

# Sustainability in the offshore wind sector



Mary Harvey, Senior Associate  
The Carbon Trust

March 2024

## AGENDA

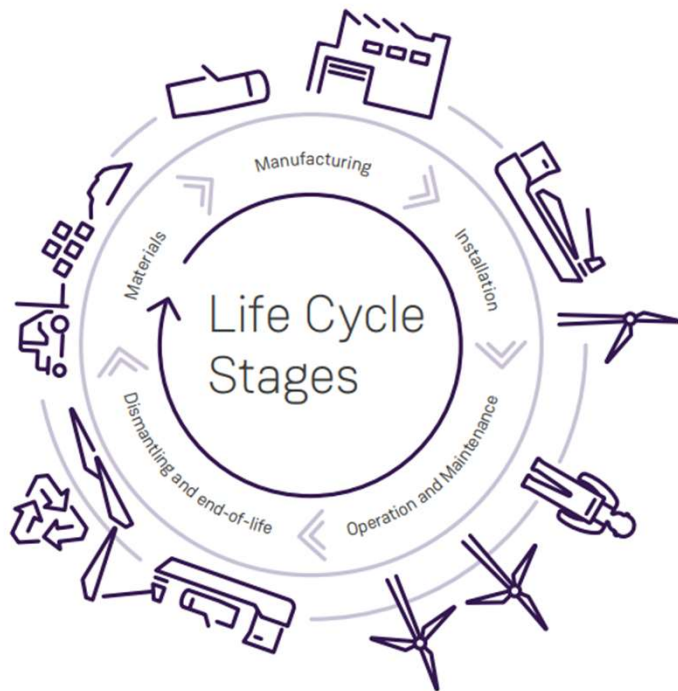
1. Sustainability: the challenge
2. Sustainability and non-price criteria
3. Carbon Trust Sustainability JIP

## SUSTAINABILITY: THE CHALLENGE

- What do we mean by sustainability?
- How do we measure sustainability?
- How do we track sustainability progress?





# Sustainability: the challenge in offshore wind

*Generating electricity from renewable offshore wind reduces CO2 emissions by 1.6Mt CO2 emissions per GW.  
So, what's the challenge?*



- Greenhouse gas emissions are produced throughout the design and construction stage of offshore wind farms.
- Although the total GHG emissions for the lifetime of an offshore wind farm are much lower than a coal-based power plant, the pipeline of offshore wind projects will be accompanied by a significant release of GHG emissions.
- These emissions must be reduced to reach net zero targets from countries and individual organisations.
- Offshore wind projects in development now will set the precedent for 2050.
- The offshore wind industry is experiencing pressure from investors to decarbonise assets.
- Non-price criteria in offshore wind leasing auctions is likely to include sustainability aspects.

