



Research Brief

Offshore Electricity Infrastructure in Australia: Regulatory Reform and Commercial Opportunities



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About Youth for Conservation

Youth for Conservation (Y4C) is a platform for young people who advocate for practical and effective environmental policy. We foster engagement with youth groups and universities with a view to elevate the centre-right youth perspective on sensible climate policy. We do this by hosting webinars with Members of Parliament and industry leaders, making submissions to parliamentary inquiries, and leading our team to events such as the Youth Environment Summit held in conjunction with COP26 in Scotland. We form part of our wider organisation, Coalition for Conservation (C4C), which is a not-for-profit organisation with DGR status.

About Our Authors

Riley Taylor: Y4C Chair

Riley is an Advisor in Government Policy and Regulation for a major media broadcaster, and has experience working for Members of Parliament at State and Commonwealth levels. During his time working in politics, Riley worked particularly in the energy and environmental policy areas and has experience researching energy regulations, particularly those relating to green technologies, and federal environmental legislation. Currently, Riley is completing a degree in law and completing a comparative study of various offshore wind licensing structures with a particular emphasis on the Offshore Electricity Infrastructure Bill.

Tiffany O'Keefe: Y4C Victorian State Manager

Tiffany is a lawyer and presently works as an Associate to International Arbitrator Dr Michael Pryles AO PBM, who specialises in international commercial, construction, and energy disputes between countries and large-scale corporations. Previously, she worked as a Senior Advisor to the Victorian Shadow Attorney-General. She is completing a Master of Laws at the University of Melbourne, specialising in Australian and international energy and resources law. Tiffany holds a Bachelor of Laws (first class honours) wherein she wrote a thesis about international regulation of transboundary gas pipelines under UNCLOS, and holds a Bachelor of International Relations. Tiffany is also a director of Coalition for Conservation.

Isabella Duncan: Y4C Director of Policy

Having recently completed a Bachelor of Law (first class honours) and a Bachelor of Psychology, Isabella is an empowered woman who is passionate about effective policy. Particularly, Isabella is passionate about effective and pragmatic climate change, energy and environment policy. Currently working in the legal field, Isabella has previously worked in Government and psychological services sectors. Isabella is driven to continue the legacy of Y4C by extending its meaningful policy submissions and briefs.

Leané Van Essen: Y4C Director of Publications

Leane works as a Parliamentary and Policy Adviser to a Minister in the New South Wales Government. She has taken an active role in youth movements at an international and domestic level seeking to promote proactive policy reform and advocacy. Leané also has experience working with NGOs, NFPs, and tech start ups. Academically, Leané has graduated with postgraduates from the University of Queensland and Macquarie University, and is currently studying a Juris Doctor at the University of Sydney.

James Ardouin: Y4C New South Wales State Manager

James is a 4th year Bachelor of Arts (Economics) & Bachelor of Advanced Studies (Finance) at the University of Sydney. He was previously employed as a staffer for Jason Falinski MP and now works as an Associate at Advoc8. He is interested in the intersection between renewable energy and the finance sector, particularly developing the international market of carbon abatement instruments. James also has been heavily involved in campus politics including the SRC, NUS, Society for Liberty and is currently serving as Undergraduate Member of the Academic Board.

Angus Lynch: Y4C Research Assistant

Angus is a manager at his local RSL Club and is passionate about issues regarding climate change, the conservation of native flora and fauna, and animal rights. Aside from his work for the Y4C, he is also currently completing an internship in the office of his local federal member, and has a keen interest in national and international politics. He recently finished his university studies leaving with a Bachelor of Arts majoring in International Relations and minoring in Political Economy, predominantly focusing on economic theories from the late 19th to early 20th century, as well as the role of the UN.

Summary

In Australia, as with other countries across the globe, we are facing an urgent need to shift our electricity generation requirements from fossil fuels to renewable energy. Offshore wind and underwater transmission connections will, arguably, be an essential component for emissions reduction and electricity generation for our country.

