



# Vestas' Low-emission steel offering

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Group Sustainability

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# Our sustainability strategy

Sustainability in everything we do



### Carbon neutrality

Carbon neutral company by 2030 – without using carbon offsets

Reduce CO<sub>2</sub>e emissions in the supply chain by 45% per MWh generated by 2030



### Zero-waste

Producing zero-waste wind turbines by 2040



### Social responsibility

Safest, most inclusive and socially-responsible company in the energy industry



### Leading the transition

Towards a world powered by renewable energy

# Why is steel in focus?

Steel and iron materials make up 85-90% of a turbine's mass and more than 50% of a wind project's total CO<sub>2</sub>e emissions on a lifecycle basis.

The steel industry is responsible for about 7% of global CO<sub>2</sub>e emissions.

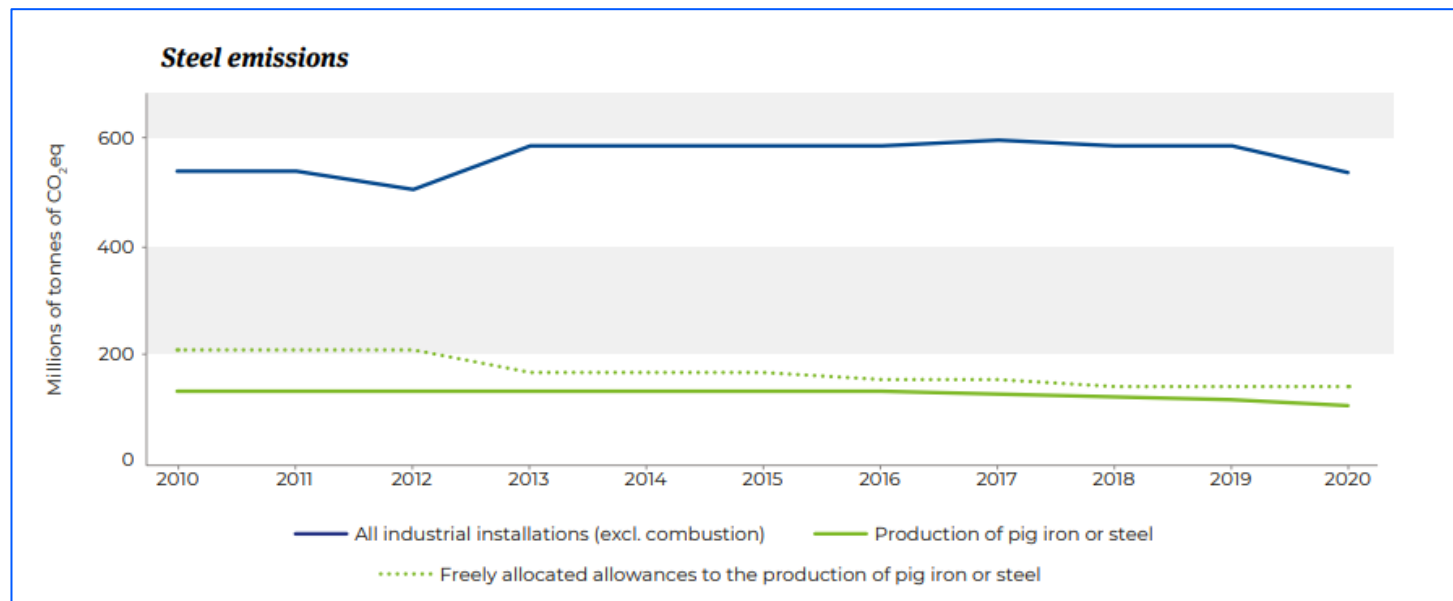
Decarbonising or finding replacements for steel is the **key lever to deliver on net-zero commitments in the wind industry.**

Reducing CO<sub>2</sub>e emissions in wind projects will become an **increasingly important non-financial criteria in tenders.**