# What does sustainability mean in the offshore wind sector?

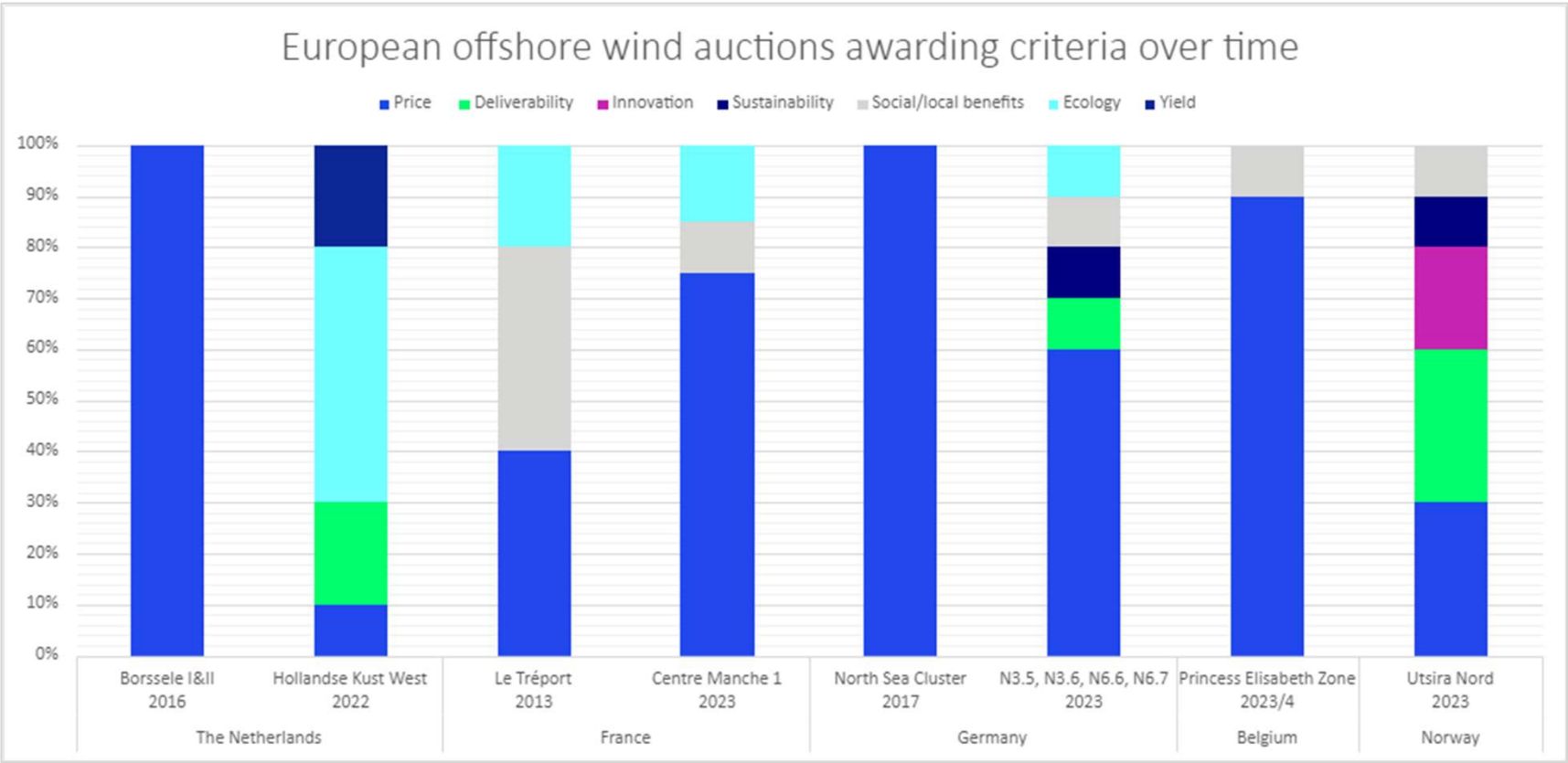
Topic area	Encompasses	Barriers/challenges
 <p><b>GHG (inc. Scope 3)</b></p>	<ul style="list-style-type: none"> <li>• Supply chain emissions</li> <li>• Green materials production</li> <li>• Measuring data</li> </ul>	<ul style="list-style-type: none"> <li>• Increased OSW pipeline means increased emissions</li> <li>• Uncertainty around measurements and data collection</li> <li>• Different subsector requirements</li> </ul>
 <p><b>Circularity</b></p>	<ul style="list-style-type: none"> <li>• Decommissioning and recycling</li> <li>• Full life design</li> <li>• Life cycle assessments</li> </ul>	<ul style="list-style-type: none"> <li>• Requires incorporation at the design stage</li> <li>• Difficult to incorporate retrospectively</li> <li>• Material variation in the supply chain</li> </ul>
 <p><b>Standards</b></p>	<ul style="list-style-type: none"> <li>• Standards around LCA or emissions</li> <li>• Sustainability policies in different markets</li> </ul>	<ul style="list-style-type: none"> <li>• Variation across markets</li> <li>• Uncertainty with criteria and requirements in new markets</li> <li>• Different subsector requirements</li> </ul>
 <p><b>Biodiversity</b></p>	<ul style="list-style-type: none"> <li>• Biodiversity throughout the lifecycle</li> <li>• Nature-inclusive design</li> <li>• Material extraction</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple stakeholders to navigate</li> <li>• Regulation variation across markets</li> <li>• Difficult to measure and collect data</li> </ul>

## NON-PRICE CRITERIA (NPC)

- How are NPC used in auctions?
- What are the challenges with introducing NPC?

