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Going off

Submission on Offshore Clean Energy discussion paper

Australia has huge potential for offshore clean energy. Ensuring the sector is developed in the community interest will require planning and resourcing. Many lessons can be learned from the European experience.

Discussion paper

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Summary

In January 2020 the Federal Department of Industry, Science, Energy and Resources published a Discussion Paper to help develop a policy regime for offshore clean energy in Australia.

The timeline proposed will result in an Offshore Clean Energy Bill being drafted early in 2020 and vote on in the Federal Parliament mid-2020.

Wind is currently the sole commercially viable offshore renewable energy generation technology and it has considerable potential to contribute to the Australian and global energy mix. If the Federal Government draws on lessons learned in Europe's successful offshore wind sector then it can design a good framework for the development of Australia's prodigious ocean energy resources.

This report provides recommendations, based on European experience, for a regulatory framework that would help offshore wind and other renewable energy technologies thrive in Australia:

- Develop a plan for offshore renewables
- Integrate with Energy Security Board and network planning
- Shift offshore renewables to Energy portfolio entirely
- Have strong and simple work health and safety regime
- Consider Offshore Renewable Energy Zones
- Use 40 year commercial licences
- Allow Public ownership
- Build a consistent decommissioning regime
- Allow European-style funding support from the Clean Energy Finance Corporation
- Create European-style offtake agreements

Front page image

TIV Resolution, the world's first self-elevating Turbine Installation Vessel (TIV), built to operate in the North Sea. As shown in the photograph, it can raise itself up to 24 metres above the sea level. Photographed at the Lynn and Inner Dowsing Wind Farm, 16 June 2007 by Ian Simons. Usage: CC BY-SA 2.0

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Introduction

In January 2020 the Federal Department of Industry, Science, Energy and Resources (DISR) published *Offshore clean energy infrastructure regulatory framework: discussion paper*.[1] This proposed a policy and regulatory framework for the development of Australia's offshore renewable energy resources.

Last year the International Energy Agency (IEA) published its first significant commercial market analysis on offshore renewable energy, which was about wind because that is the only commercially-ready ocean energy technology currently.[2] The IEA reported that the generation from offshore wind farms is so constant – thanks to the quality of the resource and the size of the turbines – that it should be thought of as the world's first 'variable baseload' technology.[3]

According to IEA-commissioned research, Australia's theoretical generation potential is over 16,000 TWh per year. For context, in 2018-2019, Australia's national electricity consumption was just 205 TWh.

Internationally, offshore wind power generation is growing rapidly, although from a low base. The International Renewable Energy Agency (IRENA) says offshore wind has 'come of age in the last two-to-three years' and predicts that it will grow roughly tenfold over the 2020s, to 228GW and reach 1000 GW by 2050.[4] In 2018, offshore wind generated 0.3% of global electricity supply and the installed capacity reached 23.1 GW, four-fifths of that in Europe.[5]

The economics of offshore wind is improving and becoming fully competitive, at which point it will grow without subsidies. Whilst it is still more expensive than onshore wind, Lazard's latest annual *Levelized Cost of Energy Analysis* puts the Levelized Cost of Energy (LCOE) of offshore wind in America at US$ 89/MWh (AU$ 134), which is cheaper than gas peakers and nuclear power, about mid-point for coal and higher than combined cycle gas.[6]

[1] DISR (2020), *Offshore clean energy infrastructure regulatory framework: Discussion paper*

[2] International Energy Agency (2019) *Offshore Wind Outlook 2019*

[3] Ibid, p.12

[4] IRENA (2019) *Future of Wind: Deployment, investment, technology, grid integration and socio-economic aspects*, p.42

[5] IEA p.15; REN21 (2019) *Renewables 2019 Global Status Report*, p.123

[6] Lazard (2019) *Levelized Cost of Energy Analysis (LCOE 13.0)*, p.2

Europe is the leading region for offshore wind and prices there are even lower. The UK's latest Contracts for Difference (CfD) tender process saw bids of £45.46/MWh (AU$ 89), a drop of 65% over 4 years.[7]

The first proposal for an offshore wind farm in Australian waters is the Star of the South project, planned for Gippsland, Victoria.[8] This would be the largest wind farm in the world, with a capacity of 2 GW and would cost around $8 billion.

With momentum building behind offshore renewables, it is high time for Australia to get its regulatory settings right to ensure the industry can develop in a way that maximises benefits and minimises costs to local regions and the wider Australian community.

