



Ministerie van Klimaat en
Groene Groei

ECHT
— regie in transitie —



Circular Future for Offshore Wind Industry

Roadmap 2040 by
Ministry KGG
and examples

Atmosphere currently strong in EU and NL for improved circularity

- EU: **Clean Industry Deal (CID)** with one of the priorities being circularity
- EU: **Critical Raw Material Act (CRMA)** pressing for recycling CRMs in EU
- EU: **Draghi report** pushing for sustainability and innovation
- EU: **Net-Zero Industry Act (NZIA)** 30% of tenders with non-price criteria
- NL: **National Circular Economy Program 2023-2030 (NPCE)** with four main circular strategies
- NL: **National Raw Material Strategy (NGS)** with target to increase supply chain security
- NL: **National Material Observatory (NMO)** for following CRM supply chains
- NL: Ministry KGG working on **Roadmap for Circular Offshore Wind**

Improved circularity increases supply chain security and therefore resilience

Roadmap for Circular Offshore Wind

- From Ministry Climate and Green Growth (KGG)
- Running Q1 and Q2 in 2025
- Supports Offshore Wind Sector in the Netherlands with long term vision and targets related to circularity and sustainability
- Connected to national circularity targets (NPCE) and national raw material strategies (NGS)

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Roadmap: Vision

- Materials treated as valuable assets
- Resilient, waste-free supply chain through innovation, policies and collaboration
- NL leading circular wind, fostering green economic growth and creating long-term prosperity
- Creation of critical raw materials stock and reduction of dependence



