



Australian Government

Department of Industry,  
Science and Resources

# Roadmap to establish an Australian decommissioning industry

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Issues paper

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# Introduction

As Australia's offshore oil and gas industry matures, and as Australia moves to reduce its emissions and its reliance on fossil fuels, decommissioning will be an increasingly important component of the offshore industry. The cost of decommissioning activity to industry in the decades ahead is estimated at A\$60 billion<sup>1</sup>.

The Australian Government is developing a roadmap to establish an Australian offshore decommissioning industry. The roadmap will set out a pathway for governments, industry, the local workforce and the community to build capability in the decommissioning of offshore oil and gas infrastructure in Australia. The roadmap will identify opportunities to recycle and repurpose dismantled offshore infrastructure and set out a longer-term pathway to support the decommissioning of offshore renewable energy infrastructure. The roadmap will identify opportunities to ensure that offshore decommissioning activity in Australia occurs in a way that is safe, cost-effective and environmentally sound. The focus of the roadmap is on offshore decommissioning in Commonwealth waters, as well as planning for when that infrastructure is brought onshore for further processing and recycling.

To support the development of the roadmap, the government is seeking feedback from anyone with an interest or expertise in the development of an Australian offshore decommissioning industry. We are accepting responses to this issues paper from 13 September to 20 October 2023.

In addition to this public consultation, we are conducting targeted consultations with industry, unions, state and territory governments, First Nations representatives, local communities and others, including through roundtables and one-on-one meetings.

If you would like to participate in targeted stakeholder consultation, please let us know by emailing [decomroadmap@industry.gov.au](mailto:decomroadmap@industry.gov.au). Your response will help inform the development of the roadmap, which will be finalised in 2024.

This issues paper aims to elicit wide-ranging views on the opportunities and challenges associated with establishing an offshore decommissioning industry in Australia. This issues paper is focused around six themes, each underpinned by a series of targeted questions. **You do not need to answer all questions to submit a response.** Please submit your feedback on our [consultation hub](#).

## Theme one: An opportunity for Australia

An Australian offshore decommissioning industry can be part of our economic transformation as we move to net zero by 2050. It can support new ongoing jobs for our skilled offshore workforce, new opportunities in many regional areas and attract new investment for Australian businesses.

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<sup>1</sup> APPEA, [Australia Oil and Gas Industry Outlook Report](#) [PDF 1.5 MB], accessed on 22 August 2023

## Theme two: Cooperating to create a sustainable decommissioning industry

Decommissioning offshore oil and gas infrastructure will have advantages for adjacent and complementary industries, such as the offshore renewables industry. Decommissioning offshore infrastructure may also face competition from other industries in attracting investment and talent. The roadmap will consider how Australia can generate cooperation between industry, the workforce and governments to remove impediments to the development of an offshore decommissioning industry.

## Theme three: A secure, growing and diverse future workforce pathway

Offshore decommissioning presents opportunities for the Australian workforce. The roadmap will consider how the existing offshore resources workforce, as well as workers in related industries, can benefit from an Australian offshore decommissioning industry. The roadmap will examine how new workers can be attracted and retained by the industry and access the necessary training. The roadmap will examine how to entrench world-class safety outcomes for a future offshore decommissioning workforce. It will also support action to enable workforce participation for women, First Nations peoples and other groups who are historically underrepresented in the offshore oil and gas industry.

## Theme four: Business opportunities and partnerships for First Nations people

The roadmap will consider how an offshore decommissioning industry can provide real opportunities for First Nations businesses and communities across the decommissioning value chain.

## Theme five: The circular economy and managing waste

A decommissioning industry can be an exemplar of the circular economy. The roadmap will consider how to maximise reuse and onshore recycling opportunities while safely handling waste streams and minimising emissions.

## Theme six: Regulatory frameworks

The roadmap will reflect the international, national, state, territory and local regulatory landscape. It will consider our existing regulatory settings to ensure they are fit-for-purpose and strike the right balance. The roadmap will also consider international regulatory best-practice for offshore decommissioning.

# What is decommissioning?

Decommissioning is the timely, safe, and environmentally responsible removal of, or otherwise satisfactory dealing with, offshore infrastructure that was previously used to support oil and gas operations. Decommissioning is a normal and inevitable stage of any offshore oil and gas project. Under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGs Act) – the primary regulatory regime that applies to Commonwealth waters for offshore petroleum production – oil and gas producers hold a title in offshore areas (titleholders). The OPGGS Act makes clear that titleholders are responsible for the full costs and safe removal of all offshore oil and gas infrastructure. Titleholders must comply with a stringent environmental and safety approval process for their decommissioning activities, including thorough consultation with impacted communities.

Decommissioning activities cannot commence without titleholders securing a series of environmental approvals through the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). Once decommissioned material from offshore is brought onshore or into coastal waters, the responsibility for most regulation lies with the states and territories.

