FACT SHEET

Recycling and decommissioning of offshore wind turbines

90 %

of a **wind turbine** is recyclable

What is offshore wind energy?

Offshore wind energy involves generating electricity from wind turbines in the ocean. These turbines capture wind energy and convert it into electricity, which is then transmitted to the shore via cables under the seabed. Offshore wind energy has been used around the world since 1991 and increases globally year on year.

What is the lifespan of an offshore wind turbine?

Offshore wind turbines have a lifespan of around 25 years; however, that can be extended to 30 to 40 years with maintenance.[1]

What happens to offshore wind turbines at the end of their lifespan?

There are a variety of considerations when a wind turbine approaches the end of its standard design life. After their operational life, they are either decommissioned or repowered with new technology.[2]

What does the decommissioning of an offshore wind turbine involve?

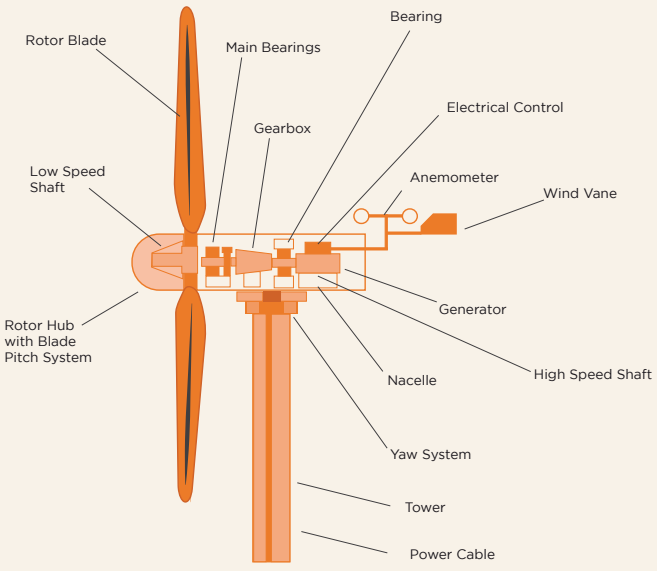
Decommissioning involves the removal of wind turbines and associated infrastructure at the end of their service life. This process includes dismantling the turbines, removing foundations, and remediating the site or repurposing it for new turbines.[3]

Who is responsible for the cost of decommissioning?

The developer, or licence holder/s, of the offshore wind farm is responsible for all costs associated with decommissioning. Developers must provide a decommissioning plan and demonstrate financial security before they are granted a commercial licence to construct wind turbines. These plans are required to be approved by the Offshore Infrastructure Regulator (OIR).[4]

Are offshore wind turbines recyclable?

Up to 90% of wind turbine materials can be recycled.[5] The main components, such as the tower, blades, and nacelle (housing the generator and other equipment), are predominantly made of recyclable materials like steel, aluminium, and composites. The recycling of wind turbine blades is an ongoing area of research and development. Companies around the world are looking at ways to reuse the materials, including mechanical recycling, chemical recycling, and repurposing into alternative products such as construction materials or energy recovery. Steel and other metals used in the tower and nacelle can be recycled through established metal recycling processes. These materials can be melted down and reused in the production of new products.



Source: Clean Energy Council Wind turbine recycling report, p5

[1] Lifespan: https://www.dcceew.gov.au/energy/renewable/offshore-wind/offshore-wind-facts#offshore-wind-farms-save-more-carbon-than-they-emit-during-their-manufacture
[2] End of lifespan: https://www.dcceew.gov.au/energy/renewable/offshore-wind/offshore-wind-facts https://windexchange.energy.gov/end-of-service-guide
[3] https://windexchange.energy.gov/end-of-service-guide
[4] OIR https://www.oir.gov.au/news-and-community/faqs#:~:text=Specifically%2C%20the%20OIR%20is%20responsible,of%20Australia's%20exclusive%20economic%20zone
[5] https://us.orsted.com/renewable-energy-solutions/offshore-wind/seven-facts-about-offshore-wind/recycling

August 2025

What happens to the materials from decommissioned wind turbines?