Connecting triple win



**Respect of planetary boundaries
through circularity and
CO2 mitigation**

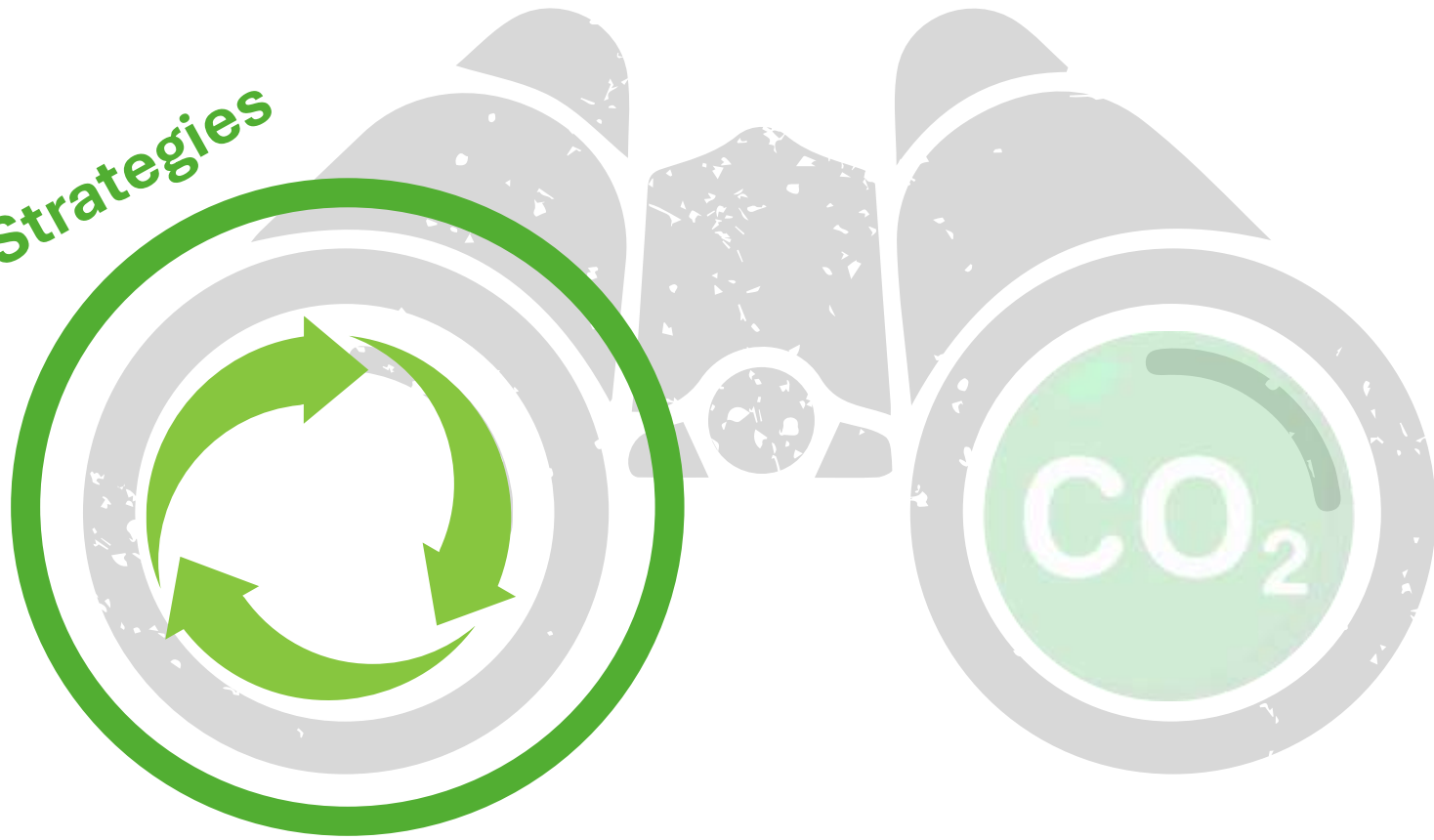


**Offshore wind sector as
part of energy transition**



**Increased resilience of
European market
through smart strategies
and collaboration**

Circular Strategies





R-ladder of Circular Strategies

Examples

Design

Refuse

Not choosing for a product, because it's not essential

Rethink

Substituting material A with more sustainable B

Reduce

Reducing material use through design changes

Original operation

Repair

Preventive maintenance plan

Re-use

Using product in other location

Remanufacture

Original manufacturer repairs product to original state

Refurbish

Product repaired to original-like state

Alternative operation

Repurpose

Product's lifetime is extended in alternative function

End of (operational) Life

Recycle

Materials are used for new manufacturing

Recover

Product is used for energy recovery (incinerated)



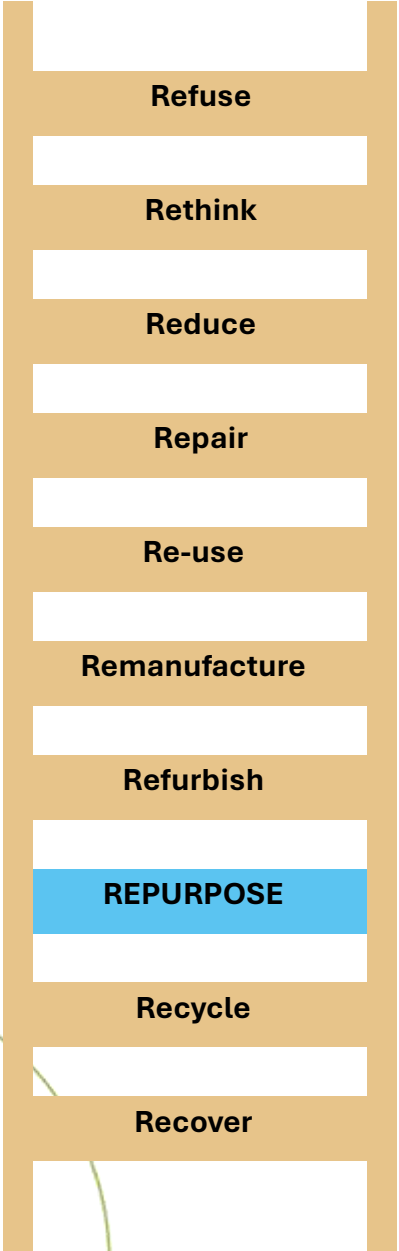
R-ladder of Circular Strategies

Design

Original operation

Alternative operation

End of (operational) Life



Repurposing of blades

The new eco-friendly multistorey car park will incorporate decommissioned wind turbine blades in its façade

Environmental benefits are repurposing large wind turbine blades (23.5 meters long) reduces waste and elimination the need for conventional building materials like concrete or steel. This will lower the carbon footprint.