In practice, there are a number of separate activities that must be undertaken to decommission ageing offshore energy infrastructure, including:

- oil and gas wells need to be securely plugged and hundreds of kilometres of pipelines and flow lines may need to be pulled up and removed from the sea floor
- steel structures with large production decks embedded in the sea floor are dismantled and floating oil and gas producing facilities and their anchors will all need to be removed
- these materials need to be transported to ports and dismantling yards, with steel, plastics and other materials recycled, and waste materials sorted, treated and disposed of safely.

Decommissioning is capital intensive and needs detailed planning and execution that includes a range of specialist (and often very large) offshore vessels and rigs. All this activity requires a highly skilled and experienced workforce, the right vessels available at the right time and a culture of safety and environmental stewardship throughout the industry.

## Box one: The scale of the challenge

The Centre of Decommissioning Australia (CODA) estimates that around 5.7 million tonnes of decommissioning material needs to be removed from offshore oil and gas facilities and projects (based on a full removal of all material case) – the equivalent of 110 Sydney Harbour Bridges.

- Around 89 per cent of material is offshore Western Australia with around nine per cent offshore Victoria.
- Around 60 per cent of this material is steel, with most of this able to be recycled.
- A further 25 per cent is concrete, as part of offshore structures or pipeline coating.
- Around 67 per cent of the material is related to pipelines (trunklines and infield). Removal of this material depends on the requirements of the regulator<sup>2</sup>.

<sup>2</sup> CODA, [Global Review of Decommissioning Planning and Execution](#) [PDF 1.2 MB], accessed 12 September 2023

Over the next 30 years, most current offshore oil and gas projects will move into their decommissioning phase, with some occurring in the next decade. The majority of oil and gas projects are situated offshore Victoria and offshore Western Australia. The first tranche of decommissioning will be largely located in offshore Victoria in the Gippsland Basin, with 10 structures expected to be decommissioned and removed by the end of the 2020s.

# Theme one: An opportunity for Australia

Australia's oil and gas industry is maturing. Some limited offshore decommissioning work has taken place over the past two decades; however, the volume of anticipated decommissioning activity is set to increase dramatically in future years. Australia has an array of firms that can, or already do, offer decommissioning services. This creates significant opportunities for Australia to grow its offshore decommissioning services industry to meet future demand and ensure that as much of the anticipated \$60 billion in future expenditure supports Australian businesses and Australian jobs. A well-functioning industry will help to ensure that opportunities to capture economic opportunities are not lost. Competition with offshore construction for scarce labour and skilled resources, port access, and for very large and specialised offshore vessels could result in cost increases and delays for both offshore decommissioning and for offshore wind generation construction.

## Part of the net zero transformation

A growing and sustainable decommissioning industry along with the growth of offshore wind generation will ensure the workers, industries and communities that have provided much of Australia's energy requirement over the past 60 years can also have a role in the opportunities presented by Australia's net zero transformation.

## These jobs can be in regional Australia

The Australian Government has a strong focus on developing our regional economies and supporting our regional communities. Based on the location of existing decommissioning service providers, and the location of existing offshore oil and gas facilities, many of the onshore jobs created by an Australian offshore decommissioning industry are likely to be in the regions. Countries with more advanced decommissioning markets have often chosen to co-locate decommissioning services in regional areas to create economies of scale. This also provides opportunities for workers in regional areas to continue to live and work in their home area.

The Australian Government has a range of programs that can support a decommissioning industry. The Local Jobs Program is in 51 regions across Australia and is overseen by local Employment Facilitators. It brings together expertise, resources and access to funding at the local level to focus on reskilling, upskilling and employment pathways for people in each region. This includes areas that are currently experiencing or are about to experience challenges and opportunities associated with the transition to a net zero economy.

To support new entrants to the decommissioning industry, employer liaison officers assist large employers and priority industries in designing and implementing effective workforce solutions, using available employment and training programs, services and market supports.

The Transition Support Network (TSN) is an on-the-ground support network providing support to affected workers when companies restructure or close. The TSN provides information and coordinates the local response to large closures or redundancies to support affected workers and regions. The TSN works with employment liaison officers to assist workers to transition into new opportunities where applicable.



## Box 2: Distribution of Australia's decommissioning liabilities

Australia's offshore oil and gas industry is centred on four main geographic areas:

- Offshore Victoria, including the Gippsland Basin offshore eastern Victoria and the Otway and Bass Basins offshore western Victoria. This area remains a supplier of domestic gas for the east coast gas market and was an important oil production centre.
- Offshore Western Australia, centred on the Carnarvon Basin between Onslow in the south and Karratha in the north. This area hosts LNG export facilities, supplies domestic gas to Western Australia and has also been an important oil production centre.
- Offshore northwest Western Australia. This area hosts gas supplies and significant condensate production.
- Offshore Northern Territory, which hosts a smaller number of oil and gas projects.