# Non-price criteria in auctions

The trend of auction assessment criteria in Europe since 2016 shows that non-price criteria are becoming increasingly common, for those markets where costs have successfully been reduced to parity with other technologies. Now, with costs at an all-time low, assessing auction bids on price alone risks projects becoming undeliverable. Several European markets have awarded offshore wind projects with zero-subsidy; non-price criteria are becoming critical to assess and award bids.



# Non-price criteria in auctions

## Sustainability as a non-price criteria


As previously discussed, sustainability encompasses a range of topics and definitions. Sustainability as a non-price criteria could include:

- Carbon footprint
- Waste produced
- Circularity
- Biodiversity
- Nature inclusive design
- Coexistence with other marine users

Sustainability criteria have so far only been included in Norwegian, German and Dutch offshore wind tenders.

*Sustainability criteria are likely to vary based on the requirements of the market.*

Example:

	Reggeringen.no	Sustainability: 10%
Criteria	Weighting	
Cost	30%	
Innovation and technological development	20%	
Execution capability	20%	
Sustainability	10%	
Positive local benefits	10%	
<b>Sustainability</b>	1. Carbon footprint 2. Coexistence 3. Waste, recycling and reuse 4. Nature and the environment	



## Sustainability JIP

- How can collaboration accelerate the sustainability challenges in the OSW sector?
- Why is this important for OSW developers?

# The Sustainability Joint Industry Programme

- A **developer-funded** and **developer-led** collaborative programme to accelerate decarbonisation action and sustainability for a net-zero OSW industry.
- A **united voice** will help influence wider industry on targets and motives around sustainability within the OSW sector.
- The SUS JIP will **support multiple sub-sector solutions** at a given time.
- The scope of the SUS JIP will be **focused** with clear boundaries and **additional**, complimenting existing efforts.



# Sustainability JIP research workstreams

## Measurement workstream

To create a standard approach for measuring the lifecycle carbon impact of an offshore wind farm to be used by offshore wind developers and wider industry.

### Outputs:

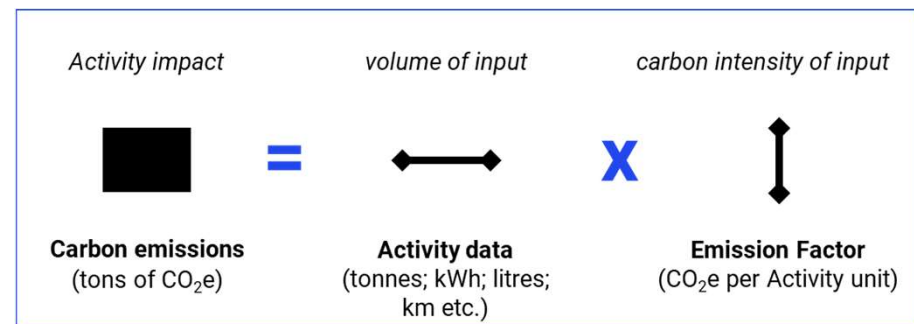
A freely available offshore wind methodology guidance document due for publication in Autumn 2024.

This will create a fair and transparent process for developers to benchmark their carbon performance against other industry players.



- **There is currently no industry guidance on calculating carbon footprints for offshore wind farms.**  
This leaves the industry open to interpretation of existing standards, which are not entirely applicable for offshore wind. Consequently, comparing carbon footprints of different offshore wind projects could be meaningless.
- **Carbon footprints are typically calculated by combining activity data with emission factors.**

**Carbon footprint** = Sum of offshore wind development activities that produce carbon emissions multiplied by an emission factor



# Sustainability JIP research workstreams

## Data workstream

To create a framework for standardising the use of data in lifecycle carbon footprinting of an Offshore Wind (OW) development