Last year, the Australian Parliament passed into law the Australian Commonwealth Offshore Electricity Infrastructure Bill 2021, which provides our country's first legislative framework for the

construction, operation, and maintenance of offshore electricity projects.

This research brief explores the offshore electrification prospects for Australia offered by the legislative framework contained within the Offshore Bill. The role of regulatory agencies is considered, as well as the declaratory process and licensing structures. Potential shortfalls of the Offshore Bill are examined, and the abundance of commercial opportunities in this new industry are highlighted. Reference is also made to the success of the United Kingdom's offshore wind industry.

Key Points

1. The proliferation of offshore wind energy will play a major role in decarbonising Australia's electricity generation, it will introduce thousands of new jobs, and provide vast commercial opportunities that will enable Australia to become a major global player in the sector.
2. Through the new Offshore Act, the National Offshore Petroleum Titles Administrator (NOPTA) and the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) will be appointed as registrar and regulator of the offshore electrification framework.
3. The granting of licences must be done in accordance with a licensing scheme, which is absent from the Offshore Bill itself and left to subsequent regulations. That being said, the Offshore Bill sets out criteria for each licence.
4. The decommissioning and financial security provisions introduced by the Offshore Bill present licenholders with important and serious obligations, some of which are subject to civil penalties.
5. The Offshore Bill does not take a proactive approach to environmental protection, beyond the management plan compliance provision, instead focusing on remediating environmental damage once already done. This leaves scope for significant improvements to be made, and can be done through further regulation.
6. Offshore electricity infrastructure projects could present circumstances wherein local communities, and the rights of indigenous people might not be wholly understood or considered under the Offshore Bill. The Australian Government should continue to adapt our laws to ensure certainty for these groups of people by defining key terms and identifying how assessments are made when such rights and interests are infringed upon.
7. The existing WHS legislative framework does not adequately address the risks inherent in activities such as the transportation and construction of massive wind turbine infrastructure in offshore environments, often subject to extreme weather events. There is ample opportunity for the Government to rectify these issues.
8. Australia has the potential to be a leading nation in the offshore energy industry. As the nation with the sixth largest wind resources, wind turbine energy now generates almost 10% of Australia's electricity, approximately 19,525 GWh, or just over a third of all power generated from renewable sources.
9. The UK has the world's largest number of offshore wind installations, nearing approximately 30 per cent. Their regulatory scheme for offshore wind is both pioneering and successful. As such, there are many lessons Australia can take from the UK experience going forward.

An Overview of the Offshore Electricity Infrastructure Bill 2021

Unlike many other countries, Australia did not have any offshore wind farms because regulation had for years prohibited their development despite estimates that the sector could amount to more than 2000 gigawatts, exceeding the country's entire electricity generation.

Fortunately, with the introduction of an offshore regulatory scheme by the Australian Commonwealth Government, Australia is now primed to allow offshore wind projects develop and flourish, enabling Australia to edge closer to its net zero commitment.

On 25 November 2021 the Commonwealth

Parliament passed the Offshore Electricity Infrastructure Bill 2021 (Offshore Bill). This vital piece of legislation will allow Australia to harness its rich wind resources which, at almost 5TW, is the sixth largest in the world.

The offshore wind industry in Australia will create jobs and drive economic growth, particularly if it is utilised for the production of green hydrogen. However, like all pieces of legislation, the Offshore Bill is not perfect. The focus of this brief is to highlight the areas that require parliamentary attention, as well as the potential opportunities offered by the new regulatory framework.