## Questions

1. How can Australia best capture value from the decommissioning of offshore oil and gas infrastructure?
2. What parts of a decommissioning industry already exist in Australia?
  - a) Are there capabilities in Australia that could be deployed for decommissioning?
  - b) Do these existing capabilities have sufficient scale to support offshore decommissioning activities?
3. What parts of the decommissioning value chain could be developed in Australia?
  - a) What parts of the value chain are most challenging to conduct in Australia?
4. What key gaps or missing capabilities are there in Australia for decommissioning support services or maritime capabilities, such as, for example, offshore vessels and ports access?
  - a) How could these gaps be addressed?
  - b) How can industry help to address these gaps and maximise Australian industry participation?
  - c) How can governments (federal, state, territory and local) help to address these gaps and maximise Australian industry participation?
5. Under current arrangements, how is the industry planning to access the necessary infrastructure and expertise for decommissioning?

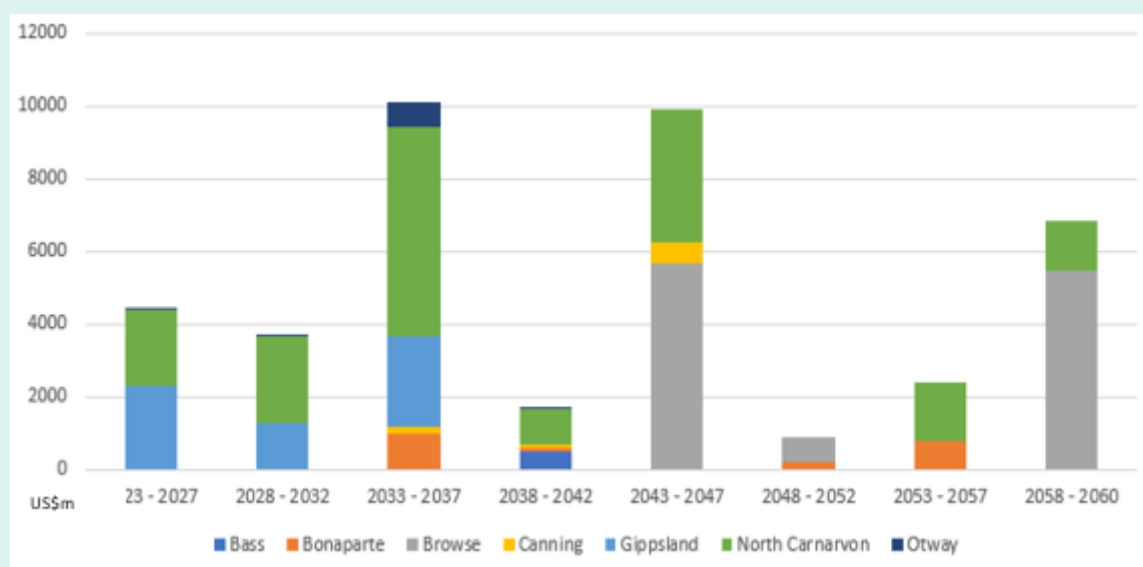
## Theme two: Cooperating to create a sustainable decommissioning industry

The pipeline of projects to be decommissioned over the coming 30 to 40 years has peaks and troughs. This profile of activity means that cooperation and scheduling between industries with similar skills profiles and industrial capability requirements will be required to manage competing pressures on infrastructure, investment and the workforce.

Well-planned cooperation and coordination between industries can help to create economies of scale, reduce competition for resources, create investment certainty, and ensure that all industries who share the marine environment are sustainable over the long term.

### Box 3: Peaks and troughs of anticipated decommissioning projects

The graph below shows the potential decommissioning pipeline in Australia from 2023 to 2060. The offshore Gippsland and North Carnarvon Basins will have decommissioning cost of around \$8 billion to 2032. There are two main peaks of decommissioning after 2032 – from 2033 to 2037 (worth \$10 billion) and from 2043 to 2047 (also around \$10 billion)<sup>3</sup>.



Industries that are complementary to the offshore oil and gas decommissioning industry include the existing oil and gas production industry and the offshore renewable energy industry, including offshore wind. While not perfectly alike, these industries may require access to the same infrastructure, require the same services, and employ the same workers to support construction, operation, and decommissioning activity.

The complementary nature of these industries is both a challenge and an opportunity. On one hand, consistent demand for services and labour from multiple industries creates scale that can support

<sup>3</sup> Wood Mackenzie, [decommissioning forecasts](#), data accessed 8 August 2023

competition, underpin investment certainty, and ensure long-term job stability for Australia's offshore and onshore decommissioning workforce. On the other, competition for the same infrastructure, workforce and capital can constrain industry development. There is already evidence from industry that excessive demand for vessels and crew are creating challenges for Australia's existing oil and gas operators in planning and executing decommissioning.

The Department of Climate Change, Energy, the Environment and Water and the Department of Industry, Science and Resources will work together to examine these crossover issues and ensure that the Decommissioning Roadmap and the development of an offshore wind industry in Australia are complementary.