Examples





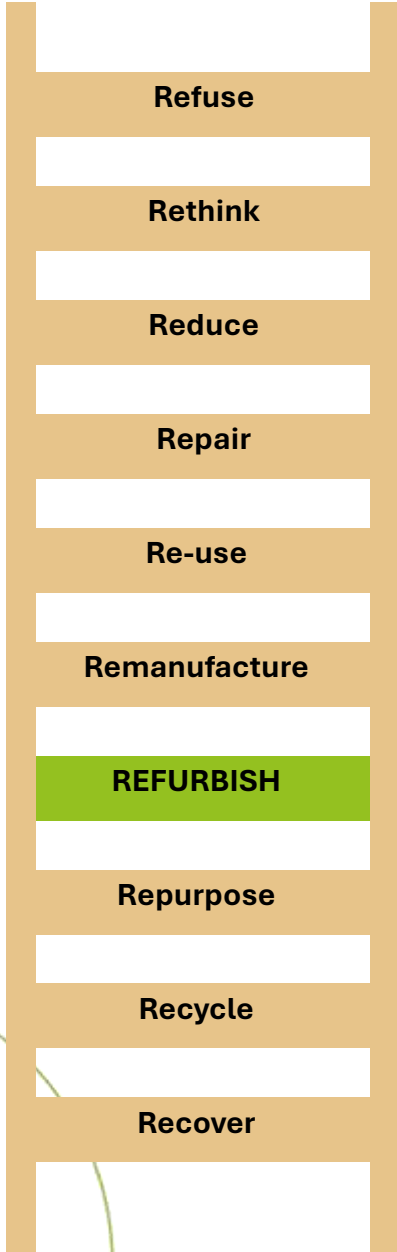
R-ladder of Circular Strategies

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Original operation

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End of (operational) Life



Wind Turbine Refurbishment

Extending the end of life of wind turbines, refurbishment has a significant positive impact on their environmental footprint.

The refurbishment process involves a thorough inspection of the turbines, decommissioning and refurbishing key components, followed by reassembly, testing, and final commissioning at their new site. This approach extends the lifespan of wind turbines while enhancing their efficiency and sustainability for future use.

Examples



Business in Wind
SHARING COMMITMENT



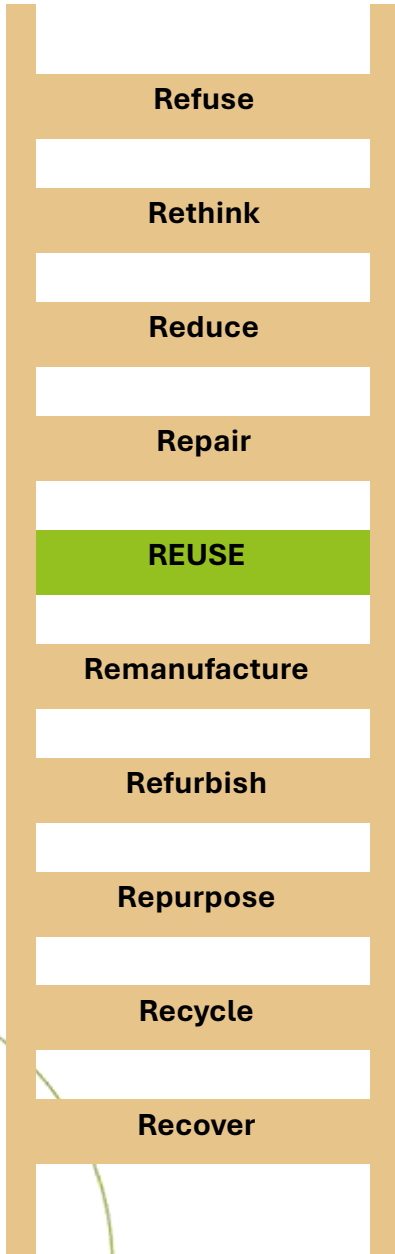
R-ladder of Circular Strategies

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Steel **Reuse** at Heerema Marine Contractors

Heerema Marine Contractors take a sustainable approach by re-using steel from previous offshore installation and decommissioning projects.

Customers can browse through pre-used steel components, giving them a new lifecycle in projects. Integrating this practice reduces waste and supports sustainability goals by reducing the carbon footprint as emissions are reduced which are otherwise associated with the manufacturing of steel.