Australia's Offshore Area

The Australian Government manages over 10 million km² of ocean, one of the largest marine jurisdictions in the world. Our maritime areas, per the United Nations Convention on the Law of the Sea (UNCLOS) and federal legislation, include the following areas:

- Coastal waters: a belt of water between the limits of the Australian States and the Northern Territory and a line three nautical miles seaward of the territorial sea baseline. Jurisdiction over the water column and the subjacent seabed is vested in the adjacent State or Territory as if the area formed part of that State or Territory.
- Territorial sea: a belt of water not exceeding 12 nautical miles in width measured from the territorial sea baseline. Australia's sovereignty extends to the territorial sea, its seabed and subsoil, and to the air space above it.
- Contiguous zone: a belt of water contiguous to the territorial sea, the outer limit of which does not exceed 24 nautical miles from the territorial sea baseline. In this zone, Australia may exercise control necessary to prevent and punish infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea.
- Exclusive economic zone (EEZ): an area beyond and adjacent to the territorial sea. The outer limit of the EEZ cannot exceed 200M from the baseline from which the breadth of the territorial sea is measured. In the EEZ, Australia has sovereign rights for, among other things, the purpose of exploring and exploiting, conserving and managing all natural resources of the waters superjacent to the seabed and of the seabed and its subsoil together with other activities such as the production of energy from water, currents and wind.
- Continental shelf: is the area of the seabed and subsoil which extends beyond the territorial sea to a distance of 200 nautical miles from the territorial sea baseline and beyond that distance to the outer edge of the continental margin as defined in Article 76 of UNCLOS. The continental shelf is largely coextensive with the exclusive economic zone within 200M from the territorial sea baselines.

Participants in this sector should also be aware that the Offshore Bill makes reference to external territories within section 5.

Australia's Offshore Area:



Source: <https://www.ga.gov.au/scientific-topics/marine/jurisdiction/maritime-boundary-definitions>

Who is the Regulator?

Through the new Offshore Act, the National Offshore Petroleum Titles Administrator (NOPTA) and the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) will be appointed as registrar and regulator of the offshore electrification framework. As those in the offshore petroleum industry would be aware, these agencies have extensive experience in developing regulatory processes for the offshore environment and the Commonwealth Government has indicated they are best placed to support and regulate the offshore electricity infrastructure sector.

NOPTA's principal responsibility will be to administer the offshore electricity infrastructure licencing scheme, including maintaining a register of licencees and managing the application process. NOPSEMA will then be responsible for regulatory matters relating to infrastructure integrity, environmental management and compliance, and workplace health and safety.

Presently, NOPTA and NOPSEMA are fully cost-recovered via fees and levies imposed on the offshore petroleum industry. Given NOPTA and NOPSEMA's regulatory functions will be expanded under the Offshore Bill, the Offshore Electricity Infrastructure (Regulatory Levies) Bill 2021 was introduced and passed. This will ensure that the Offshore Infrastructure Registrar and the Offshore Infrastructure Regulator, NOPTA and NOPSEMA, are fully cost-recovered to undertake the functions required to facilitate the life cycle of offshore electricity infrastructure projects. Levies collected from regulated entities will be placed in the Offshore Infrastructure Registrar Special Account, as established by the primary Offshore Bill, and will be apportioned between the agencies to recover costs incurred.

Declaratory Process - What you need to know

It is important for key stakeholders and project developers to be aware of the declaratory process that has been introduced by the Offshore Bill.

Prior to obtaining a licence under the Offshore Bill, the Minister must declare an area within the Commonwealth offshore area as suitable for such projects. These declarations can restrict the kinds of licences that may be granted therein. Furthermore, the Minister has discretion to impose conditions on declarations. For example, the Minister may determine that within the declared area that certain offshore infrastructure activities remain prohibited.

Once made, declarations can be varied or revoked. However, licences in force at the time of such decisions in respect of an area that is, or was, the declared area or part of that area are not affected. Despite this, the variation may still have an impact, for example, on holders of feasibility licences who will have to receive commercial licences subject to the variation. Similar to this, pre-existing licences remain in force even if a declaration is revoked, but the end date of that licence may not be extended and no new licences may be granted.

Licensing Structure

The granting of licences must be done in accordance with a licensing scheme, which is absent from the Offshore Bill itself and left to subsequent regulations. That being said, the Offshore Bill sets out criteria for each licence.