## Port access is critical and likely to be in high demand

There are a limited number of ports around the country that are suitable for supporting offshore decommissioning activities and offshore wind construction, in addition to normal port operations. This may be an area where industry cooperation is beneficial. For example, both the oil and gas industry as well as the offshore renewables industry will need access to ports with sufficient water depth for large vessels or barges. Ports will also need access to sufficient areas to lay down:

- equipment for offshore construction (for example, large wind turbine blades)
- material for disassembly and breaking from offshore (for example, large, decommissioned oil and gas platforms and rigs).

Lay down areas may have to deal with excess weights associated with large steel pieces of oil and gas infrastructure or with large cranes and construction equipment.

There is a case for ports to be close to decommissioning activity, as the transport of large pieces of infrastructure adds cost, risk and emissions. In addition, ports need to:

- have good transport links to get materials in or out and limit space congestion (this applies to both decommissioning activities and offshore wind construction)
- be equipped to manage and store wastes or contaminated materials.

## Growing other ancillary industries

An offshore decommissioning industry can help grow a range of adjacent industries. Cooperation and forward planning will ensure these industries have a steady forward work program, which in turn helps to underwrite investment confidence and future growth.

These support services and industries can range across engineering and project management services, offshore support vessels, specialist waste management services and specialist logistics and transport operators.

To maximise shared opportunities, other countries have explored mechanisms that foster greater industry collaboration, such as the North Sea Transition Authority (NSTA). The NSTA fosters greater coordination, not just between projects but also between service providers and regulators.

There may be benefits to greater coordination to support an offshore decommissioning industry in an Australian context. For example, a single shared contract that keeps a specialty decommissioning vessel in Australian waters to service a number of projects is a better value proposition than short

duration contracts for a single project that could see speciality vessels routinely travel in and out of Australia's jurisdiction.

## Questions

6. What are the barriers to offshore decommissioning projects working cooperatively, including through sharing vessels, equipment and contracting strategies?
7. Are there additional ports or common use facilities required to support both decommissioning activities and adjacent industries?
8. Where could port infrastructure be located to be support a decommissioning industry, and how could industry best provide that infrastructure?
  - a) How could government (federal, state or territory) best support its establishment?
9. What opportunities could foster improved cooperation between offshore decommissioning and adjacent industries, including offshore renewables and onshore decommissioning of old energy infrastructure?
  - a) What would be the best way to improve cooperation to encourage a more sustainable industry?
10. How can Australia best attract additional overseas investment into the decommissioning sector?
11. What are the opportunities for an Australian decommissioning industry to undertake decommissioning activities in overseas jurisdictions?

## Theme three: A secure, growing and diverse future workforce pathway

Growing a decommissioning industry creates the opportunity for a range of new jobs across Australia, particularly in the regions. Workers in Australia's existing offshore oil and gas industry are well-placed to secure new jobs in an expanding decommissioning industry. An opportunity also exists to create new jobs to support onshore decommissioning activities.

### Existing offshore oil and gas workers will be well suited to work on offshore decommissioning projects

A recently commissioned study<sup>4</sup> found that more than 60 per cent of skills and roles in the offshore oil and gas industry had high or good overlap with skills needed for offshore wind. A further 31 per cent of roles have a partial overlap. These skills and trades included:

- electricians and mechanical fitters
- specialist engineering roles
- various management and contract management roles
- health, safety and environmental specialists
- specialist offshore operators, including for cranes and drilling activities.

The report also noted that many offshore oil and gas workers already hold the relevant certificates and licences for offshore wind-related activities. Many of these overlaps are also relevant for the offshore decommissioning industry.

### A decommissioning industry will also create demand for onshore skills

In addition to the skills required to support the dismantling of offshore energy infrastructure, there are also a wide range of onshore skills needed for tasks such as:

- dismantling of equipment and large structures at the point of onshore deliver
- categorisation, handling, storage and recycling or permanent disposal of different waste streams
- transport of disassembled or scrapped material
- recycling.

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<sup>4</sup> Star of the South, [Making the move to offshore wind: a guide for workers](#) [PDF 2 MB], p6, accessed on 1 September 2023

