 of COP26

Perhaps the most significant item up for discussion on the COP26 agenda is the status of Article 6 of the Paris Agreement. Article 6 was a surprise inclusion in the Paris Agreement, as progress on an international carbon market had been stagnant up until that point. Its inclusion at COP21 gave delegates a sense of hope and achievement. However, there has been a conspicuous lack of agreement on the rules that would render Article 6 operational. Those rules were supposed to be agreed on and adopted at COP24 in Katowice, Poland, but this did not occur. Since then, parties have moved further away from any agreement. Given the climate emergency facing the planet, COP26 is seen as a final opportunity to nail down the rules.

Article 6 envisages three mechanisms for the transfer of so-called ITMOs between countries, companies and other international actors. ITMOs essentially refer to greenhouse gas emissions reduction activities, in which the reduction outcomes can be transferred (for example, by way of trading) to help other entities reduce their emissions. ITMOs are conceptually wide, accounting for a diverse range of activities such as carbon markets, renewable energy capacity or re-forestation initiatives.

The three voluntary mechanisms envisaged by Article 6 are:

+ A State-level trading mechanism, allowing a country that is beating its internationally recognised commitment to reduce greenhouse gas emissions (known as "nationally determined contributions" or **NDCs**) to sell its overachievements to a country that is failing to meet its NDC. The exact nature of the ITMOs to be transferred is still to be decided.
+ An international carbon market, governed by a UN body, through which private and public entities may trade emissions reductions across the globe. An example of this is the trading of carbon credits to offset emissions from air travel, as is currently the case with the International Civil Aviation Authority's CORSIA scheme. This Article 6 mechanism is the only one that requires demonstrating an "overall mitigation in global emissions", meaning that greenhouse gas emissions must fall not merely because of other emissions reduction mechanisms, as these reductions would have occurred in spite of the international carbon market.
+ A non-market (ie non-trading) mechanism for climate cooperation between States, such as State investment (in, for instance, a new windfarm), development aid or concessional loans. Switzerland has entered into bilateral agreements with Peru, Ghana, Senegal and Vanuatu under which it will develop climate protection projects in those countries. The emissions reductions achieved by those projects will be attributed to Switzerland. Additionally, Sweden is seeking to implement bilateral agreements for decarbonised projects in Ghana and the Dominican Republic. In Sweden's case, the country is seeking specifically for these projects to be recognized as ITMOs under Article 6, suggesting that it intends to put pressure on countries to come to an agreement on Article 6 rules.

The key challenge ahead is for all countries to agree on the rules and processes for the three mechanisms, which will require intense scrutiny of loopholes to ensure emissions reductions are not counted twice and that an overall reduction in greenhouse gases is actually achieved.

COP26 also provides an opportunity to hold countries accountable to their NDCs. NDCs enable countries to set their own targets, which will be revised under the so-called "ratchet mechanism" every five years. In this way, the world does not need

to develop a final plan to combat climate change; countries are merely being asked to build on their ambitions over successive five-year periods. Even if the rules of Article 6 remain elusive, the NDC mechanism should provide a means of measuring COP26's success. Having said this, the UN secretary-general, António Guterres, is concerned that countries will fail to abide by, or contribute to, the NDC mechanism. Currently, it appears the most effective action on climate change is arising from bilateral agreements, given the recent announcement of a joint US-EU effort to curb methane emissions, the so-called Global Methane Pledge. Other countries are able to commit to the pledge, but it remains to be seen whether Australia will sign up.

The future of coal

Boris Johnson, the UK prime minister, recently shone a spotlight on the use of coal-fired power stations, arguing their use needs to end in all countries in order to limit global warming to within 1.5 degrees Celsius. The role of coal in the near future is proving difficult to manage. Many countries are reliant on coal-generated power and the move away from it has been a sticking point for international negotiations in the lead up to COP26. A recent meeting of the G20 in Naples was unable to reach agreement on moving away from coal power, with India being one of the strongest opposers. The world's largest emitter, China, is under increasing scrutiny to cut its carbon emissions, while its coal consumption reaches record highs. Developed countries are also resisting the call to axe coal: US President Joe Biden refused to commit himself to ending domestic coal power in a G7 meeting in June 2021.