Feasibility Licences

These licences entitle licence holders to undertake offshore infrastructure activities for the purposes of assessing the feasibility of a project proposed to be undertaken in the licence area under a subsequent commercial licence. These activities must be undertaken in accordance with a management plan and licence conditions, and any conditions prescribed by the licensing scheme. Feasibility licences are necessary to later apply for a commercial licence to undertake the proposed project itself.

An applicant for such a licence must show they have the capability to carry out the proposed commercial project, and that the proposed project itself is likely to be viable. Furthermore, the applicant must show they are suitable to hold the licence and that they satisfy any criteria set out in the subsequent licensing scheme.

Commercial Licences

Commercial licences allow their holders to carry out projects to exploit renewable energy resources in the licence area. These activities must comply with the approved management plan and any licence conditions. Furthermore, the applicant must provide financial security which will be explored below.

For the licence to be granted, the licence area must be a declared area or part thereof and the grant must be consistent with any conditions of the original declaration. The area must also be continuous and not include any part of any other commercial or feasibility licence areas, and be within the area of the original feasibility licence.

The Offshore Bill also requires that the grant be consistent with any relevant conditions of the original feasibility licence, and that the proposed project be substantially similar to that which was originally assessed or is otherwise appropriate.

Research and Demonstration Licences

This class of licence authorises offshore infrastructure activities for research or demonstration purposes. For example, the licence would allow such activities for the purposes of researching the exploitation of potential wind resources in a specific declared area. The aforementioned management plan requirement must be satisfied, and financial security must be provided.

The projects permitted under these licences are not limited to energy infrastructure itself, and allows the licence holder to conduct activities relating to offshore electricity transmission infrastructure. This is not limited to renewable energy transmission.

For such a licence to be granted, the same considerations apply as do under commercial licences. An important exception being that research and demonstration licence areas can be within another commercial or feasibility licence area.

Transmission and Infrastructure Licences

Transmission and infrastructure licences authorise assessing the feasibility transmission projects, as well as the actual projects themselves. Like the aforementioned licences, there must be a management plan and financial security provided. Prospective licence holders should also be aware that the electricity stored, transmitted or conveyed under these licences need not be a renewable energy product.

Transmission and infrastructure licences may be granted for non-continuous areas provided they are still entirely within the Commonwealth offshore area, unlike the prior licence types which must be continuous.

Variation of Licences

Once granted, licences may be varied to impose conditions or reduce the licence area itself. This variation process is application driven, and depends largely on what is prescribed by the licensing scheme. However, the Minister is empowered to make such variations absent an application in specific circumstances (e.g. where there has been a change in control of the licence holder).

Where a variation reduces a licence area, it must be shown that the licence holder has not carried out any offshore infrastructure activities in the relevant area. Furthermore, the Minister must be satisfied that the licence holder has no intention to carry out these activities. This latter criterion is distinguished in feasibility licences, where the requisite satisfaction can relate to a lack of intention under the feasibility licence or the subsequent commercial licence. Finally, the removal must not result in the remaining licence area being non-continuous. This final condition does not apply in relation to transmission and infrastructure licences, as the areas relevant to this licence need not be continuous.

Decommissioning and Financial Security

The decommissioning and financial security provisions introduced by the Offshore Bill present licenholders with important and serious obligations.

A licence holder under the Offshore Bill must provide financial security to cover decommissioning and other costs. These obligations appear in two key areas: submission of a management plan for a licence, and transfer of a licence.

Prospective licence holders are required to provide plans for the offshore infrastructure activities that are to be carried out under the licence(s) to the Regulator. Once this has been approved, it becomes a management plan for the licence.

For a management plan, the licence holder must at all times while the licence is in force, provide the Commonwealth Government with financial security sufficient to pay any costs, expenses or liabilities associated with the decommissioning of licence infrastructure, removal of property and equipment, and remediation of the licence area. If this is not provided, the Regulator may refuse to approve the management plan, or any revised version thereof. The precise form in which financial security may be provided is not yet clear - and may be dealt with in future regulations - however, the Offshore Bill is clear that it must be in a form that is acceptable to the Regulator.