[7] KPMG (2019) *Blown Away: CfD Round 3 delivers record low price for offshore wind*, p.1

[8] (n.d.) *Star of the South*, http://www.staroftheSouth.com.au/

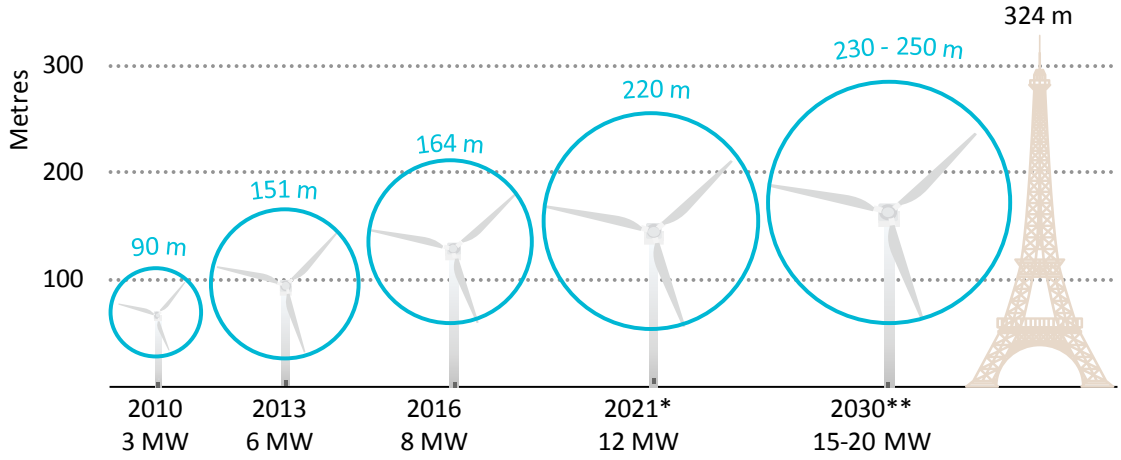
Offshore wind led by Europe

Europe has been the leading region for offshore wind and it offers important lessons about how best to regulate offshore wind and renewables more broadly.

The world's first offshore wind project was the Vindeby Offshore Wind Farm, a demonstration project built off the Danish island of Lolland in 1987.[9] It had a generation capacity of 4.95 MW, provided by 11 x 450 kW turbines. For context, the project proposed for Victoria would be 400 times larger.

European governments have used a combination of policies to support both onshore and offshore wind, leading to improvements in the turbines themselves and in the regulatory regime. These supports have led to wind turbines becoming larger and their cost of generation lower. Figure 1 shows that the capacity of wind turbines has grown 400% since 2010. The largest turbines are now being designed for offshore use and are too large to be used onshore.

Figure 1: Historical and predicted growth in the size of the largest commercially available wind turbines



Source: IEA[10]

According to IEA modelling new offshore wind farms in Europe will have higher 'capacity factors' than gas-fired generators and can match coal.[11] (The capacity factor

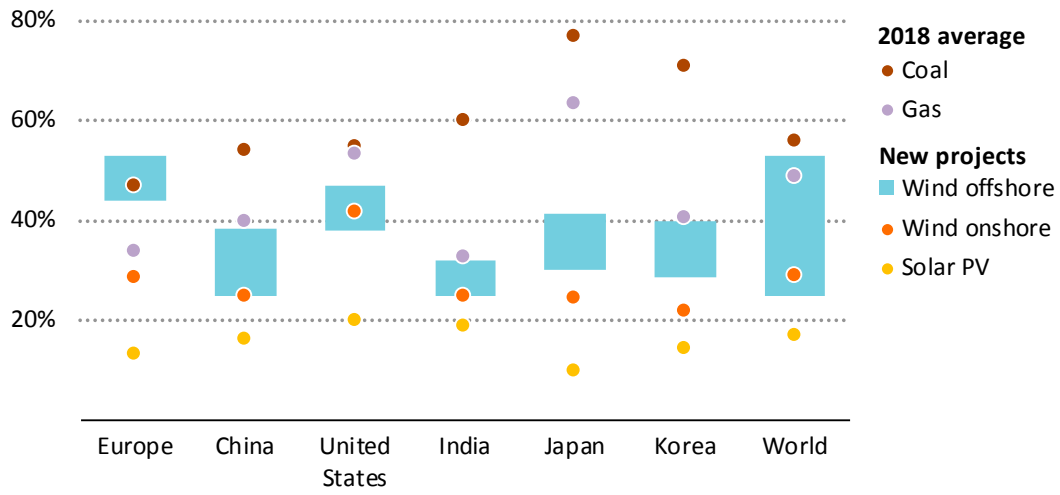
[9] (2019) *Vindeby Offshore Wind Farm*, https://en.wikipedia.org/w/index.php?title=Vindeby_Offshore_Wind_Farm&oldid=929192672

[10] IEA, p.20

[11] Ibid, p.21

of an electricity generation technology is the ratio of actual output versus maximum potential output.) Even these projections may be pessimistic, as GE claims its 12 MW Haliade-X turbine can deliver a capacity factor of 63% at a typical North Sea site.[12]

Figure 2: Offshore wind capacity factor beats gas and competes with coal



Source: IEA[13]