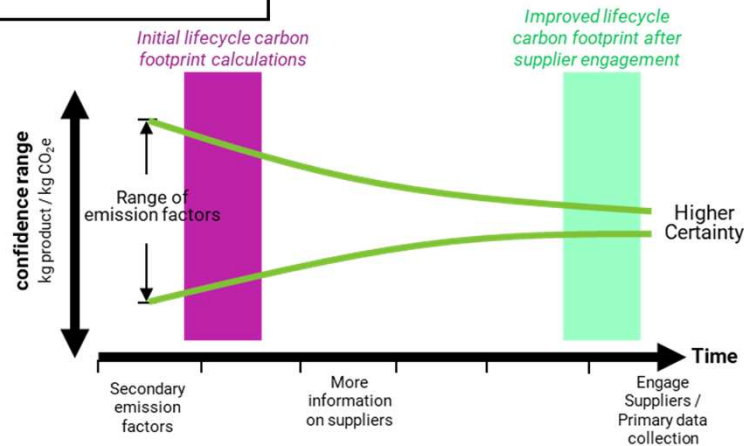
### Outputs:

Guidance for JIP partners with standards for minimum data quality to engage with suppliers.

Increased awareness of SUSJIP and support from the supply chain through engagement.

- **Good quality data is key to creating an accurate carbon footprint.**

Carbon footprints can be calculated with assumptions or estimations of emission factors. However, to fully understand carbon reduction opportunities, accurate data collection is required. There is a need for data improvement in the offshore wind industry.



**Average-data**

kg of purchased aluminium known with an industry-average **kgCO2e/kg** emission factor

**Least Accurate**

**Supplier-specific activity Data**

Supplier-sourced **kgCO2e/kg** of aluminium (Product Carbon Footprint)

**Most Accurate**

*The process to improving data quality and realising carbon reductions will be both collaborative and iterative and should trickle up the full supply chain.*

# Sustainability JIP research workstreams

## Decarbonisation workstream

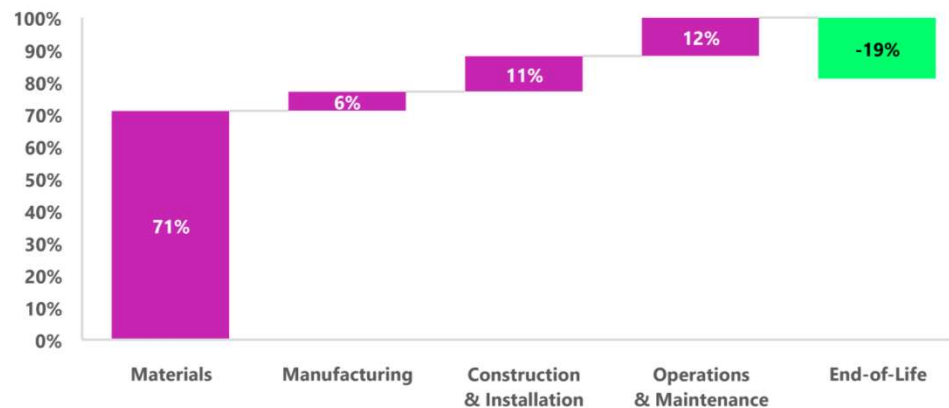
To develop an actionable strategy and roadmap to decarbonisation within the OSW sector.

### Outputs:

- 1) Decarbonisation strategies and high-level transition pathways.
- 2) This will contribute to an Offshore Wind decarbonisation roadmap, with prioritising actions for the industry and relevant stakeholders.

- **Identifying the most impactful levers to reduce carbon emissions in the OSW industry.**
  - Identifying industry-level decarbonisation opportunities with timeframes and gaps for development is challenging due to the large number of stakeholders which need to collaborate and drive change.
  - The OSW industry competes with other sectors (e.g., steel required for multiple components competes with the automotive industry). 'Commercial readiness' of low-carbon materials may not equate to commercial availability.

Emissions within the offshore wind value chain



*The stakeholder action roadmap will be assessed based on impact, time frame and likelihood*



# Thank you for listening



Mary Harvey, Senior Associate

[Mary.Harvey@carbontrust.com](mailto:Mary.Harvey@carbontrust.com)