It is also noted that when a licence holder transfers its licence to another entity, that entity will have to comply with the financial security scheme under the Offshore Bill.

Prospective licence holders ought to be aware that civil penalties may apply if there is a failure to provide financial security.

Learning from the Northern Endeavour experience

One of the key reasons the new Offshore Bill has financial security provisions relating to decommissioning is because of the lessons the Commonwealth Government has learned following the Northern Endeavour debacle in the Timor Sea.

In February 2020, the Northern Oil & Gas Australia (NOGA) group of companies that owned and operated the Northern Endeavour offshore petroleum site went into liquidation.

The Government had to step in and foot the decommissioning bill, as this was deemed the most effective way to remove future potential risk and protect the environment. Northern Endeavour's decommissioning and cleaning will take several years. It will include dismantling the facility and disconnecting it from the undersea infrastructure. Wells will be capped entirely and abandoned, subsea infrastructure will be removed, and restoration work will be completed. Unfortunately however, it is expected that the decommissioning activity could cost Australian taxpayers upward of 1 billion AUD.

The Independent Walker Review was launched, as this was an unprecedented event in Australia's offshore oil and gas industry. The Government sought to understand how and why it arose to consider how best to minimise risks of a similar event occurring again. One of the key recommendations arising from the Review was for the Government to implement legislative changes to enable the regulator, NOPTA, to require financial security from titleholders, to protect Australian taxpayers from major financial liabilities.

This experience, as has been noted in several of the parliamentary contributions for the Offshore Bill, influenced the inclusion of financial security provisions and is a welcomed measure.

Environmental Protections - Gaps in the Framework

Currently, the Offshore Bill leaves uncertain mechanisms through which the environment can be safeguarded.

The primary mechanism through which marine ecosystems are conserved under the Offshore Bill is by mandating that projects register a management plan which complies with federal environment law. In practical terms, this means compliance with the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

The EPBC Act was subjected to a comprehensive analysis by Professor Graeme Samuel AC in 2019. The Samuels Review concluded that federal environment law, in its current form, is inadequate in its conservation aims. This is exacerbated due to the unique environmental challenges created by offshore wind projects which would not be adequately addressed by the EPBC Act. For example, the federal environment law does not provide a sufficient framework to counter marine noise pollution, potential reef damage, or fish spawning patterns and behaviours.

Furthermore, there are structural issues present in the Offshore Bill's drafting which impact even the effectiveness of the federal environmental protections. Currently, the Offshore Bill mandates a management plan which complies both the EPBC Act and any regulations made thereunder. It can be presumed that these regulations are yet to be drafted, likely contained in a departmental or regulatory guidance note. In this form, they have no clear legal enforcement. Additionally, the drafting is primarily in reactive language. Therefore the Offshore Bill does not take a proactive approach to environmental protection, beyond the management plan compliance provision, instead focusing on remediating environmental damage once already done.

There is also scope to improve the environmental protections offered under the Offshore Bill in the initial declaratory process itself. Under the current framework, the Minister administering the Offshore Bill is obliged to consult with the Defence Minister and the Minister administering section 1 of the Navigation Act 2012 prior to declaring an area as suitable or varying it. To ensure federal environmental oversight, it is essential that consultation also be required with the Minister administering the EPBC Act.

Finally, whilst it is beyond the scope of this brief, the Offshore Bill would benefit from incorporating principles of marine spatial planning. This could be implemented through strategic assessments which take into account existing marine users such as fisheries and conservation areas. Such a process could be triggered by the consultation with the Minister administering the EPBC Act. However, to adequately implement a marine spatial planning process, the Commonwealth Government should use industry experience and existing records to actively compile (and expand) environmental and social baseline data to appropriately augment the declaratory process.

Native Title - Ramifications for First Nations Sovereignty

Native title is an important element of Australian law which recognises that some Aboriginal and Torres Strait Islander people hold rights and interests in land and water. Aboriginal people have lived in Australia for more than 40,000 years and have a strong connection to our country.