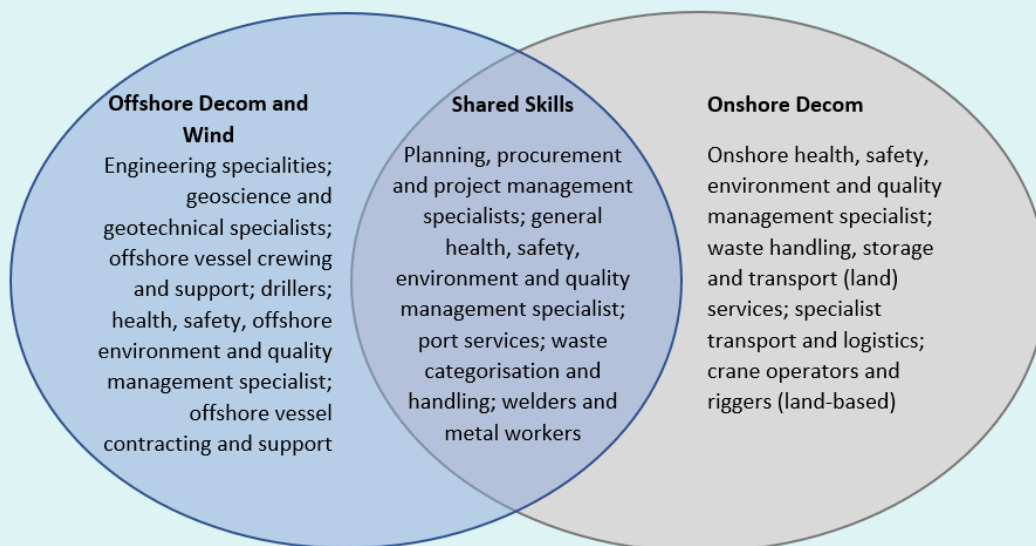
## Box 4: Existing workforce in oil and gas

The Australian Bureau of Statistics estimated that around 21,700 people were directly employed in oil and gas extraction full time in 2022. Around 5,000 of these employees were women. This included onshore oil and gas production<sup>5</sup>.

The majority of the offshore oil and gas workforce are based either offshore Western Australia or offshore Victoria. The required skillsets are diverse. The top occupations in oil and gas production that have increased since 2011 are<sup>6</sup>:

- electricians
- structural steel workers and trade workers
- engineers (mechanical, chemical, miscellaneous)
- construction and production managers.

The diagram below demonstrates that there is significant overlap with skills needed for offshore decommissioning and offshore wind, and onshore decommissioning:



## The creation of new roles opens up opportunities to grow women's participation in the offshore workforce

Women are significantly underrepresented in the oil and gas extraction industry. In 2021, women comprised 26 per cent of the oil and gas extraction industry, up from 23 per cent in 2016<sup>7</sup>.

<sup>5</sup> ABS, [Table 06 'Mining – Oil and Gas Extraction'](#) accessed on 1 September 2023.

<sup>6</sup> NERA, [Preparing Australia's future oil and gas workforce](#) [PDF 2.5 MB], p14, NERA, 2018, accessed on 1 September 2023.

<sup>7</sup> Department of Industry, Science and Resources, ['Workforce and Gender Equity Policies: STEM and other industries'](#), accessed 12 September 2023

In developing an offshore decommissioning industry there is an opportunity to diversify the workforce and fill critical skills shortages. However, to create a safe and supportive work environment for all genders, there are issues that the industry needs to address. In 2021, the oil and gas extraction industry had the largest pay gap in dollar terms (\$63,000) of all industries. Only 16 per cent of senior managers are women<sup>8</sup>. Women face discrimination and harassment in these workplaces. While culture and behaviours have come along way, more work can be done to ensure a safe and inclusive workplace that not only welcomes and encourages women, but values and supports them to lead.

## Skills gaps exist for some of the capabilities needed to support a decommissioning industry

The Australian Government is aware of skills shortages in some of these areas and has wide ranging reform of the vocational education and training sector underway, including:

- Establishing 10 new industry specific Jobs and Skills Councils (JSCs) to create stronger, more strategic industry voice to provide students with industry relevant skills. JSCs are leading workforce planning for their industries, including identifying emerging skills needs, such as decommissioning and offshore renewables, and then develop the necessary qualifications to meet these needs.
- Jobs and Skills Australia (JSA) works with partners and stakeholders to provide whole of economy independent advice to address skills and labour market issues to build the skilled workforce Australia needs for the future. JSA is undertaking a workforce capacity study to identify the job roles and skills pathways Australia will need to build a clean energy workforce and transition to net zero by 2050. This includes decommissioning of oil and gas facilities, as well as coal-fired power stations. The JSA Clean Energy Workforce Report will be finalised in late 2023.
- The New Energy Apprenticeship and New Energy Skills Programs will see 10,000 eligible apprentices receive up to \$10,000 to help with the cost of living during their apprenticeship. Industry-based mentoring will help develop the next generation of skilled clean energy workers.
- From 1 July 2023 a new Australian apprenticeships service delivery model will also provide specialised support and mentoring for:
  - First Nations apprentices
  - apprentices with disability
  - those who live remotely
  - women in male-dominated trades
  - others who experience additional barriers to completing their apprenticeship.
- The \$1 billion 12-Month National Skills Agreement is making 180,000 fee-free TAFE places available across Australia in 2023, with a further investment of more than \$400 million to deliver 300,000 places from 2024. Fee-free TAFE offers vocational and education training in

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<sup>8</sup> Department of Industry, Science and Resources, [‘Workforce and Gender Equity Policies: STEM and other industries’](#), accessed 12 September 2023

priority areas of the economy. This includes construction, manufacturing, sovereign and the technology and digital sectors.