# From 2026, new ETS regulations in EU will eliminate free allowances for carbon tax in EU

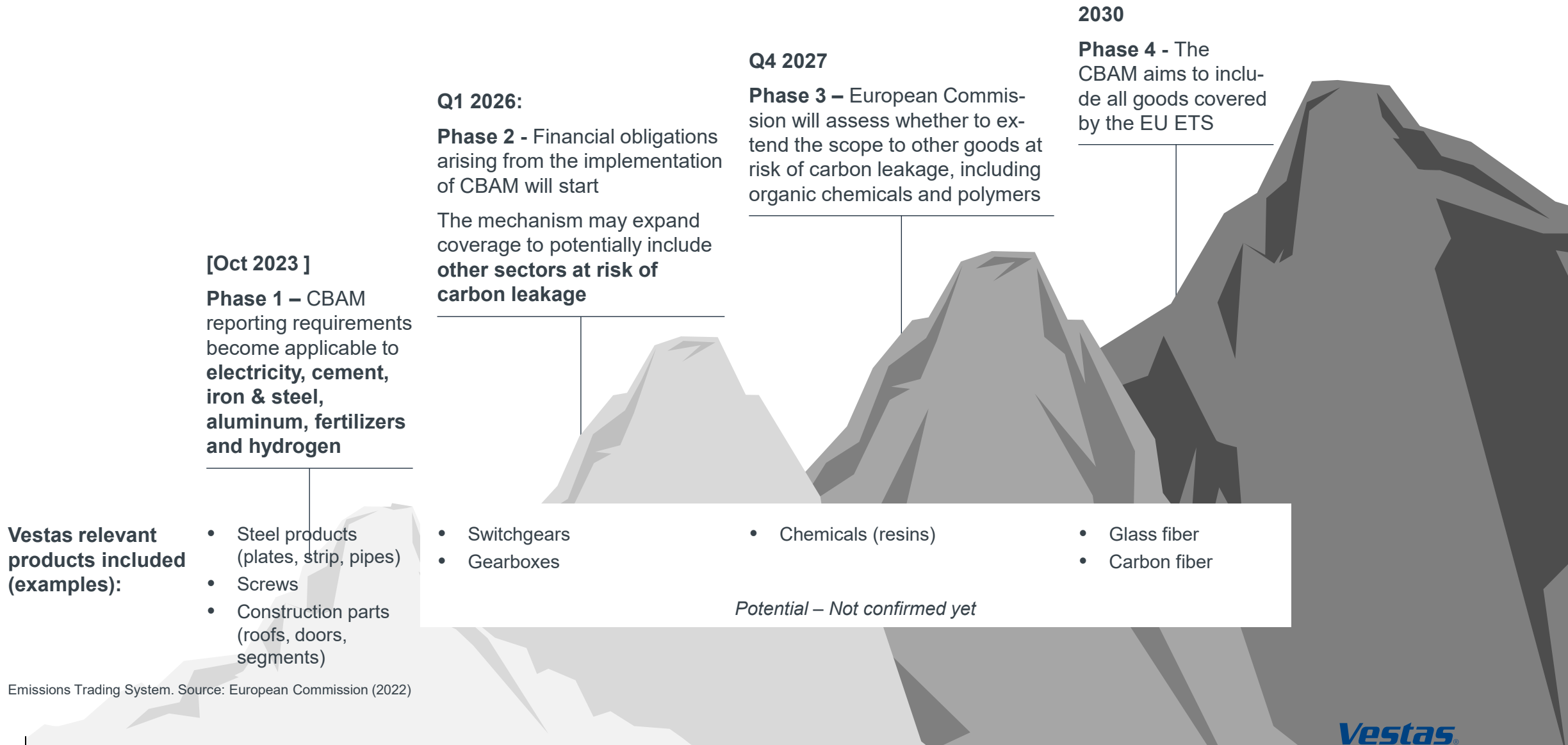
ETS mechanisms have been ineffective in reducing the emissions of the steel industry so far...