The source of native title lies in the laws and customs observed by Aboriginal and Torres Strait Islander people. For native title to be recognised, those laws and customs must have been acknowledged and observed in a 'substantially uninterrupted' way from the time of settlement until now.

The Commonwealth Native Title Act 1993 provides a process through which Indigenous Australians can lodge an application to seek a determination of native title. It also provides for Indigenous Land Use Agreements, which are important in the context of energy project development, as they set terms for the use of land and water subject to native title.

Given the connection between Aboriginal and Torres Strait Islander people to parts of Australia's surrounding ocean space, it is important to ensure that the rights and interests of these groups are recognised during the process of offshore wind development.

The Offshore Bill allows for interference with native title rights and interests if "necessary" and where there is "reasonable exercise" of a project. This raises the critical question, as has been identified by experts such as Dr Madeline Taylor - what is considered "necessary" and "reasonable"?

Offshore electricity infrastructure projects could present circumstances wherein local communities, and the rights of indigenous people might not be wholly understood or considered due to the uncertainty of what constitutes "interference". It is not clear how interference will be assessed by government bodies and external stakeholders.

Current provisions do take steps to ensure Aboriginal and Torres Strait Island peoples' rights are protected. However, the Australian Government ought to continue to adapt our laws to ensure certainty for these groups by defining key terms and identifying how assessments are made when such rights and interests are infringed upon.

Nevertheless, we acknowledge that the Offshore Bill does present an opportunity for Aboriginal and Torres Strait Island people to be involved in the development of offshore wind sites, and it is important that we balance the needs of Australian energy security with the rights of our traditional owners.

Work, Health and Safety - Inherent Risks and a Bespoke Framework

When discussing energy policy, particularly the development of a domestic offshore wind industry, the safety of those working within the sector is often overlooked. By not acknowledging the risks associated with this unique industry, the health and safety of Australian workers is placed in jeopardy. The existing WHS legislative framework is not fit for purpose, and cannot properly address the risks inherent in activities such as the transportation and construction of massive wind turbine infrastructure in offshore environments, often subject to extreme weather events.

The Offshore Bill stipulates that NOPSEMA will oversee the health and safety of workers within the industry using the framework offered by the Work Health and Safety Act 2011. However, the Offshore Bill notes that certain provisions must be amended to ensure that it adequately addresses the challenges to safety created by the offshore wind industry. This places workers in the initial development phase in a precarious position.

Whilst comparison with the broader offshore petroleum framework is dealt with in the previous section, it is useful to note that the petroleum laws offer a specifically tailored health and safety framework. This is a framework that NOPSEMA has ample experience in applying. There is no reason why a similar bespoke health and safety framework should not be implemented for the offshore wind industry, and this Offshore Bill provides the opportunity to do so.

Commercial Opportunities

The introduction of offshore energy infrastructure projects have the potential to provide numerous commercial prospects through large scale investment and the creation of thousands of full-time employment opportunities.

In Gippsland alone, modelling suggests that an estimated 3,000 direct jobs would be created as result of the creation of an offshore wind project, primarily throughout regional Australia. Furthermore, the project would generate more than \$10 billion AUD of wider economic benefits, highlighting the commercial and economic benefits that stem from offshore infrastructure.

The three proposals of Marinus Link, Star of the South and Sun Cable would see the creation of over 10,000 direct and indirect jobs, leading to increased economic activity in the region and regional Australia, and attract large-scale investment opportunities, with Star of the South creating 5,600 jobs alone.

Star of the South would see an approximate investment of \$8.7 billion into Victoria, of which includes a \$6.4 billion AUD boost to the economy of the Gippsland region, an area which has already suffered with the closure of Yallourn power station. The economic benefits of renewable energy sources are on full display in Norway, where the nation generated \$USD4.89 billion in 2019, a 30% increase from 2018.