Examples





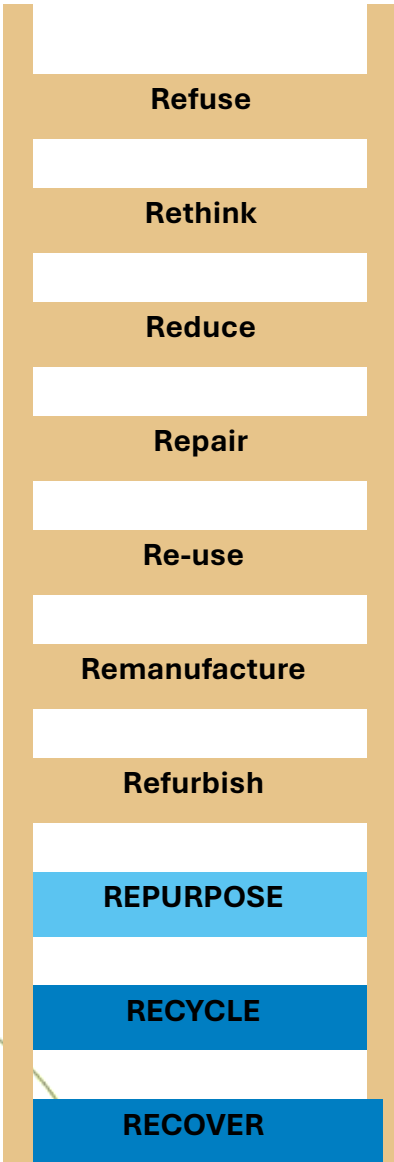
R-ladder of Circular Strategies

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Waste prevention



Examples

A NEW CHAPTER IN OUR SUSTAINABILITY JOURNEY!

So, how are we going to do this?

We are excited to announce that we will produce **zero waste blades** by 2030, as we seek to address an important challenge our industry is facing -to reduce the carbon footprint of its products. In practice, this means we aim to send no excess manufacturing materials and packaging to landfill and incineration without energy recovery by 2030.

At LM Wind Power, nearly one third of our operational carbon footprint comes from waste disposal. As a responsible company we are looking forward to either **reusing, repurposing, recovering or recycling** all the waste from our blades.



[www. https://www.lmwindpower.com/en/sustainability/zero-waste-blades.com](https://www.lmwindpower.com/en/sustainability/zero-waste-blades.com)



R-ladder of Circular Strategies

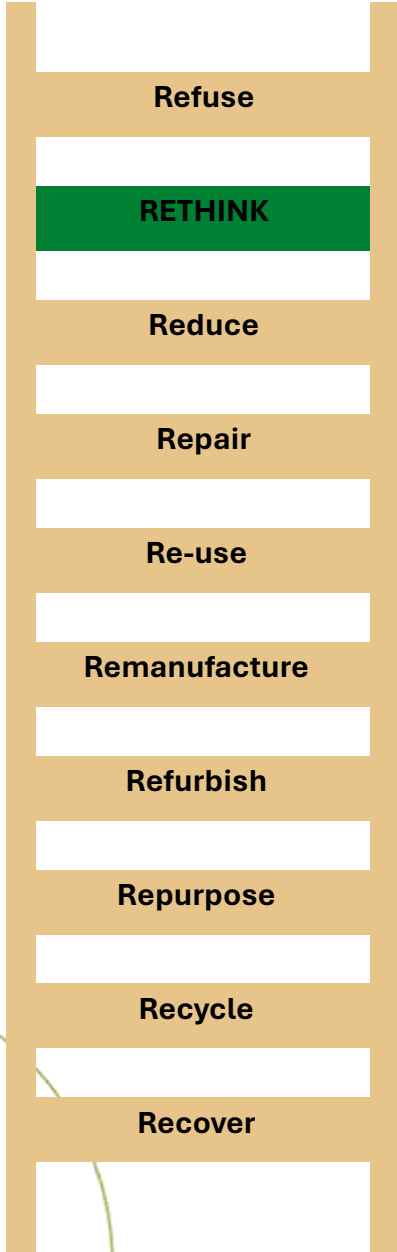
Examples

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Redesign with materials

RENEWABLE ENERGY

The RecyclableBlade

New recyclable resin - same technology.

The RecyclableBlade is produced the same way as a standard blade and is based on the same manufacturing processes. The only difference is the use of a new type of resin that makes it possible to efficiently separate it from the other components at the end of the blade's working life. This allows the materials to be recycled for new applications.