EUROPEAN LESSONS IN OFFSHORE WIND REGULATION

Denmark has a particularly advanced approach to energy policy, which results in long-term planning and certainty for the offshore wind and other sectors. Every 5 years the government and opposition parties renegotiate a rolling political accord called the *Danish Energy Agreement*.[14]

Under the current *Agreement*, which covers the period 2020-2024, Danish political parties have set a long-term goal to develop 10 GW of offshore wind in the North Sea and Baltic Sea.[15] Around 80% of this will be unsubsidised. The strategy is to use coordinated policy to bring down the cost of offshore wind generation proceed. The state conducts resource and strategic planning assessments and designates priority

[12] (n.d.) *World's Most Powerful Offshore Wind Turbine: Haliade-X 12 MW | GE Renewable Energy*, https://www.ge.com/renewableenergy/wind-energy/offshore-wind/haliade-x-offshore-turbine
[13] IEA, p.21
[14] (2018) *Danish Energy Agreement*
[15] Ibid, pp. 3-4

sites for development. Three CfD tenders will be offered, starting site in 2021, with a minimum size of 800 MW per project.

Oscar Fitch-Roy from the University of Exeter has studied the regulation of offshore wind in the five leading European countries: UK, Germany, Denmark, Belgium and the Netherlands.[16] He proposes that there are three threshold regulatory issues for offshore wind farms:[17]

- Granting of licences to develop and operate the wind farm
- Responsibility for transmission connection to the onshore electricity network
- Financial returns to the project

Licences

Denmark has 1.3 GW of offshore wind and is the birthplace of the sector. Offshore wind is regulated by the Danish Energy Agency (DEA).[18] The DEA has much broader remit than any Australian agency and is responsible for national planning and policy in electricity and energy production onshore and offshore, as well as international climate negotiations, national emissions reductions, energy efficiency, emissions trading, technology research, development and demonstration and also water, waste and telecommunications.[19] (Prices in electricity, natural gas and district heating are regulated by the Danish Utility Regulator.[20])

There are two pathways for the granting of operating licences for offshore wind farms in Denmark: the zoned releases and 'open door'.[21] Under the tender process the DEA prospects for the best wind sites and offers them in a reverse CfD auction, similar to the renewable energy tenders used by Australian states and the ACT.[22]

If a developer wishes to build a wind farm in an area that has not been put out to tender, they use the open door pathway. The developer submits an application to the DEA, initially just to undertake exploration studies. This application includes a project proposal for the wind farm including a draft design of the layout of the array, turbine

[16] Fitch-Roy (2016) *An offshore wind union? Diversity and convergence in European offshore wind governance*
[17] Ibid, p.588
[18] Ibid, p.593-594
[19] Danish Energy Agency (2016) *Our Responsibilities*, https://ens.dk/en/our-responsibilities
[20] Danish Utility Regulator (n.d.) *About us*, https://forsyningstilsynet.dk/about-us
[21] Danish Energy Agency (2016) *Procedures and Permits for Offshore Wind Parks*, https://ens.dk/en/our-responsibilities/wind-power/offshore-procedures-permits
[22] Cass (2019) *Class ACT: How the Australian Capital Territory became a global energy leader*, pp.15-16

technology etc. The DEA then coordinates the approval processes across government and if there are no objections then the DEA makes a decision about whether or not to proceed. This stage includes Environmental Impact Assessment (EIA). If approval is granted, the developer can commence detailed site investigations and if those are positive it can proceed to apply for the commercial operating approval.

The UK has 8 GW of offshore wind, which is more than any other country. The UK Crown Estate has title over the sea bed. It has the authority to grant licences for offshore wind farms within UKs Exclusive Economic Zone (EEZ), but the approval process has been largely consolidated through the Department for Business, Energy & Industrial Strategy. Like Denmark, the UK maps offshore energy resources including potential carbon capture and storage (CCS) sites and considers the potential environmental impacts, to determine development zones for technology types, which are declared in the Offshore Energy Strategic Environmental Assessment (OSESA3 is the current version).[23]

The *Planning Act 2008 (UK)* designated offshore wind farms larger than 100 MW as Nationally Significant Infrastructure Projects, which means that all development conditions and licences are 'streamlined into the granting of a single development consent order…issued by the Energy Secretary'.[24] As in Denmark, wind proponents can apply through both types of licence pathway: declared zones and open door.

Germany has the second largest offshore wind fleet (6.4 GW). Like Australia, Germany has a Federal system, with a national government that has jurisdiction over the EEZ and state governments that have jurisdiction in the territorial waters.[25] In 2009 the German Maritime and Hydrographic Agency published a Marine Spatial Plan which declared offshore wind priority zones. As in Denmark and the UK, wind farms can apply for licences in declared zones and also propose to prospect for a specific site elsewhere, through an open door process.