In Australia, coal is the primary source of electricity generation and produces around 80% of the country's electricity requirements. This is a staggering percentage, particularly given the rapid uptake of wind and solar farms, in which Australia has outperformed much of the world. But the Federal government faces significant pressure from certain coal-heavy areas in central Queensland, the Hunter Valley in NSW, Victoria's Latrobe Valley, and Western Australia and has steered clear of making any promises to reduce coal consumption. Australia is therefore unlikely to support any direct requirement to reduce the use of coal except, perhaps, to the extent that such a requirement relates to its interactions with other countries (for instance, agreeing not to provide finance for coal-fired power stations overseas). Despite this, the NSW energy minister recently announced that ending coal-fired power stations by 2030 was more than achievable. However, the commitment to the Paris Agreement targets at Federal level appears weak: bowing to Australian pressure, the UK recently agreed to remove a reference to the temperature targets of the Paris Agreement from the text of a free trade deal being negotiated between the two countries.

THE OUTCOMES OF COP26: WHY THEY MATTER TO YOU AND YOUR BUSINESS

The outcomes from COP26 relating to Article 6 and the issue of coal will have real-world impacts, including shaping Australia's quest for net zero emissions.

In terms of the private sector, the international carbon market under Article 6 is the mechanism most likely to have an immediate effect on Australian companies, as it will allow companies to trade ITMOs on an international scale. Currently, Australia has a similar scheme, the Emissions Reduction Fund, through which companies can earn Australian carbon credit units (**ACCUs**). These can be sold either to the government or on a secondary market for other companies to offset their emissions. This is an example of an ITMO trading mechanism, to which the international market would add another dimension: companies could choose to trade ITMOs (in a similar form, perhaps, to ACCUs) internationally, giving them greater flexibility to tackle climate change on a truly global scale. The Clean Energy Regulator recently put out expressions of interest regarding the establishment of an Australian carbon exchange to simplify ACCU trading. Such an exchange could potentially be tied into a similar mechanism at the international level.

As for coal, it is entirely possible that the coal supply chain, from producers to suppliers and power station owners, will buckle as international pressure builds to move away from coal. Companies run the real risk of being left with stranded assets and coal-reliant regions will become exposed to economic ruin without appropriate initiatives from State and Federal governments. However, we do not expect this risk to eventuate for some time, given the current high levels of reliance on coal both domestically and internationally. The top importers of Australian coal are Japan, China and India, with Japan being the only country of the three showing signs of a shift away from coal, as lending from financial institutions and government tightens for carbon-intensive projects.

WHY COP26 IS AN OPPORTUNITY

COP26 provides an opportunity for the world's leaders to resolve pressing issues in the fight against climate change and the quest for net zero emissions. Tacking climate change requires positive action; not just lip-service and optimism. Above all, COP26 is another chance to instigate positive action. However, despite the summit's imminence, the silence from the leaders of some of the world's biggest emitters in relation to the IPCC Report and COP26 commitments does not bode well. However, if countries are able to put their differences aside and bring their minds to bear on the subject matter at hand, they may just be able to develop innovative and effective measures in the fight to limit climate change.

The world will be watching the international stage during COP26 and we will be providing an update on the outcomes of the conference in its wake. We remain hopeful that our Federal government will release a substantive long-term strategy for emissions reduction in Australia before COP26 – or run the risk of further global scrutiny as the laggards down under.

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FOLLOW THE COP26 UN CLIMATE CHANGE CONFERENCE

12/11/2021

WHAT IS COP26

The COP26 UN Climate Change Conference, hosted by the UK in partnership with Italy, will take place from 31 October to 12 November 2021 in Glasgow. COP26 is considered the most important UN climate meeting since Paris in 2015, when nations agreed to the goal of keeping global temperatures at 1.5C above pre-industrial levels by the end of the century. Leaders from around the world across the private and public sectors will gather in Glasgow to discuss working together to build a net zero future.