...leading to EU implementing new ETS and CBAM regulations from 2026

- **EU ETS certificates today are received as a free allocation** and all other certificates need to be purchased
- **New EU ETS regulations will progressively eliminate free allowances for carbon tax in Europe** for energy-intensive industries, electricity, heat generation, aviation within EEA and maritime transport
- **To avoid carbon leakage from outside the EU, CBAM (Carbon Border Adjustment Mechanism)** is introduced as a carbon tax for carbon-intensive goods imported from non-EU countries

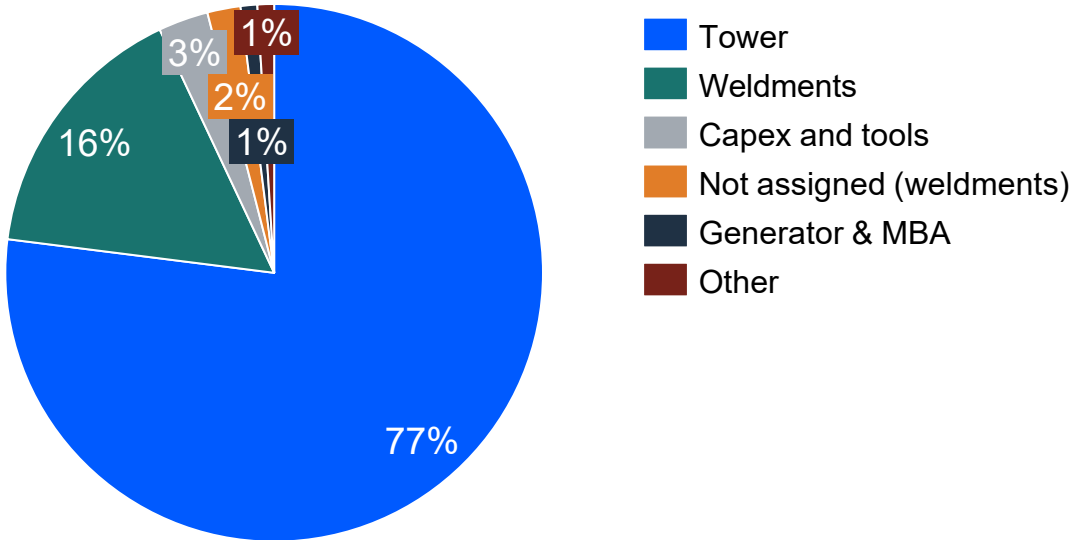
# To make CBAM effective, it is expected to expand its scope to all products that are today covered by the ETS mechanism



Emissions Trading System. Source: European Commission (2022)

# CBAM expected to have largest direct impact on imports of tower parts and weldments (but will impact most EU-imported items indirectly<sup>1</sup>)

## Weight distribution of CBAM relevant parts<sup>2</sup>



Module	Items representing majority of weight
<b>Tower</b>	Parts for bottom section, shell flanges, door segment
<b>Weldments (not assigned mainly weldments)</b>	Main nacelle housing, crane gallery and rear structure
<b>Capex and tools</b>	Counterweight
<b>Generator &amp; MBA</b>	Stator pack

1. Vestas suppliers need to import or produce steel parts to assemble the components they sell to Vestas. All of these items will either have CBAM cost, ETS cost or additional green steel premiums on them  
 2. Aluminum 6,8t not included, mainly profiles, floor plates, gallery, ladders, staircase, busbar covers