Australia's proposed offshore wind projects

SOURCE: FINANCIAL REVIEW

Project name/location	Owner	Start	Size MW
Star of the South, Woodside Beach, Vic	Copenhagen Infra Ptnrs	2030	2200
Bunbury Offshore Wind Farm, WA	OceanEx Energy	TBA	2000
Eden Floating Wind Farm, NSW	OceanEx Energy	TBA	2000
Illawarra Floating Wind Farm, NSW	OceanEx Energy	TBA	2000
Novocastrian Floating Wind Farm, NSW	OceanEx Energy	TBA	2000
Ulladulla Floating Wind Farm, NSW	OceanEx Energy	TBA	1800
Wollongong Offshore Wind Project, NSW	BlueFloat/Energy Estate	2030	1600
Greater Gippsland Offshore Wind Project	Flotation Energy	n/a	1500
Greater Gippsland Windfarm, Vic	BlueFloat/Energy Estate	2030	1400
Hunter Coast Offshore Wind Project, NSW	BlueFloat/Energy Estate	n/a	1400
Cliff Head wind farm, WA	Pilot Energy/Triangle	n/a	1100
Great Southern Offshore Wind Farm, Vic	Green Investment Grp	2030	1000
Spinifex Offshore Wind Farm, Vic	Alinta	2030	1000
SA Offshore Windfarm, SA	Australis Energy	n/a	600
Victoria Offshore Windfarm, Vic	Australis Energy	n/a	495
Bass Offshore Wind Energy Project, Tas	Nexsphere	2026	360
WA Offshore Windfarm, Binningup, WA	Australis Energy	2026	300

The Australian Financial Review has put together the following list prospective projects:

The jobs created cover a variety of specialisations, from trade-specific jobs such as welding and fitting to steel production and fabrication, as well as logistical operations and engineering, allowing for individuals to gain employment without requiring a training course on wind turbine production methods. OceaneEx is predicting the creation of a minimum of 3,000 jobs over a four-year construction term, followed by 300 long-term local jobs.

Furthermore, as seen in nations where sea-based wind farms are already prevalent such as Germany, coastal facilities also see commercial benefits from the creation of offshore energy infrastructure projects, particularly through upgrading their capacities to host turbine components.

In 2019, Germany employed 25,000 in the offshore wind turbine industry, generating an annual turnover of nine billion Euros, highlighting the astounding commercial opportunities that offshore energy infrastructure can produce.

In summary, Australia has the potential to be a leading nation in the offshore energy industry. As the nation with the sixth largest wind resources, wind turbine energy now generates almost 10% of Australia's electricity, approximately 19,525 GWh, or just over a third of all power generated from renewable sources.

The UK Experience

The United Kingdom's (UK) offshore wind framework is both pioneering and successful. The UK has the world's largest number of offshore wind installations, nearing approximately 30 per cent. In 2021, wind energy accounted for over 21 per cent of the UK's electricity according to the National Grid, which is a remarkable feat.

The UK has eight offshore wind clusters, and each one is a collaboration between developers and regional supply chain partners, public sector bodies, and education providers. The clusters are as follows:

- Deep Wind (North Scotland)
- Forth and Tay Offshore
- North-east England
- Humber
- East Anglia
- Solent
- Celtic Sea Cluster
- North-West and North Wales

With more electricity generated by offshore wind than anywhere else in the world, the UK is at the forefront of the fastest-growing energy source, and there are lessons Australia can take from the UK's experience in its path toward net zero.

Regulation

There are numerous pieces of legislation applicable to UK offshore wind farm developments and offshore oil and gas activities. Under the Crown Estate Act 1961 (UK), the Crown Estate is the landowner of the UK seabed and areas of foreshore. Following compliance with application and consent requirements, the Crown Estate may grant a site lease for an offshore development, enabling developers to construct offshore wind infrastructure.

The Department for Business, Energy & Industrial Strategy (BEIS) as well as the Office of Gas and Electricity Markets (Ofgem) have the overall responsibility for offshore energy projects in the UK.