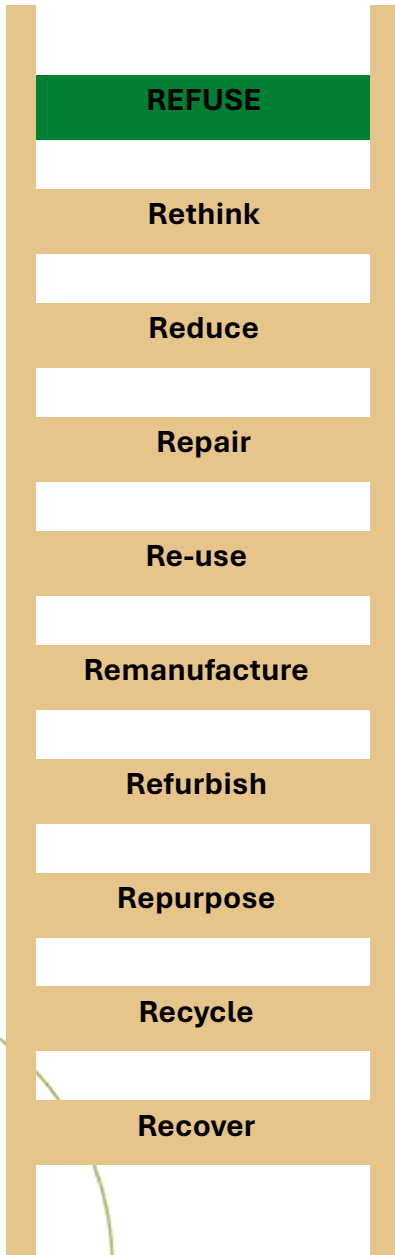
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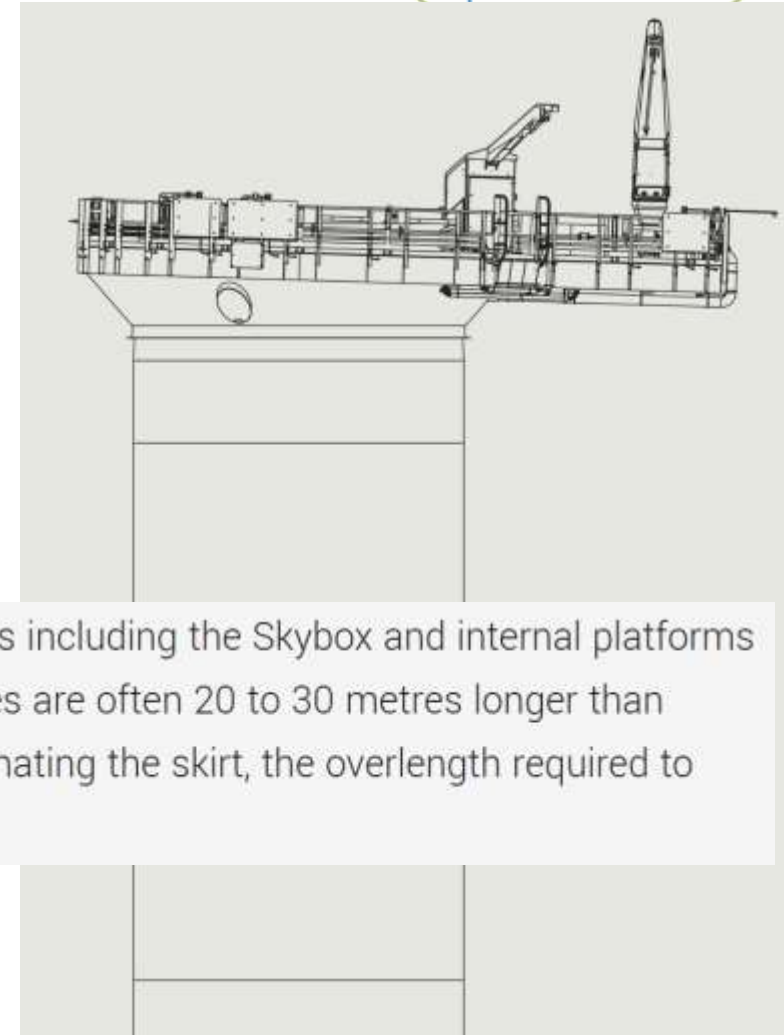