Transmission

In Denmark the state-owned Energinet plans and owns the transmission network onshore and offshore.[26] It is also the electricity system operator for Denmark. In the case of an offshore wind farm licenced through the tender pathway, Energinet builds,

[23] UK Government (n.d.) *Offshore Energy Strategic Environmental Assessment (SEA): An overview of the SEA process*, https://www.gov.uk/guidance/offshore-energy-strategic-environmental-assessment-sea-an-overview-of-the-sea-process

[24] Fitch-Roy, p.591

[25] Ibid, p.592

[26] Danish Energy Agency (2016) *Procedures and Permits for Offshore Wind Parks*

owns and maintains all the offshore transmission equipment. In the case of a project licenced through the open door pathway, the developer pays for the offshore transmission infrastructure.

Until 2009, offshore transmission connections in the UK were built, owned and operated by the wind farm.[27] The new model is that there is a competitive tender process for third-party offshore transmission owner to operate the transmission infrastructure offshore.

The UK Government recognised that in some cases it is materially more efficient for the wind farm developer to build the transmission infrastructure at the same time as the array is constructed. In these cases the transmission assets are then passed off to an operator. In the Australian context, this is likely to be the best option, at least in the early days of the offshore renewables sector, as the long-term owners of the generator are not likely to be a transmission network company which would have an interest in operating such assets offshore.

Since 2006, German transmission networks have been obliged to provide grid connections to offshore wind farms. Until then they were built by developers. To reduce the burden on transmission networks, there is a cap in the obligation of 800 MW per year.[28]

Early financial support

In Denmark there are different prices for wind farms depending on their licence pathway. Projects that win a licence through the reverse auction tender process are paid at the price they offer. Projects that win their licences through the open-door process are paid a supplement of 25 øre/kWh (AU$ 60 / MWh) on top of the wholesale electricity price, up to an all-in cap of 58 øre/kWh (AU$ 130 / MWh). The average wholesale electricity price in Denmark in 2018 was EUR 44.1 / MWh (AU $74 / MWh) in Western Denmark and EUR 46.2 /MWh (AU $ 77 / MWh) in Eastern Denmark.[29]

As noted in the introduction, the UK has a competitive tender process that allocates 15 year contracts to offshore wind projects. In order to accelerate the industry, in 2014 the UK also granted contracts to five projects at prices that were set by the Department at a level that would ensure they went ahead.[30]

[27] Ibid.

[28] Fitch-Roy, p.592

[29] Danish Utility Regulator (2019) *National Report 2019 for Denmark*, p.7

[30] Fitch-Roy, p.592

Germany held its first auction for offshore wind farms in 2017 and two developers won with bids of zero, meaning they get no subsidy and proceed on a 'merchant' basis, taking the wholesale electricity price as their sole source of revenue.[31]

With the right regulatory regime, we could expect that Australia can also see large, subsidy-free offshore wind projects proceeding before too long.

[31] Amelang (2017) *Operators to build offshore wind farms without support payments*, https://www.cleanenergywire.org/news/operators-build-offshore-wind-farms-without-support-payments

Discussion paper

The Federal Government's Discussion Paper on offshore clean energy does not mention the words 'climate' or 'emissions'. These omissions are important, because unlike other offshore industries, the role of renewable energy is not simply to maximise profits for operators. Offshore renewable energy could play a major role in fulfilling international obligations on climate change. Australia is not on track to meet its current 2030 emissions reduction targets of 26-28% on 2005 levels without the legally questionable use of Kyoto credits.[32] Under the Paris Agreement, this level of ambition is to be 'ratcheted' up further. If Australia is to have a hope of meeting our Paris Agreement obligations or 'strategies' then we will at some point have to stop increasing our emissions and start to reduce them.

The Commonwealth will be the lead jurisdiction for the offshore renewables sector, but it will work closely with the State or Territory adjacent to the development. This is consistent with the governance framework for offshore petroleum regulation, which arose from the Offshore Constitutional Settlement with the six States and Northern Territory, which the Commonwealth negotiated in 1980. This settlement agreed to the principle that states and territories would have title and power over Australia's territorial waters out to 3 nautical miles and that the two tiers of government would cooperate.[33]

Offshore renewable energy needs to be integrated into wider policy development around climate change and energy policy. With this in mind, we make the following recommendations.

Develop a plan for offshore renewables

> ***Recommendation – The Federal Government should commission a comprehensive offshore renewable energy resource assessment, including siting and potential resource conflicts, with a focus on wind. It should asses how offshore wind can best make a contribution to supply and reliability of the National Electricity Market and green hydrogen and develop an industry plan.***

[32] Climate Analytics Australia (2019) *Australia's proposed 'Kyoto carryover' - nature, scale, implications, legal issues and environmental integrity of the Paris Agreement*, p.3

[33] Rothwell (1993) 'The High Court and the External Affairs power: a consideration of its outer and inner limits', *Adelaide Law Review*, p.216

The Discussion Paper states that offshore renewable energy has economic benefits, with the 'potential for significant new employment, and billions of dollars of investment, in Australia's coastal economies.'[34] These benefits will not be realised unless there is a clear industry plan.