In our previous article on the promises and problems to be resolved at COP26, we explored the key points relevant to Australia. Since then, the Federal Government has released Australia's Long-Term Emissions Reduction Plan*, a technology-driven plan by which the government commits to reduce greenhouse gas emissions:

+ by up to 35% below 2005 levels by 2030; and
+ to reach net zero by 2050.

*A summary of the Plan can be found here: 'The Plan to Deliver Net Zero: The Australian Way'

With this Plan hot off the press, the world will be closely watching the international stage during the conference and we will be providing an update on the outcomes in its wake.

Over the next two weeks, we will release daily updates on the key events and outcomes at COP26.

Each day of the conference is scheduled to focus on a different theme, beginning with finance and energy before moving to youth and public empowerment, science and infrastructure:

+ Day 1 and 2 – Monday 1 November and Tuesday 2 November: World Leaders' Summit will begin, a two-day event which will include statements on the need to tackle climate change from various heads of state. Government leaders will be invited to put forward their proposals on limiting carbon emissions and keeping the 1.5C warming target within reach.
+ Day 3 – Wednesday 3 November: 'Finance: Mobilising public and private finance flows at scale for mitigation and adaptation', focusing on the financial and economic aspects of climate policy. The morning event will be led by Mark Carney, UN Special Envoy and the UK Prime Minister's Finance Advisor for COP26.
+ Day 4 – Thursday 4 November: 'Energy: Accelerating the global transition to clean energy', including the transition away from coal power, scaling up clean power and increasing energy efficiency.
+ Day 5 – Friday 5 November: 'Youth and public empowerment', providing a voice to young people at the conference.
+ Day 6 – Saturday 6 November: 'Nature: Ensuring the importance of nature and sustainable land use are part of global action on climate change and a clean, green recovery'.
+ Day 7 – Sunday 7 November: Rest day.
+ Day 8 – Monday 8 November: 'Adaptation, loss and damage: Delivering the practical solutions needed to adapt to climate impact and address loss and damage'.
+ Day 9 – Tuesday 9 November: The first event will be 'Gender: Progressing gender equality and the full and meaningful participation of women and girls in climate action'. The second will be 'Science and innovation: Demonstrating that research and technology can deliver climate solutions to meet, and accelerate, increased ambition'.
+ Day 10 – Wednesday 10 November: 'Transport: Driving the global transition to zero emission transport'.
+ Day 11: Thursday 11 November: 'Cities, Regions and Built Environment: Advancing action in the places we live, from communities, through to cities and regions'.
+ Day 12: Friday 12 November: The conference will close.

12/11/2021 By - Anneka Thomson

DAY 12 – FRIDAY 12 NOVEMBER 2021

Today marks the closure of negotiations at COP26.

After two intense weeks of talks covering a range of topics, some of the key outcomes have been:

4. pressure on countries to ramp up their 2030 emissions reduction targets, with India finally coming to the table with a net zero target—by 2070;
5. a pledge to reduce methane emissions under the 'Global Methane Pledge' and the agreement of 190 countries (though not Australia) to phase out coal power throughout the 2030s and 2040s; and
6. calls for greater climate adaptation financing, with the target of $100 billion per annum set to be increased as developing countries demand more support.

Negotiations continue on in the background to finalise an overarching COP26 agreement, the draft text for which was published on Day 10, as well as work out the mechanics of some of the finer points of the Paris Agreement, such as the practical operation of Article 6.

12/11/2021 By - Anneka Thomson

DAY 11 – 11 NOVEMBER 2021

COP26 is moving to a close but today the Zero Emission Vehicles Transition Council announced its 2022 Action Plan, which identifies areas for collaboration to move towards zero emissions vehicles, covering:

1. charging infrastructure, with a dedicated taskforce focusing on how to deploy such infrastructure and the requirements of electricity grids to facilitate this;
2. development of fuel efficiency standards and regulations;
3. heavy vehicle transition to zero emissions, with a focus on technological options for doing so; and
4. ensuring the zero emissions vehicle transition is a global transition.