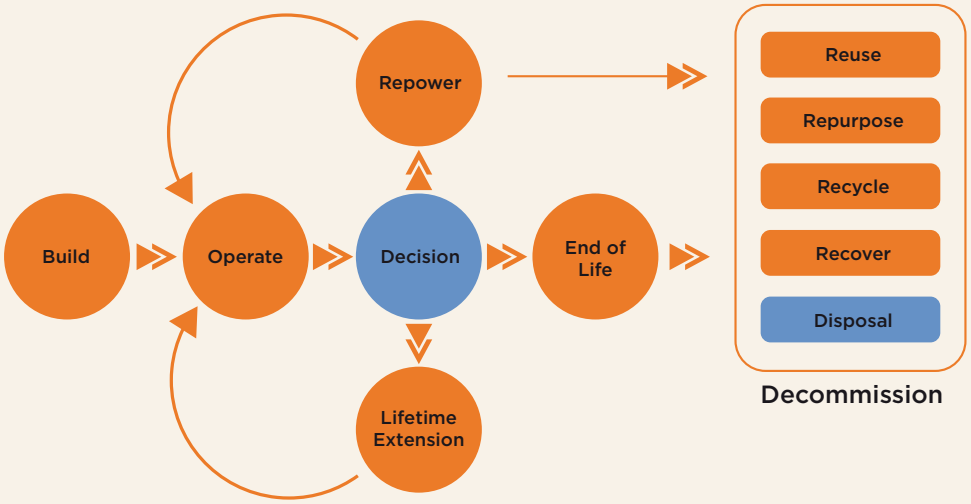
Most materials used in turbines are increasingly being processed into new products. They have even been used in playgrounds, bike shelters, glamping pods and skate parks.[6,7]

What happens to the seabed after decommissioning?

After decommissioning an offshore wind farm, operators are required to remove infrastructure and restore the seabed to its original condition. This process involves removing turbine foundations, cables, and other equipment from the seafloor. In some cases, there may be environmental benefits to leaving some infrastructure behind, for example if valuable new ecosystems have formed around infrastructure. The specific requirements for seabed restoration after decommissioning will be addressed in project-specific decommissioning plans and governed by Australian regulations.

What is the role of the Offshore Infrastructure Regulator in decommissioning?

Developers must provide a decommissioning plan and demonstrate financial security before they are granted a commercial licence to construct wind turbines. These plans are required to be approved by the OIR. The OIR has responsibility for operational oversight of the offshore renewables industry.[8] The OIR is responsible for overseeing activities involving the construction, installation, commissioning, operation, maintenance or decommissioning of offshore renewables energy infrastructure.



Source: Clean Energy Council Wind turbine recycling report, p12

For more information, read our report:

Winding up: decommissioning, recycling, and resource recovery of Australian wind turbines

Are there environmental considerations during decommissioning?

Decommissioning must comply with environmental regulations to minimise impacts from noise and habitat disturbance. Matters of National Environmental Significance under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and relevant environmental state legislation must be assessed and managed during decommissioning, as they are for construction and operations.[9] Decommissioning plans must also follow strict guidelines to protect marine ecosystems.[10]

Does decommissioning impact local communities?

Decommissioning of offshore wind projects in Australia can positively impact local communities, particularly in port and coastal areas.[11] The process involves removing infrastructure and addressing environmental remediation, which creates jobs and economic activity. It also requires careful planning by the developer to minimise disruption to community and ensure restoration of the marine environment.

[6] Could Scotland's unwanted wind turbines be turned into playparks?
[7] Solving the problem: recycling and recovery of decommissioned wind turbines | SLR Consulting
[8] OIR role: https://www.oir.gov.au/news-and-community/faqs#:~:text=Specifically%2C%20the%20OIR%20is%20responsible,of%20Australia's%20exclusive%20economic%20zone.
[9] Environmental considerations: https://www.dcceew.gov.au/energy/renewable/offshore-wind/offshore-wind-facts
[10] Marine ecosystems: https://www.dcceew.gov.au/energy/renewable/offshore-wind/offshore-wind-facts
[11] Decommissioning: https://www.aeic.gov.au/sites/default/files/documents/2023-10/aeic-considerations-offshore-wind-industry-community-engagement.pdf

CLEAN ENERGY COUNCIL

Level 20, 180 Lonsdale Street
Melbourne VIC Australia 3000
+61 3 9929 4100
info@cleanenergycouncil.org.au

cleanenergycouncil.org.au

Scan here for more clean energy fact sheets