Three pieces of work are necessary. Firstly, there needs to be a comprehensive resource assessment, to map out the potential of our offshore renewable resources and how they can be developed without causing disruption of other important activities. Geosciences Australia's Australian Energy Resources Assessment had a mere four paragraphs on offshore wind in the 2014 print edition.[35] The current, shorter digital edition has a similar absence of details about offshore wind.[36] As stated earlier, leading European countries have developed detailed assessments and used these as the basis for tendering out the best sites for development. In 2016 the American Government commissioned a significant study of offshore wind potential.[37]

The Discussion Paper proposes that after the Offshore Clean Energy Bill is in operation, the first step in opening up Australia's offshore renewable energy resources to development would be 'for the Minister to consult over an area that may be potentially suitable'.[38] The international best-practice would be to have the consultation about how best to use the resource come after doing an assessment of the nature of the resource.

Again taking a lead from Europe, this process of identifying zones should not preclude developers from using an open door pathway, to propose projects in any area.

Secondly, there needs to be a study into the potential for offshore renewables to contribute to the Australian Energy Market Operator's Integrated System Plan (ISP). The ISP is Australia's national planning process for the development of our transmission system. The reason the ISP is required is that the electricity system is going through a profound transformation, from a reliance on small numbers of large fossil fuel power stations to large numbers of small, variable and mostly renewable, distributed energy resources (DERs), which includes demand side resources such as batteries and demand response.

[34] DISR, p.3

[35] Geoscience Australia (2014) *Australian Energy Resource Assessment*, Australian Government, Dept. of Industry, p.252

[36] Australia (n.d.) *Australian Energy Resources Assessment (AERA)*, https://aera.ga.gov.au/

[37] Musial, Heimiller, Beiter, Scott, & Draxl (2016) *2016 Offshore Wind Energy Resource Assessment for the United States*, http://www.osti.gov/servlets/purl/1324533/

[38] DISR, p.4

The ISP model is to assess the renewable energy resource around Australia and then determine where the best places are for Renewable Energy Zones (REZ), where a large number of solar and wind generators could be built. The process is that the transmission network will be augmented to provide connection to the priority REZs and to deliver other necessary infrastructure such as interstate interconnectors, which will enhance reliability and reduce cost.

The original 2018 ISP raised the offshore wind potential in the Gippsland REZ and noted that the 'offshore wind farms in this area could be optimal'.[39] This is as a result of the strength of the transmission network that links the Latrobe Valley coal generators to Melbourne and the west of Victoria. The Gippsland REZ has 2,000 MW of connection potential and according to AEMO the transmission losses would be unlikely to change significantly in the foreseeable future.

Thirdly, there needs to be an industry plan so that Australian communities get maximum economic benefits from the sector. This should ensure a high level of manufacturing is done in Australia and that other economic benefits are maximised.

An offshore wind industry plan would integrate with existing regional economic planning. In particular, with the first proposed project close to Victoria's Latrobe Valley, consideration should be given as to how this project could contribute to the local economy, which has been affected by electricity privatisation and more recently by the retirement of the Hazelwood Power Station.[40] The Latrobe Valley Authority's *Latrobe Valley New Energy Jobs and Investment Prospectus* says offshore wind could generate employment in the Latrobe Valley in design, construction, component manufacturing and maintenance, if the right planning and incentives are in place.[41]

[39] AEMO (2018) *Integrated System Plan 2018*, Australian Energy Market Operator

[40] State of Victoria (2017) *Landmark Scheme Gives Hazelwood Workers A Fresh Start*, https://www.premier.vic.gov.au/landmark-scheme-gives-hazelwood-workers-a-fresh-start/

[41] Latrobe Valley Authority, Victoria, & Department of Environment (2018) *Latrobe Valley New Energy Jobs and Investment Prospectus*, p.13

Integrate with the Energy Security Board and network planning

Recommendation – The Federal offshore renewable energy regime must be integrated with the Energy Security Board and AEMO's national network planning role through the ISP and state-based network strategies.

The Discussion Paper states that offshore renewables have 'network benefits'. It presents a scheme for the granting of Transmission and Infrastructure Permits.[42] However there is no mention of how offshore renewable energy transmission and the generation it connects to will be integrated into the NEM and AEMO's ISP.

The planning of offshore renewable energy must be integrated with the planning of the NEM and the Wholesale Electricity Market (WEM) for the South West Interconnected System of Western Australia.