- The government is also preparing to invest an additional \$3.7 billion in a new five-year National Skills Agreement being developed in partnership with state and territories, to be in place by January 2024. The agreement will strengthen collaborative national leadership on skills and workforce development and convene government, industry and community partners to address major economic and social priorities – including supporting the net zero transformation; developing Australia’s sovereign capability and food security; as well as ensuring Australia’s digital and technology capability.

The establishment of the national Net Zero Authority will support workers in emissions-intensive sectors to access new employment, skills and support as the net zero transformation continues. The Authority will coordinate programs and policies across government to support regions and communities to attract and take advantage of new clean energy industries and set those industries up for success.

In addition to domestic skills building, migration will also be essential to having the right mixture of expertise for a growing decommissioning industry. The Australian Government is currently developing a migration strategy for release later this year. This will prioritise bringing in the people Australia needs to enhance our economic prosperity and security. It will also make it simpler and more efficient for employers and migrants.

## Questions

12. What is the best way to maximise Australian jobs to support decommissioning activities?
13. What workforce capabilities are required to support an Australian decommissioning industry, now or in the future?
14. What are the barriers to growing the decommissioning workforce, especially in regional Australia?
15. How can the industry best address issues around diversity and gender equality in the workforce?
16. How can existing government programs in the skills and education sectors better support the growth of a decommissioning industry?
17. What education and training services are needed to support an offshore decommissioning industry? Are there gaps in the education or training currently available?
18. What are the educational and/or training needs associated with these identified capability/skill gaps or shortages, and are there any gaps in the education/training currently available?



## Theme four: Business opportunities and partnerships for First Nations people

The government acknowledges that there is both a great opportunity and a responsibility to have First Nations peoples central to the establishment of new industries. We pay our respect to our First Nations peoples, their elders and their ancestors who have always cared, and continue to care, for our lands, waters and communities. The development of this Roadmap can contribute to Closing the Gap targets and outcomes, and priority reforms that change the way governments work with Aboriginal and Torres Strait Islander people and communities.

First Nations peoples are the custodians of the lands and waters where activities associated with oil and gas production and decommissioning take place. There is a growing recognition that the most successful consultation and engagements with First Nations peoples and businesses focuses on long-term relationship-making and genuine partnerships with local communities and businesses. Engagement and agreement-making under various Commonwealth Acts and state and territory legislation is required for new developments on lands and waters where First Nations people hold rights and interests. This places First Nations engagement and agreement as central throughout the value chain of decommissioning offshore oil and gas infrastructure.

Areas of the resources sector are already providing significant opportunities for First Nations peoples and businesses. There are a growing number of examples where First Nations peoples and native title holders are involved in partnerships in projects, including through ownership of direct interests. There are also examples where companies have directly established subsidiaries which provide training, jobs and ongoing opportunities through long-term relationships with social communities. Effective engagement and consultation with First Nations peoples can provide local employment opportunities, skills development and investment in regional communities.

There are likely to be a range of different ways for First Nations peoples and communities to be involved at different stages of the decommissioning value chain. For example, a tangible and effective way to engage with First Nations businesses is through direct contracting and procurement of services. This provides not just short-term jobs but an ongoing opportunity to build successful and long-term business relationships between the sector and First Nations peoples.

### Questions

19. How can industry and other stakeholders best engage with First Nations peoples in the growing opportunity of decommissioning of offshore oil and gas infrastructure?
20. What are the barriers to growing the decommissioning workforce and boosting the participation of First Nations peoples?
21. How can a decommissioning industry build long-term partnerships and best support business opportunities with First Nations businesses across Australia?

## Theme five: The circular economy and managing waste

All of Australia's environment ministers have agreed to work with the private sector to design out waste and pollution, keep materials in use and foster markets to achieve a circular economy by 2030. This goal needs governments to work with industry and the private sector to remove waste and pollution from the economy and environment and keep materials in use. Australia's transition to a circular economy will be underpinned by three priorities:

- reduce use of new materials
- make materials and products durable, repairable and safe
- collect, reuse and recycle materials and products.

The decommissioning of offshore oil and gas infrastructure represents an opportunity to embed circular economy principles within the industry. Recovering and recycling suitable materials (like steel, other metals, plastics and concrete) will keep those materials in circulation, contributing to reducing emissions.

Existing regulations require that any wastes produced as part of decommissioning must be categorised and handled appropriately. This will avoid cross-contamination and ensure that opportunities to recycle waste streams safely and productively are maximised. There is also an opportunity to minimise handling and transport of materials to reduce fuel use and emissions.

Companies have an existing obligation to ensure compliance with all environmental regulations. The Australian Government is supporting a nature-positive approach under reforms to the *Environment Protection and Biodiversity Conservation Act 1999*. We will protect our land and sea and leave it in a better state than we found it.

### There are opportunities to grow Australia's recycling capabilities to support domestic decommissioning

The main components of offshore infrastructure are steel, non-ferrous metals and concrete. Steel represents around 60 per cent of this material with concrete representing about 25 per cent<sup>9</sup>. Reusing steel from decommissioning could be an effective way to reduce the carbon intensity of steel manufacturing. The World Steel Association estimates that every tonne of steel scrap reused avoids the emission of 1.5 tonnes of CO<sub>2</sub>. It also avoids the consumption of 1.4 tonnes of iron ore, 740 kg of coal and 120 kg of limestone.