Dematerialisation by smart design



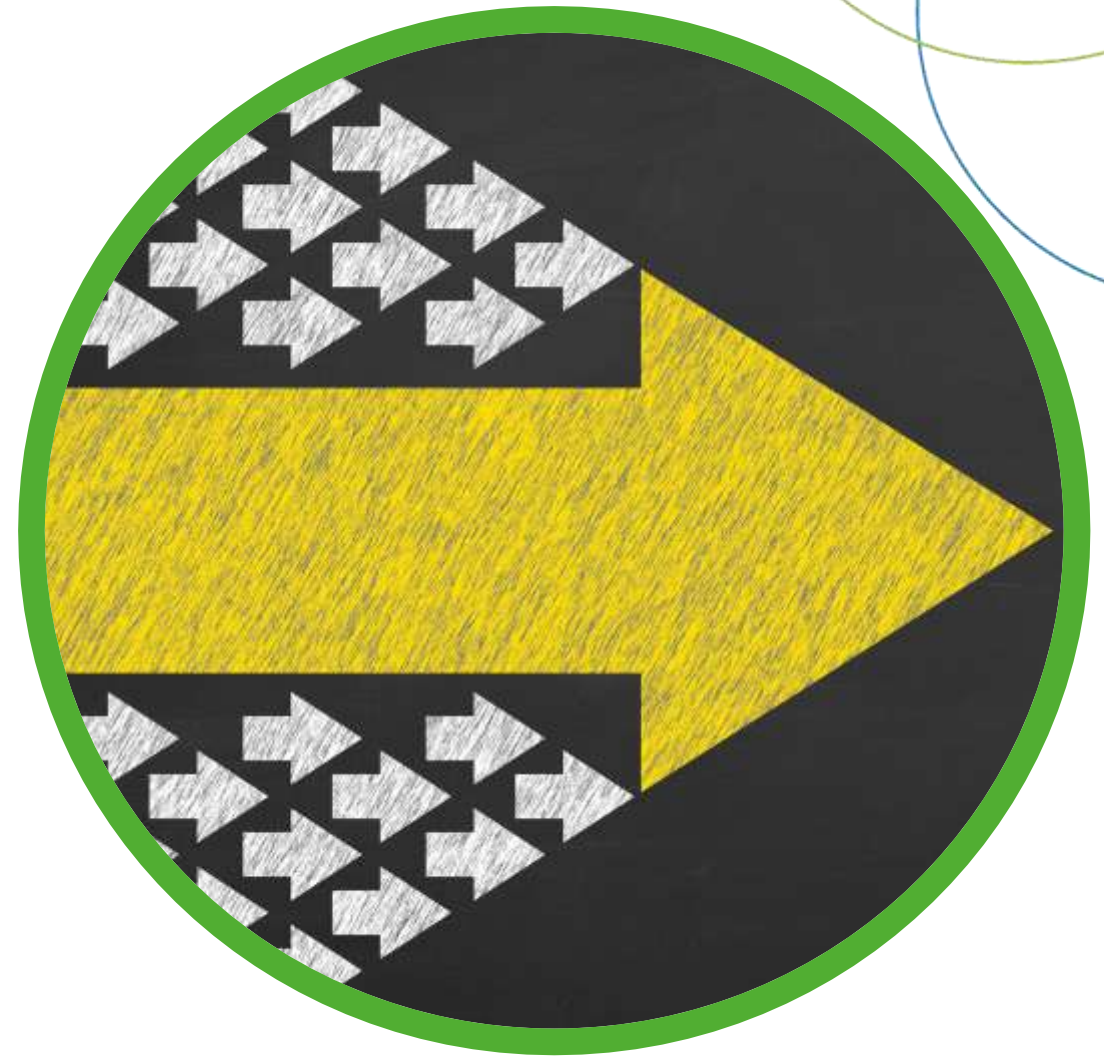
The TP-Less monopile offers space for innovations including the Skybox and internal platforms that can replace the boat landing. These monopiles are often 20 to 30 metres longer than traditional monopiles and save on weight by eliminating the skirt, the overlength required to move a transition piece across the monopile.

Examples



CALL TO ACTION!

2 opportunities to get involved with **circularity!**



CALL TO ACTION 1:



Re-Quip Foundation

Rethink Equipment

**Re-Quip Foundation
Event 2025**

Tuesday, March 18 | 13:30 - 18:00h

TWD | Marconistraat 16, Rotterdam

BE PART OF THE CHANGE

Join our foundation for sustainable
and circular equipment for the
energy market.

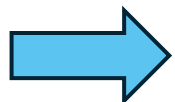


CALL TO ACTION 2:

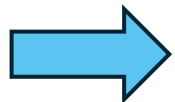
'The Bridge of Europe'



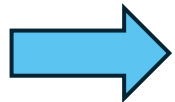
Join in co-designing a collaborative, national level entity that connects decommissioning to next-life value creation in:



Product level (cables, turbines, etc.)



Component level (blades, nacelle, tower, etc.)



Material level (steel, CRM, composites, etc.)



**Kick-off meeting
3rd of April !!!**

Thank you for sharing the energy!



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