The IEA modelling cited above states there is about 100 GW of offshore wind resource at or below around $91 / MWh, including offshore transmission and assuming that there is onshore transmission capacity nearby. However, there is currently no plan to make any onshore transmission capacity available for offshore renewable energy in Australia. AEMO is planning to specifically include offshore wind planning in the ISP for the first time in 2020, within the Gippsland REZ.[43]

Even with a transmission plan for offshore renewables, there may be a need for governments to provide support to connect projects to the grid. According to the IEA, total transmission costs for offshore wind farms, including an onshore substation and cabling of the array, amounts to about 20-30% of total upfront capital costs.[44]

In March 2020 the Victorian Parliament is considering a Government bill that, if passed, would expedite electricity network augmentation in Victoria, which could help the offshore renewables sector. This bill would derogate from the national rules of the NEM, the *National Electricity (Victoria) Law* (NEL) and subsidiary National Electricity Rules (NER).[45] This legislation would allow the Victorian Minister for Energy to make specific changes to the NEL and NER in Victoria that would give the State and AEMO the authority to quickly approve new transmission infrastructure, outside of the usual Australian Energy Regulator process. This also allows the state to offer funding to

[42] DISR, pp.6-7

[43] AEMO Draft 2020 ISP webinar, 11 February 2020

[44] IEA, p.25

[45] *National Electricity (Victoria) Amendment Bill 2020* (National Electricity (Victoria) Amendment Bill 2020)

transmission projects. Victoria's derogations could be used to facilitate transmission planning for offshore renewable energy.

In 2019 NSW published an *Electricity Strategy* that seems to include the same legislated derogations to allow fast-tracked transmission augmentation, however no bill has been tabled yet.[46]

Given these state initiatives, the Commonwealth will have to work closely with states as well as the ESB and AEMO so offshore (and onshore) REZ developments can proceed and coal can retire as rapidly as is possible under current climate and energy policies.

Shift offshore renewables to Energy portfolio entirely

Recommendation – Responsibility for the offshore renewables should sit in the Energy portfolio at Ministerial and agency levels. A separate regulatory function should be created, preferably as a stand-alone agency or a unit within the Clean Energy Regulator. In the interim, it would be best to have an Offshore Renewable Energy Office in the DISR to hold licences and support the Federal Energy Minister as the decision maker and a renewables unit within NOPESMA to manage compliance.

Australia has no offshore electricity generation but we do have a significant offshore petroleum sector. It is therefore understandable that Australian Government's approach is informed by the existing petroleum regime.

The Discussion Paper proposes that offshore renewables would be regulated by the Energy Minister but that the regulatory agency for the sector would be the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), which reports to the Resources Minister.[47]

The electricity sector in Australia requires better planning and coordination, not less. There is a risk that if the offshore renewables sector is left partly in the Resources portfolio, this will further fragment electricity regulation.

Putting offshore renewable energy entirely within the electricity sector better reflects its economic characteristics. Offshore petroleum is a finite resource, whereas as offshore wind and other clean energy is a renewable resource. The potential environmental and health impact of a major explosion, fire and spill from offshore

[46] NSW DPIE (2019) *NSW Electricity Strategy*

[47] NOPSEMA (2019) *Annual Report 2018-2019*, p.3

petroleum is very significant. The fuels for offshore renewable energy are natural and safe: wind, waves and the natural salinity and thermal stratification of ocean water.

The Discussion Paper proposes that the agencies that currently regulate offshore petroleum would play the same role for offshore renewable energy. Offshore petroleum (including gas) and greenhouse gas sequestration are governed by the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*. The Act defines 'offshore' to generally be the area to 'beyond the outer limits of the coastal waters of that State' (i.e. out to 3 nautical miles) and 'within the outer limits of the continental shelf'.[48]

Under the Act, regulated activities within the offshore area are administered by a Joint Authority, which consist of the Commonwealth and relevant State Minister (for Resources).[49] It makes sense that the Federal Minister for a Joint Authority for Commonwealth-State/Territory approvals of offshore renewable energy developments would be the Energy Minister.

The Joint Authority's work in granting petroleum licences and amending their conditions is delivered by the National Offshore Petroleum Titles Administrator (NOPTA). This is a Commonwealth agency paid for by industry fees. The National Offshore Petroleum Safety and Environmental Management Authority (NOPESMA) has responsibility for regulating work health and safety (WHS) and environmental management.

In the previous section we argued how important it is the Commonwealth cooperates with States in particular when developing offshore renewables. This is entirely consistent with the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth), which spells out that:

> …the Commonwealth, the States and the Northern Territory should try to maintain, as far as practicable, common principles, rules and practices in regulating and controlling the exploration for, and exploitation of, offshore petroleum beyond the baseline of Australia's territorial sea.[50]

NOPSEMA has a single portfolio outcome, which is petroleum and greenhouse gas oversight.[51] It seems likely that if the Offshore Clean Energy Bill is to locate offshore renewable energy regulation under NOPSEMA, that would also require amendment of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*.

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[48] *Offshore Petroleum and Greenhouse Gas Storage Act 2006*, Section 8 Items 1-3

[49] Ibid., Section 4

[50] (n.d.) *Memorandum of Understanding - NSW Energy Package*

[51] NOPSEMA, p.15

Have a strong and simple work health and safety regime

Recommendation – In order to avoid duplication of costs, overlapping regulatory regimes and regulatory uncertainty, the workplace health and safety of all work associated with offshore clean energy should be regulated by the Work Health and Safety Act 2011 (Cth) with the Offshore Clean Energy Bill subordinate to the WHS Act for WHS issues.