11/11/2021 By - Amelia Arndt and Anneka Thomson

DAY 10 – 10 NOVEMBER 2021

As COP26 has progressed, negotiations between countries aimed at realising the goals of the Paris Agreement have been occurring in the background. Today the 'draft text' of the negotiations was published, which indicates the direction taken. Once finalised and accepted by all parties, this text will have legal force as an international agreement. The draft text raises the following key points:

1. focus must remain on mitigating emissions and limiting warming to 1.5 degrees Celsius – anything beyond that will cause irreversible damage;
2. the importance of adaptation will increase as climate change impacts snowball, with enhanced international support required to help developing countries adapt;
3. climate finance for adaptation (the current target being $100 billion annually) is insufficient and developed countries should provide more financing; and
4. coal must be phased out faster. Countries should revisit

their 2030 climate plans by the end of 2022, with a proposed meeting of world leaders planned for 2023 to review those plans. On that note and separately from the draft text, the US and China announced a deal to enhance cooperation between the two countries to phase out coal and reduce emissions, including methane.

Additionally, today saw three declarations relating to:

1. vehicles: national, regional and local governments, as well as businesses and industry signatories, agreed to 'work towards all sales of new cars and vans being zero emission globally by 2040, and by no later than 2035 in leading markets'. Australia is not a signatory. Given its large landmass and remote communities, any move to zero emissions vehicles will likely require more thought than simply electrifying all vehicles.
2. aviation: the International Aviation Climate Ambition Coalition, a coalition of 23 countries (not including Australia) who are signatories to the Paris Agreement and contracting states to the Convention on International Civil Aviation 1944, held its inaugural meeting and signed a declaration supporting the development of aviation emissions targets aligning with the Paris Agreement, with the aim of net zero by 2050 and targets for sustainable aviation fuel and carbon offsets / reduction schemes.
3. shipping routes: Australia signed the Clydebank Declaration for Green Shipping Corridors, under which countries agreed to support the 'establishment of green shipping corridors – zero-emission maritime routes between 2 (or more) ports', with the aim of creating at least 6 of these corridors by the mid-2030s.

Despite the apparent gains made at COP26, Climate Action Tracker has predicted that pledges from countries attending the summit will still lead to warming increases of around 2.4 degrees Celsius this century.

10/11/2021 By - Jim Power

DAY 9 – 9 NOVEMBER 2021

Day 9 was expectedly dominated by government pledges as the Ministerial negotiation week continues. Australia did make some commitments despite not being represented by a Minister at the Conference.

Australia has committed to leading the Net Zero Industries Mission and being a supporting member for the Carbon Dioxide Removal Mission through the Mission Innovation program (see Day 3 update). The initiative outlines four new missions that seek to bring industry and government together 'to catalyse investment to accelerate technologies'. The four new missions join existing missions in hydrogen, shipping and power systems and include:

1. Net Zero Industries Mission (Australia co-lead with Austria) – a pledge to reduce emissions for heavy industries like steel, cement and chemicals. Further information is expected to be published in 2022;
2. Carbon Dioxide Removal Mission (Australia supporting member) – a pledge to accelerate CO2 removal technologies;
3. Urban Transitions – a pledge to have large-scale projects by 2030 that demonstrate how cities can adapt to decarbonised norms; and
4. Biorefineries Mission – an initiative to seek bio-based alternatives to help reduce emissions for the steel, cement and chemicals industries.

The Break Through Agenda's (see Day 2 update) Global Checkpoint System was announced for 2022, which seeks to garner international collaboration and accountability by implementing a quarterly review and reporting system with explicit deliverables, including monitoring progress of the Glasgow Breakthroughs announced last week. Progress will be assessed and reported on by the IEA, IRENA and the United Nations High Level Climate Action Champions.