Recycling infrastructure, particularly steel, is the norm in overseas jurisdictions conducting decommissioning. In Norway, as much as 98 per cent of steel from offshore decommissioning is recycled. The steel is noted for its high quality and continued suitability for offshore use and so is

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<sup>9</sup> CODA, [Understanding the opportunity for local disposal and recycling pathways](#) [PDF 1.8 MB], p5, accessed on 1 September 2023.

often reused for structures like offshore wind turbines.<sup>10</sup> Offshore concrete structures have been used to construct breakwaters in Norway.

In the United Kingdom, decommissioning of the Brent Field (one of the largest in the North Sea) has seen 97 per cent of the topside reused or recycled<sup>11</sup>.

Prior to planning for decommissioning, operators must also evaluate the re-purposing potential for the assets. This is done during the late life operating phase, at least six years before the expected cessation of production. This includes potential reuse for carbon capture and storage (CCS) and hydrogen opportunities.<sup>12</sup>

A market engagement process by CODA found that industry was confident that most disposal work associated with decommissioning can be undertaken in Australia<sup>13</sup>. To do this, Australia will need to grow and expand its dismantling and specialist services sectors, including its capabilities to handle naturally occurring radioactive material (NORMs) and other hazardous materials. Some of these gaps relate to specific skills that are in short supply in Australia, as well as more general capabilities in the workforce.

CODA also found that there are no prime contractors offering integrated decommissioning turnkey capability. However, few responders placed value on the development of centralised, multi-contractor facilities.

## Questions

22. How can a decommissioning industry maximise its contribution to a circular economy in Australia?
23. What are the barriers to recycling material from offshore in Australia, including steel?
24. What are the gaps in managing the waste streams associated with decommissioning offshore infrastructure?
25. How can companies protect worker safety and ensure their activities are nature-positive while undertaking decommissioning activities?

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<sup>10</sup> France24, [‘In Norway, old oil platforms get a second life’](#), accessed on 1 September 2023.

<sup>11</sup> Shell, [Brent Delta topside decommissioning close-out report](#) [PDF 4.4 MB], p6, accessed on 1 September 2023.

<sup>12</sup> NSTA UK, [Decommissioning: repurposing](#), accessed on 1 September 2023.

<sup>13</sup> CODA, [Understanding the opportunity for local disposal and recycling pathways](#) [PDF 1.8 MB], p8, accessed on 1 September 2023.

## Theme six: Regulatory frameworks

The OPGGS Act and its associated regulations is the Australian Government's primary regulatory regime for offshore petroleum production and greenhouse gas storage in Commonwealth waters. The OPGGS Act places a requirement on titleholders that offshore oil and gas infrastructure is removed once production ceases.

Under current legislation, options other than full removal may be considered in some circumstances where a titleholder can demonstrate to the independent regulator, NOPSEMA, that an alternative approach will:

- deliver an equal or better environmental outcome compared to complete removal
- meet all applicable requirements under the OPGGS Act and regulations
- comply with other applicable legislation, including the *Environment Protection (Sea Dumping) Act 1981*.

The legislation regulating offshore petroleum exploration and production interacts with state and territory legislation. States and territories have their own legislation covering coastal waters (waters that are within three nautical miles of the territorial sea baseline, including offshore islands). This includes any petroleum activities that may take place. States and territories also have legislation covering recycling, waste management and waste disposal along with land use planning and controls which will be important when considering potential port expansions or changes of use.

### A domestic decommissioning industry must meet world's best practice

There are a range of international treaties and conventions that govern aspects of decommissioning. Australia has ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal which is designed to reduce the transfer of hazardous waste between nations. The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships is an international agreement developed under the International Maritime Organisation (IMO).

The IMO is an agency of the United Nations responsible for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships. The IMO administers the United Nations Convention on the Law of the Sea which is an international agreement that establishes a legal framework for all marine and maritime activities.

The IMO has issued Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone which sets out the minimum global standards to be applied to the removal of offshore installations and structures.

The London Protocol is an international agreement to control pollution of the sea by dumping and to encourage regional agreements. It was amended in 2009 to include CO<sub>2</sub> streams to allow for export for carbon capture and storage purposes (with certain provisions). The Australian Government has introduced legislation that will ratify the 2009 amendment.

## We can learn from international experience

There are several international examples Australia could learn from to encourage industry to undertake more decommissioning activities in Australia. Decommissioning in the oil and gas fields of the North Sea between the UK and Norway is already occurring at scale as many fields have exhausted their reserves and ceased production. There is significant coordination of decommissioning activities occurring. Offshore wind generation construction is also increasing with the repurposing of existing infrastructure a focus.