The Australia Institute shares the concerns raised by the Maritime Union of Australia that vessels and workers may be covered by three different WHS regimes:

- Occupational Health and Safety (Maritime Industry) Act (Cth) (OSH(MI) while in Commonwealth waters with the Australian Maritime Safety Authority (AMSA) as the inspectorate
- State WHS Acts during loading operations and passage through coastal waters
- Offshore Petroleum and Greenhouse Gas Storage Act at offshore renewable energy installations with NOPSEMA as a regulator
- Navigation Act (Cth), with Australian Maritime Safety Agency as the inspectorate

According to the MUA, this could lead to confusion which would expose workers to increased risks and also create unnecessary administrative burdens and costs for projects.

Use 40 year commercial licences

Recommendation – The maximum term for commercial licences for offshore renewable energy should be 40+ years, not the 30 years proposed in the Discussion Paper.

The Discussion Paper proposal is that the commercial licences for offshore renewable energy be for an initial term of no more than 30 years, which may be renewed indefinitely.[52] The construction period for a large offshore wind farm may be several years and the operational lifetime can be 20 years.

Wind farms onshore and offshore can be 'repowered' towards the end of their operational lifetime. Partial repowering involves replacement of the gearbox, rotor or other critical component, to extend the lifetime of the original turbine. Full repowering

[52] DISR, p.5

involves essentially building a new turbine on the existing tower or foundation structures.

IRENA recommends that offshore wind farms should be able to operate for 30-40 years. We suggest it would be best if Australia had 40 year licences as well as the proposed process for reviewing and extending licences, which would be increasingly important as technological advances are made in wind farm repowering.[53]

Allow public ownership

Recommendation – government-owned corporations should be explicitly allowed to hold licences

On-land Australian electricity generation and transmission assets are owned by a variety of government-owned, publicly-listed and private corporations, including co-operatives. It is important that the Offshore Clean Energy Bill does not place any limitations on government-owned corporations from playing an active role in the development of Australia's offshore renewable energy resources.

Government-owned corporations should be allowed to hold all types of licence issued under the Offshore Clean Energy Bill:

- Feasibility Licence
- Non-Commercial Licence
- Commercial Licence
- Transmission and Infrastructure Permit

Build a consistent Decommissioning Regime

Recommendation – the offshore resources decommissioning regime should be consistent for all energy resources and for greenhouse gas storage, with bonds sized to be commensurate with the risks posed by inadequate decommissioning or project failure.

The Discussion Paper proposes that commercial projects should provide a decommissioning bond security as a condition of their licence.[54] This would guarantee

[53] IRENA (2019) *Future of Wind: Deployment, investment, technology, grid integration and socio-economic aspects*, p.29

[54] DISR (2020), p.5

that if the operator of a project fails to decommission it properly at the end of its life then there are funds available for the Commonwealth to use for that purpose.

In general it is right that resources and energy industries should be required to clean up after themselves. However this has not universally been the case in Australia. A study by the Australia Institute in 2017 showed a huge number of abandoned mines in Australia plus up to 972 in 'care and maintenance', often for long periods. Yet only about $8 billion in total environmental bonds are held by governments.[55] Currently, there are no decommissioning bond securities required for offshore petroleum projects, despite pending disasters such as the Northern Endeavor in the Timor Sea.[56]

There should be decommissioning bonds required across all offshore energy and resources projects, commensurate with predicted environmental risks. Petroleum and offshore greenhouse gas sequestration projects pose greater risks to the environment than those presented by offshore renewables. Their bonds should be sized in relation to the potential risks posed by inadequate decommissioning or failure in the case of greenhouse gas projects.

The best practice for all offshore resources industries should be not just to decommission their facilities but implement fuller resource stewardship. The steel, mechanical and other valuable materials should be reused, repurposed or recycled. The UK's offshore renewable energy Decommissioning Guidance specifies that an "ideal" decommissioning program involves 'removing the whole installation to shore, where it can be reused, recycled or incinerated with energy recovery.'[57]

According to DISR there are approximately 136 fixed petroleum facilities offshore that will need to be decommissioned around Australia over the 2020s.[58] The Department is currently conducting a review of offshore petroleum decommissioning. It is welcome serendipity that this petroleum review is taking place at the same time as offshore renewable energy policy development. These two processes should be harmonised so

[55] Campbell & et.al. (2017) *Dark side of the boom: What we do and don't know about mines, closures and rehabilitation*, pp.7, 11, 12

[56] Iggulden (2019) *Taxpayers could face $200m bill if buyer cannot be found for rust-riddled oil platform*, https://www.abc.net.au/news/2019-11-11/offshore-oil-rig-timor-sea-operations-cease-environment-safety/11691040

[57] Hussain (2019) *Offshore wind projects: Assessing the environmental impact*, https://www.whitecase.com/publications/insight/united-kingdom

[58] Department of Industry (2018) *Offshore oil and gas decommissioning framework review*, https://www.industry.gov.au/data-and-publications/offshore-oil-and-gas-decommissioning-framework-review

that a fair and consistent policy is formulated across renewable and non-renewable energy resources in Commonwealth waters.