Australia has failed to join traditional allies the US and UK along with around 50 other countries who signed a pledge to reduce emissions in the healthcare sectors and secure health infrastructure against climate change.

Australia was again heavily criticised for its approach to climate change as it was once more ranked last out of 64 nations for climate policy, and 58th out of 64 overall in the annual Climate Change Performance Index. The report noted Australia's decision not to introduce any new policies in support of its net zero pledge at COP26 as a notable disappointment. Meanwhile, the EU has called on richer nations such as Australia to do more to ensure COP26 succeeds in reducing emissions. Dutch member Bas Eickhout was more explicit in his disappointment with Australia when he described the Morrison government's pledge as 'literally a brochure'.

09/11/2021 By - Jim Power

DAY 8 – 8 NOVEMBER 2021

Day 8 was relatively quiet as negotiators work around the clock in an effort to keep the Conference on its timetable.

Angus Taylor announced late on Sunday that he is leaving the Conference. The departure of Australia's Minister for Industry, Energy and Emissions Reductions comes at a time when many Ministers from member nations are arriving for the second week of negotiations, which are intended to be driven by those Ministers. Angus Taylor's departure means Australia now has no ministerial representation at the Conference.

The ACT Government has signed the Global Coal to Clean Power Transition Statement, which was introduced on Day 5 of the Conference. The ACT Government is the only Australian

government to sign the statement, which involves 4 key commitments:

1. rapid scale up of clean power generation;
2. rapid scale up of technologies and policies within this decade to successfully transition away from coal power;
3. cease issuance of new permits for coal-fired power generation projects that have not yet reached financial close; and
4. strengthen domestic and international efforts to provide the framework and support required to transition away from unabated coal power.

The Chair of the UK's Climate Change Committee, Lord Deben, has criticised the Morrison government's decision not to move away from coal. Lord Deben labelled Australia's performance at COP26 'a great disappointment to the rest of the world' and accused the Prime Minister of failing to 'understand the urgency of what we have to do' and the need to transition away from coal. The criticism preceded an announcement from the Morrison government on Monday in which it reaffirmed its commitment to coal by announcing feasibility funding for a clean hydrogen project, the product of which the Prime Minister suggested 'can be used in coal-fired power plants'. Lord Deben also warned that as the effects of climate change begin to take hold, 'people are simply not going to be prepared to trade with countries that don't meet the same standards.'

07/11/2021 By - Giorgia Fraser, Anneka Thomson and Danielle Lukic

DAY 7 – 7 NOVEMBER 2021

Despite being a rest day in Glasgow, the presidency of the United Nations climate talks in Glasgow released a summary of negotiating points titled "Presidency summary of possible elements identified by Parties for inclusion". The document states that a key goal of the Conference is to tighten global emission reductions by 2030, and that "parties who have not yet submitted enhanced Nationally Determined Contributions [are] expected to do so in 2022". Our previous article explains that NDCs are voluntary emissions reduction goals that signatories are expected to formally submit to the UN's climate body and then improve upon every five years. This is known as the "ratchet mechanism" and is designed to steadily increase reductions goals.

Heading into COP26, Australia simply resubmitted the goal it first set in Paris of reducing emissions by 26-28 per cent by 2030. In comparison, the US doubled its original goals. If the proposal to require parties who have not yet submitted enhanced NDCs to do so in 2022 is adopted, it would affect countries such as Australia that did not improve their original target.

06/11/2021 By - Giorgia Fraser, Anneka Thomson and Danielle Lukic

DAYS 5 AND 6 - 5 AND 6 NOVEMBER 2021

Friday and Saturday of COP26 were devoted to the importance of educating and giving a voice to youth and the public in relation to climate action, as well as looking at the transition being driven by farmers, communities and businesses towards sustainable management and restoration of nature. YOUNGO, the Official Children's and Youth constituency of the UNFCCC, presented the COY16 Global Youth Position statement, representing the views of over 40,000 young climate leaders from across the world. The statement presented their priorities directly to Ministers, including action on climate finance, mobility and transportation, through to wildlife protection conservation.