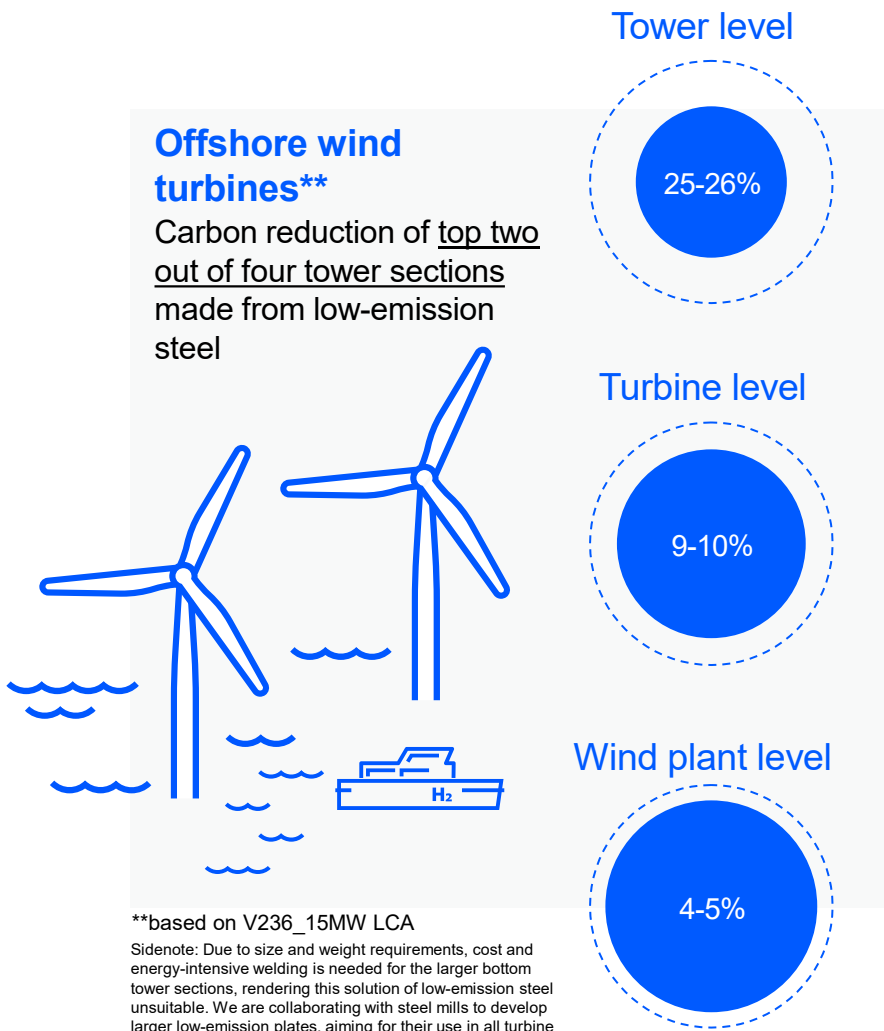
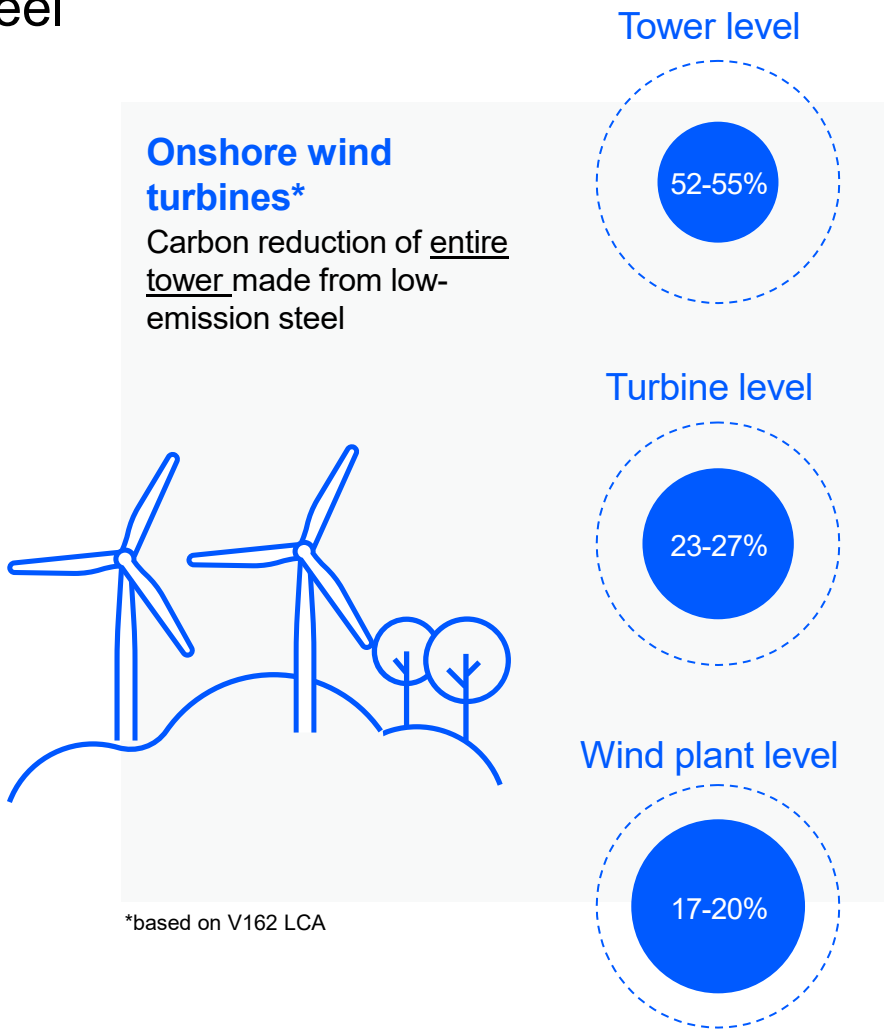
# Green steel = emissions-reduced steel