Offshore renewable energy projects beyond the UK's territorial waters are regulated by the Energy Act 2004 (UK). A Renewable Energy Zone (REZ) is established by the Act, allowing the Crown Estate to award licences for wind farm sites for any area within the REZ, much the same as it leases sites within territorial waters.

Three rounds of full term leases have been offered by the Crown Estate. Round 1 full term leases consisted of 22 years, plus 1 year for removal and decommissioning. Round 2 projects were the largest, consisting of full term leases of 50 years, including decommissioning. The Crown Estate has proposed that exclusive zones will be determined for development. It is expected that the Crown Estate will co-invest in up to 50% of all Round 3 full term leases.

Environmental Protections

UK regulations (particularly Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2000; Harbour Works (Environmental Impact Assessment) Regulations 1999) require environmental impact assessments to be conducted by developers of offshore wind farms.

The assessment requires consideration of both the positive and negative environmental impacts that may result from an offshore wind farm development. This includes impacts from the development stage through to decommissioning.

Importantly, offshore wind projects are prohibited from deliberately disturbing wild animals of a European Protected Species, especially during breeding, rearing, migration and hibernation periods.

Conversely, as previously mentioned, Australia's Offshore Bill does not take a proactive approach to environmental protection beyond the management plan compliance provision, and instead focuses on remediating environmental damage once already done. It is therefore recommended that the Australian Government look to the benefits of the UK model and adapt our legislative framework to ensure better environmental protection, including the protection of ecosystems.

Work, Health and Safety

Work, health and safety (WH&S) factors associated with offshore wind in the UK are regulated by the Health and Safety Executives of Great Britain, Maritime and Coastguard Agency and Marine Scotland. It is common practice for all stages from the design, through to the integrity of the support structure to require third-party certification. This ensures the independent review of offshore wind developments and compliance with the UK's WH&S standards.

The UK's WH&S legislation aims to ensure safe working conditions for individuals working in the offshore wind industry. In particular, the UK has gone to significant lengths to ensure specific regulatory expectations for emergency response in the event of an offshore-wind related emergency. This is because of the unique nature of offshore wind developments. Whilst it is acknowledged that there is limited literature associated with the risks of offshore wind developments, specific risks such as vibration, transportation of wind turbines, electromagnetic fields, shadow flicker and biological hazards are commonly associated with offshore wind developments. As such, the UK's WH&S regulations require that specific attention is paid to these risks and robust safety measures are put into place.

By comparison, Australia's offshore wind WH&S measures must not be generalised to encompass general and cross-industry WH&S measures. Instead, it is advised that the Australian Government considers the UK's specific approach, so that regulatory standards are tailored to the unique safety challenges associated with the offshore wind industry.

Decommissioning

The Energy Act 2004 provides the decommissioning scheme for offshore wind in the UK. Decommissioning activities must comply with the Act, and developers/owners are responsible for ensuring they verify their decommissioning programs against any other relevant legislation.

Key aspects of the decommissioning scheme include:

- The developer/owner is required to prepare a draft decommissioning programme, including proposed financial security provisions.
- Where a developer/owner fails to submit a decommissioning programme within the required timescale or does not follow the approved financial security programme or fails to decommission, the Secretary of State has powers to take remedial action and (where relevant) recover any expenditure incurred.
- Failure to follow the requirements of an approved decommissioning programme could lead to the developer/owner incurring a criminal offence.

Australia's decommissioning scheme appears to have followed the UK model, and given the successful decommissioning of the North tower of Blyth Offshore Wind Farm, it inspires hope that Australia's framework will be fit-for-purpose.

Appeal to Donors

Y4C, which is a subgroup of C4C, is composed of ambitious young people who are keen to help pave the way for market based emissions reduction in Australia. Part of this involves setting up events, meeting with Members of Parliament, and producing research briefs like this one!

If you would like to help support Y4C's work, you can make a tax deductible donation through our website here: <https://www.coalitionforconservation.com.au/donation>