On Friday, the International Energy Agency reacted positively to the emissions pledges made at COP26. The IEA director, stated that "New IEA analysis shows that fully achieving all net zero pledges to date and the Global Methane Pledge by those who signed it would limit global warming to 1.8C". This has since been challenged by Selwin Hart, the special adviser to the UN Secretary-General on climate action, who said that "based on the nationally determined contributions that have been submitted, the world is on a 2.7 degree pathway – a catastrophic pathway". Watch this space.

No major policy outcomes arose from these two days.

05/11/2021 By - Anneka Thomson

DAY 4 – 4 NOVEMBER 2021

Today was marked by two internationally-supported statements committing to a clean energy future, neither of which Australia signed:

1. 190 countries have committed to phasing out coal power by scaling up technologies and policies that allow a move away from coal power generation throughout the 2030s and 2040s, as well as agreeing not to issue new permits for coal power plants. Australia is not a signatory to the deal, with Prime Minister Scott Morrison firm in his belief Australia can reach net zero by 2050 without ending coal power.
2. Fourteen countries, along with the European Commission, signed a statement supporting a just global transition to a clean energy future, including respect for human rights and support for local sustainable jobs. Again, Australia is a notable absence, given other countries like Canada, Germany, New Zealand and the United States have signed up.

04/11/2021 By - Anneka Thomson and Lara Borshoff

DAY 3 – 3 NOVEMBER 2021

COP26 was all about finance today:

1. An update on the Mission Innovation – Breakthrough Energy Collaboration Agreement was announced, an agreement between Mission Innovation (launched by world leaders at COP21) and Breakthrough Energy (Bill Gates-backed) focused on increasing clean energy technology investment. The partnership has been expanded to focus on increasing private and public sector collaboration, with the aim of commercialising clean energy technologies more rapidly by increasing research and development and early investment in promising technologies.
2. Former Bank of England governor Mark Carney has coordinated an initiative ("Glasgow Financial Alliance for Net Zero") to mobilise some 450 organisations (such as banks and insurers) together controlling two-fifths or $130 trillion of the world's assets to focus investment in clean technologies by increasing access to easy and cheap money for green initiatives, committing to net zero emissions across investment portfolios by 2050.

Looking back on the World Leaders' Summit over the past two days, 151 countries have updated their Nationally Determined Contributions (a country's commitment to reduce its greenhouse gas emissions), including Australia due to its commitment to reach net zero by 2050. The result is that these commitments now cover some 90% of global emissions. During the Summit, Fortescue Future Industries' CEO Julie Shuttleworth AM was one of only six CEOs to address world leaders, focusing on the potential for green hydrogen to be globally significant by the end of this decade.

03/11/2021 By - Giorgia Fraser and Lara Borshoff

DAY 2 - 2 NOVEMBER 2021

There was positive direction for COP26 on the second day of the World Leaders' Summit, including new emissions and finance announcements.

1. More than 100 countries, including 15 major emitters, backed US President Joe Biden's initiative to cut methane emissions by 30 per cent this decade. The Global Methane Pledge represents 40% of global methane emissions and 60% of the global GDP. Unfortunately, Australia is not one of the supporters. This was the first time a COP in recent history has hosted a major event on methane.
2. World leaders, including Australia, endorsed the Breakthrough Agenda - a commitment to work together internationally this decade to accelerate the development and deployment of the clean technologies and sustainable solutions needed to meet Paris Agreement goals, ensuring they are affordable and accessible for all. This agenda will be discussed at future meetings of global leaders and a review of global progress will be undertaken in 2022.
3. Further to yesterday's announcement, over 100 countries pledged to halt and reverse deforestation and land degradation by 2030 and to collectively provide US$12 billion for forest-related climate finance between 2021-2025.
4. Australia joined the Green Grid Initiative - One Sun One World One Grid Steering Committee, the vision of which is to combine efforts to create a more inter-connected global grid and develop an action agenda for global cooperation to achieve that vision.
5. The Multilateral Development Banks released a joint statement in relation to 'Nature, People and Planet'. The joint MDB group, made up of the Asian Development Bank (ADB) and other leading MDBs, issued the high-level statement to affirm their commitment to mainstreaming nature considerations into their policies, analysis, assessments, advice, investments, and operations.