In the UK, the Offshore Petroleum Regulator for Environment and Decommissioning has responsibility for regulating the decommissioning of offshore oil and gas infrastructure. Owners of oil and gas installations and pipelines are required to decommission their offshore infrastructure at the end of a field's economic life. A decommissioning program for all parts of the infrastructure must be approved by the regulator, including if infrastructure is to be left in place.

The two principles underlying the UK's policies are that decommissioning should aim to achieve a clear seabed (acknowledging that this will not always be achievable given the complexities involved), and that those who have benefitted from exploitation or production hydrocarbons in the UK Continental Shelf to bear the responsibility for decommissioning.

### Box 5: Decommissioning in the North Sea

The role of the NSTA is to regulate and influence the offshore oil, gas and carbon storage industries. The NSTA (which is funded via industry levies) collaborates with operators to 'steward' assets from late life to decommissioning. This encourages collaboration between all parties to encourage economies of scale and sharing of lessons learned.

It also encourages operators to consider re-use and repurposing opportunities that support net zero (such as electrification, carbon capture and storage, and hydrogen).

The NSTA has a focus on bringing the cost of decommissioning down, while holding the industry to account for halving upstream emissions by 2030. Increasing the uptake of CCS is a particular goal of the organisation, along with the potential to reuse or repurpose offshore oil and gas infrastructure.

Like Australia's regime, Norway requires full removal of offshore infrastructure as the base case, with flexibility to leave infrastructure in place in limited circumstances.

There may be potential to reuse oil and gas infrastructure (including ports and lay down areas) for offshore renewables projects and CCS projects in Commonwealth waters. There are several proponents considering CCS project using depleted offshore oil and gas reservoirs. There are regulatory and legislative barriers to achieving this outcome that need to be addressed.

In the United States, the US Bureau of Safety and Environmental Enforcement (BSEE) regulates decommissioning offshore. BSEE expects the removal of unused infrastructure for safety and environmental reasons. It also specifically allows infrastructure to be used as part of a 'rigs to reef' policy.

## Questions

26. How are companies planning for offshore decommissioning activities within the current regulatory regime?
27. Do our regulatory frameworks for decommissioning provide sufficient safeguards for our marine environment?
28. Are there opportunities to enhance the efficiency of our existing regulatory frameworks to facilitate decommissioning activity in Australia?
29. Is there any duplication between regulatory requirements for decommissioning level between Commonwealth regulators and/or between Commonwealth, state, and territory requirements?
30. Are there examples from overseas decommissioning regulatory frameworks that might be applicable in Australia?
31. Are there regulatory barriers that prevent a decommissioning industry working with adjacent industries, including offshore renewables or the reuse of oil and gas infrastructure?

# Appendix one: Phases of offshore decommissioning

The decommissioning of an oil and gas project includes multiple stages with various regulatory approvals providing opportunities for consultation with impacted communities. Each stage of the process has its own opportunities and challenges.

## Planning

Planning for decommissioning will occur over the life of the project. This includes:

- developing an appropriate closure strategy
- agreeing that strategy
- planning documents with the regulator (NOPSEMA)
- procuring appropriate vessels and skills to undertake the decommissioning.

Given the global nature of the oil and gas industry and the increasing rate of construction for offshore renewables, contracting vessels and crews is increasingly complex. Projects around the world are competing for a small pool of large vessels, drilling rigs, support craft and skilled workers.

## Offshore decommissioning

Once vessels and a workforce are procured, securing offshore oil and gas wells (through well plugging and abandonment) is the largest component of offshore decommissioning, comprising 40 per cent to 50 per cent of decommissioning costs.

Each oil and gas project will contain numerous subsea wells and associated infrastructure. This includes well heads, gathering lines and risers to take product to the surface, which all must be safely secured as part of decommissioning. Securing wells will require a specialist facility like a drilling rig or other specific vessels.

Preparing any platform infrastructure for decommissioning, along with its actual removal, requires the coordination and management of different vessels. This includes:

- very large offshore floating cranes
- heavy lift vessels
- support vessels
- barges and tugs to get infrastructure to shore.

Preparing and lifting pipelines for removal requires specialist vessels (or the agreement of the regulator for it to be left in place). This work also includes categorising any material being removed so it can be appropriately handled and stored onshore.

## Transport to onshore facility

Once infrastructure is removed, it can be taken to shore at a suitable port for dismantling. This may require deep-water access, large areas of lay down and hardstand, and areas to quarantine and

store waste. Road or rail transport links are needed if large volumes of steel or concrete need to be transported for recycling.

## Onshore processing

Any hazardous waste materials such as NORMs, asbestos, sludges or plastics will need correct handling, storage, transport, and recycling or disposal. Early categorisation of these materials assists in minimising any cross-contamination with other materials or handling areas.

Once decommissioned material is onshore, material and waste will need to be stored, handled and transported out of port areas efficiently and in a timely manner. Cooperation with the transport sector, waste handlers and recyclers (especially steel recycling) will ensure port areas do not become congested or overcrowded.