Emissions levels can be further subdivided based on production technology

	Availability
<p><b>High-emission steel:</b></p> <ul style="list-style-type: none"><li>• Above 2.2 kg CO<sub>2</sub>e/ kg steel produced</li><li>• Conventional steel; legacy blast furnace technology</li></ul>	Currently, 99.997% of total steel in Vestas products
<p><b>Medium-emission steel:</b></p> <ul style="list-style-type: none"><li>• Between 1.4 and 2.2 kg CO<sub>2</sub>e/ kg steel produced</li><li>• Electric arc furnace powered by mixed energy sources; carbon capture</li></ul>	Some availability in the USA from scrap-based sources
<p><b>Low-emission steel:</b></p> <ul style="list-style-type: none"><li>• Between 0.3 and 1.4 kg CO<sub>2</sub>e/ kg steel produced</li><li>• Electric arc furnace powered by clean energy; partial hydrogen reduction</li></ul>	New Vestas product offering in Europe
<p><b>Near-zero emission steel:</b></p> <ul style="list-style-type: none"><li>• &lt;0.3 kg CO<sub>2</sub>e/ kg steel produced</li><li>• Breakthrough technologies, including direct reduced iron from green hydrogen</li></ul>	Future Vestas product offering- Transitional investments are underway

# Breakdown of emission reductions on turbine and plant level

Vestas low-emission steel offering has 66% less CO<sub>2</sub>e emissions per kg of steel than conventional steel





# Low-emission Steel Agreement with ArcelorMittal

**Contract:** Multi-year heavy steel plate reservation agreement that includes all or most of the steel earmarked for the wind industry by ArcelorMittal

**Price premium:** Cost premium, plus additional margin, is passed on to developers and in some cases rate payers if non-price criteria for decarbonisation are present

**Sourcing:** Steel is sourced out of Charleroi, Belgium, transported to Gijón, Spain for heavy plate production, and then used in Vestas tower production in Spain, Poland, or Denmark.



(left to right) Geert Van Poelvoorde, CEO ArcelorMittal Europe, and Henrik Andersen, CEO Vestas, celebrating partnership agreement at the World Economic Forum in Davos



# Conclusions and next steps

## Reducing emissions in the short-term

Scrap-based steel from an electric furnace powered by wind energy reduces CO<sub>2</sub>e emissions by 66%.

## Commercial differentiator

Low-emission steel is a competitive differentiator in public tenders with non-price criteria on decarbonization, a procurement criterion for some leading energy developers, and helps mitigate the impact of ETS/CBAM prices.

## Scaling up volumes with the industry

Vestas aims to procure increasing volumes of low-emission steel towards 2030, and to expand our geographic coverage of suppliers.