02/11/2021 By - Anneka Thomson and Shay Kiriakidis

DAY 1 - 1 NOVEMBER 2021

The first day of the World Leaders' Summit at COP26 saw early wins for the environment with:

1. over 100 world leaders (including Brazil) agreeing to end deforestation by 2030, as well as provide funding to protect forests, such a commitment covering around 85% of Earth's forests; and
2. India's prime minister committing to net zero by 2070. Although the aim of COP26 was that all countries agree to net zero by 2060, this is nevertheless a big step forward, coming from a country that has previously refused to embrace net zero ambitions.

Colombia's Mining & Energy Minister also shone a spotlight on the need for a just transition, stating that electricity needs to be supplied to those still living without it. Meanwhile the UK was criticised for granting new oilfield licences and outgoing German Chancellor Angela Merkel called for a carbon price.

Prime Minister Scott Morrison has used his address at the Summit to announce an additional $500 million for international climate finance, bringing Australia's total contribution to $2 billion. This funding relates to an agreement made by developed nations at COP15 in 2009 to jointly mobilise $100 billion per year from 2020 to support the efforts of developing nations in addressing climate change and its impacts. Analysts consider it unlikely that this target has been met, though we won't definitively know until 2022.

01/11/2021 By - Anneka Thomson

PROCEDURAL OPENING OF NEGOTIATIONS - 31 OCTOBER 2021

COP26 kicked off in Glasgow, with conference president Alok Sharma calling it "our last best hope" to meet the aim of the Paris Agreement of 1.5 to 2 degrees warming. Over the next two days

world leaders are expected to present and increase their nationally determined contributions towards limiting global warming. Vladimir Putin and Xi Jinping will be notable absences from those talks. Other world leaders have arrived in Glasgow hot off the heels of the G20 Summit in Rome, where the rhetoric was around limiting climate change—with leaders urging "meaningful and effective action".

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AUSTRALIA COPPED IT AT COP26: KEY OUTCOMES AND THEIR SIGNIFICANCE FOR AUSTRALIA

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The UN Climate Change Conference in Glasgow, known as COP26, drew to a close last Friday after two weeks of intense media coverage and international scrutiny. We covered the highlights and key outcomes of COP26. The promises emerging from the conference span not only countries, but sectors and communities, although Australia's role, which has been heavily lambasted, leaves much to be desired.

KEY TAKEAWAYS FROM COP26

+ Governments are starting to pull their weight, committing to mid-century as well as interim net zero targets.
+ There are promising industry-specific agreements relating to the clean energy transition across areas as diverse as forestry, methane, aviation and shipping.
+ US$130 trillion in assets has been mobilised by financial institutions to drive clean energy investment.
+ Coal is on its way out with most countries agreeing to phase it out in the 2030s and 2040s.
+ The Glasgow Climate Pact was agreed, which articulates rules for an international carbon market, including an overall reduction in greenhouse gas emissions through a mechanism resulting in 2% cancellation of each credit traded.

FOCUS ON TOP-DOWN ACTION

120 world leaders assembled at COP26, placing the emphasis of top-down action by reinforcing national government pledges to reach net zero by 2050 and, in some cases, setting more ambitious interim targets for 2030. Although Australia was criticised for not increasing its net zero target to 2030, it at least made it to the talks with a 2050 target, announced just days before the commencement of COP26. India was kind enough to set its net zero target as 2070, which would have made Australia look better if only India were not a developing country with a population that is many multiple times our own.