Allow European-style funding support from Clean Energy Finance Corporation

Recommendation – The Federal Government should update the Investment Mandate for the Clean Energy Finance Corporation to ensure that it has offshore wind within its investment scope.

The Discussion Paper does not discuss how offshore renewable energy projects would earn revenue in electricity markets. Offshore wind in Europe has thrived partly due to state financial support, until the sector becomes fully cost competitive. Support has come from CfD schemes and transmission support discussed earlier in this paper and also through direct investment.

European state-owned investment banks including Britain's Green Bank, Germany's KfW, Denmark's EKF and the European Investment Bank have invested in offshore wind. As the IEA notes, this successfully lowered the cost of capital and made it easier to attract sufficient commercial debt to build projects, helping make Europe the leading region for offshore clean energy.[59]

It is appropriate that at least the first few Australian projects could seek funding from the Clean Energy Finance Corporation (CEFC). The CEFC has played a major role as an investor in onshore wind, with investments across a portfolio of 2 GW of wind up to the end of financial year 2018-2019.[60]

There are two sources of funds potentially available within the CEFC.[61] Firstly there is the Grid Reliability Fund that the Federal Government has requested the CEFC create from its existing funds, which is directed to projects under the Underwriting New Generation Investments (UNGI) or negotiated with states under bilateral agreements. Secondly, there are the general funds of the CEFC.

The CEFC is guided by an Investment Mandate that is negotiated with its portfolio Ministers. There should be an update to the CEFC IM to ensure that offshore wind is fully included in its scope for future investments.

[59] IEA, pp.40-41

[60] CEFC (2019) *Annual Report 2018-19*, p.18

[61] DISR (2019) *Grid Reliability Fund*, https://www.energy.gov.au/government-priorities/energy-programs/grid-reliability-fund

Build European-style offtake agreements

Recommendation – amend the eligibility criteria of the Underwriting New Generation Investments program, so that offshore wind projects are eligible for funding. The federal government could work with states to deliver joint offtakes through UNGI, perhaps facilitated by a Commonwealth-State MOU.

The first offshore wind projects in Australia could benefit from support in the form of government offtake contracts, as in Europe. In 2018 the Federal Government created the Underwriting New Generation Investments (UNGI) program, to support new 'firm' or 'firmed' electricity generation capacity. Offshore wind should be eligible as 'firmed' as its output can be paired with other generation, storage, demand response or financial contracts.[62]

Unfortunately offshore wind may be technically ineligible for UNGI support as a result of the eligibility criterion that projects must 'take place within an interconnected network within Australia'.[63] As stated above, there are no onshore connection points built or planned in Australia, so it is hard to see how UNGI in its current form could support offshore renewables.

The Federal Government could extend UNGI so that it unambiguously includes offshore wind, in which case the criterion should be amended appropriately. It could be reworded to require that there is a plan to build the appropriate transmission connection.

Victoria is likely to be the first State with an offshore wind farm and it could consider offering an offtake agreement to the first one or two offshore developments. It would be logical and in the spirit of the Offshore Constitutional Settlement for the federal government to work with the state of Victoria to formulate joint offtake agreements.

[62] Australian Government (2018) *Underwriting New Generation Investments : Call for Registrations of Interest*, Department of the Environment and Energy, p.1

[63] Ibid, p.7

Conclusion

The Australian Government is planning to legislate a regulatory regime for offshore renewable energy resources in 2020. Given wind is the only commercial offshore renewable technology, this paper has focused recommendations on that sector, which in many cases would apply to other technologies.

Australia's regime should draw on the lessons from Denmark and Europe more widely, which is the world leader in commercial offshore renewable energy, specifically wind. European governments have played a crucial role in planning, simplifying regulation and with funding support, so that offshore wind is becoming competitive, not reliant on subsidies.

With a clear national plan and perhaps some early financial support, Australia should be able to develop a competitive offshore wind sector. This will require a simple and strong work health and safety regime. Offshore renewables should be regulated under the Energy portfolio with dedicated regulators and integrated with national electricity planning.

Commercial licences should be for 40 years, to make efficient use of multi-billion dollar investments. The Federal regime should be ownership-agnostic, to allow for the increasing role of state-owned generators and also for state ownership of transmission assets. If subsidies are required for early projects then European-style CfDs are likely to be the best mechanism and the CEFC mandate may have to be expanded to explicitly allow for it to support offshore wind.

If the Federal Government creates decommissioning bonds for offshore renewable energy projects, this should be applied to all resources and energy projects offshore.