KEY SECTORAL OUTCOMES

One striking outcome of COP26 was the magnitude of sectoral pledges that were announced, covering areas as diverse as:

+ forestry, when over 100 world leaders, including Brazil, agreed to end deforestation affecting some 85% of Earth's forests by 2030 (to which Australia is a signatory);
+ the Global Methane Pledge, aimed at reducing methane emission by 30% by 2030, supported by over 100 countries, together representing 40% of global methane emissions;
+ the Breakthrough Agenda, which committed countries to work together to accelerate the clean energy transition by driving down costs in transport, power, steel and hydrogen (to which Australia is a signatory); and
+ transport, in which there was significant movement towards net zero emissions, with declarations in the areas of aviation, vehicles (supported by a number of business and industry actors) and so-called green (zero emissions) shipping corridors, of which at least six are to be established by mid-2030 (and to which Australia is a signatory).

Another major focus of the conference was on climate finance and adaptation funding. Some US$130 trillion in assets was mobilised by financial institutions to drive investment in clean and green developments. However, developing countries were crying out for greater climate adaptation finance.

LAST GASP FOR COAL

Coal did not escape scrutiny, but Australia did escape scrutinising coal—at least for now. The Global Coal to Clean Power Transition Statement was introduced on Day 5 of the conference and commits signatories to scaling up clean technologies and power generation, concomitantly reducing the reliance on coal-fired power. The ACT Government duly signed up, though this begs the question of exactly what role it expects to play, given the dearth of coal projects in that Territory. The outcome of the background negotiations at COP26, which resulted in the Glasgow Climate Pact, included a reference to 'phasing down' coal—though this was weaker than what had originally been hoped for. This provides some relief to Australia's struggling—though (at least for now) essential—coal industry.

GLASGOW CLIMATE PACT

The Glasgow Climate Pact, a binding document, achieved more than simply referencing coal. It also:

+ committed countries to strengthening their emissions reduction targets for 2030 by 2022. Australia is under particular scrutiny given the flack it copped for not strengthening this target at COP26 itself;
+ urges developed countries to double their climate adaptation funding by 2025;
+ finally establishes long-awaited rules for a global carbon market under Article 6 of the Paris Agreement, including:
  - the transfer of carbon credits created under the Kyoto Protocol Clean Development Mechanism (though these credits are much maligned as lacking environmental integrity);
  - an agreement to ensure there is no double counting of carbon credits (ie the country selling them cannot also use the credits to offset its own emissions);
  - a minimum 2% cancellation of each credit traded under the new market, to ensure an actual overall reduction in emissions. However, analysts argue that 2% is too inconsequential, and that bilateral emissions reduction agreements will undermine this given they are exempt from this cancellation policy;
  - overall, this mechanism provides flexibility to Australian businesses wishing to offset their emissions, as they gain access to a global carbon credit market for approved projects, allowing the burden of net zero to be more appropriately shared; and
+ commits countries to reduce greenhouse gas emissions by 45% of 2030.

WHERE TO NOW?

Somewhat hearteningly, the latest International Energy Agency assessment found that the pledges and promises at COP26, in addition to other targets made outside the conference, put us on a warming trajectory of 1.8 degrees Celsius. It should be noted that not everyone agrees—UN secretary-general Antonio Guterres being one and Climate Action Tracker considering 1.8 degrees an 'optimistic' scenario. Indeed, this trajectory remains a mere fantasy unless those pledges and promises are actually implemented.

That is the point we are at now: **the 2020s is the decade to deliver**, in which governments, businesses and communities must make good on their net zero targets and strategies. Australia is co-leading the Net Zero Industries Mission, a pledge to reduce

emissions for heavy industries like steel, cement and chemicals, with further information expected to be published in 2022, which will play an important role in figuring out ways to decarbonise emissions intensive sectors. This mission naturally aligns Australia with its key energy and resources industries, which are looking desperately at how to decarbonise operations, as well as keeping in step with the Federal government's reluctance to take a firm stance on coal, preferring to focus on the 'technology' to get to net zero. It remains to be seen whether this will be sufficient.

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