

Welcome to **Vestas Insights on Sustainability**

17th March 2021



Agenda

Welcome

Richard Baylis, Vice President Sales East & Business Development

A New Approach to Sustainability

Lisa Malmquist Ekstrand, Global Head of Sustainability

Focus: Circular Economy

Peter Garrett, Senior Environmental Specialist, QSE

A New Approach To Sustainability

Lisa Ekstrand

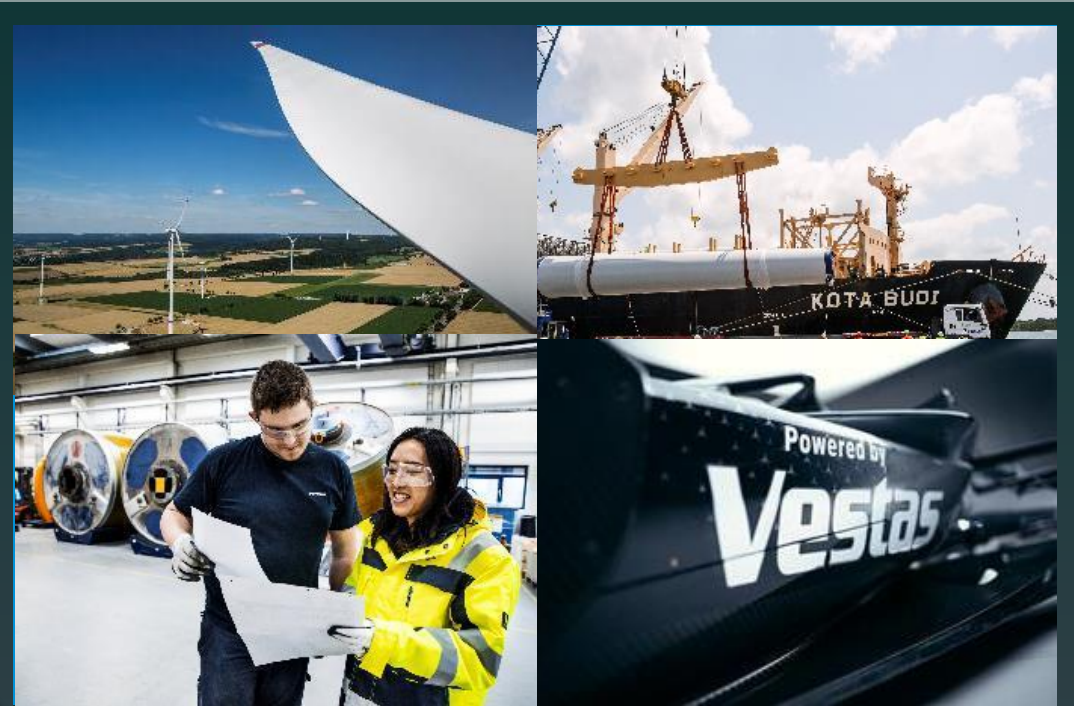


January 2020: Vestas launches a sustainability strategy 'Sustainability in everything we do'

Integrating sustainability into the full value chain



From 'Sustainability is the business we are in'



To 'Sustainability in everything we do'

SUSTAINABILITY IN EVERYTHING WE DO

CARBON FOOTPRINT

Carbon neutral company by 2030 – without using carbon offsets

Reducing CO₂ emissions in own operations by 55% by 2025, without using carbon offsets

Reducing CO₂ emissions in own operations by 100% by 2030, without using carbon offsets

Reducing CO₂ emissions in the supply chain by 45% per MWh generated by 2030 compared to 2019



CIRCULARITY

Producing zero-waste wind turbines by 2040

Hub and blade to be 50% recyclable by 2025

Hub and blade to be 55% recyclable by 2030



OUR EMPLOYEES

Safest, most inclusive & socially-responsible workplace in the energy industry

25% women in leadership positions by 2025 and 30% by 2030

Inclusive leadership training and unconscious bias training mandatory part of all talent and leadership training by 2021

Reduce the rate of total recordable injuries to 1.5 by 2025, and to 0.6 by 2030



ENERGY TRANSITION

Leading the transition towards a world powered by sustainable energy

Take a leading role in driving electrification beyond the power sector

Team up with other sustainability leaders to drive change

Supporting our partners in their journey to become more sustainable



SUSTAINABILITY - A MUST-WIN BATTLE IN VESTAS

We believe sustainability is future-proofing and an opportunity for value creation

THE EXTERNAL ENVIRONMENT



High sustainability awareness - in 2018-2019 driven by grassroots movements and in 2020 by green economic recovery policies



Customers setting new standards for sustainability - customers expect CO2 reductions and circularity across the value chain



Investors require sustainability strategies with clear KPIs and short-term and long-term targets, 32% of our share capital is owned by investors with responsible mandate



Millennials are seeking purposeful companies - holistic view of sustainability key to meet current and future employee expectations

OUR RESPONSE



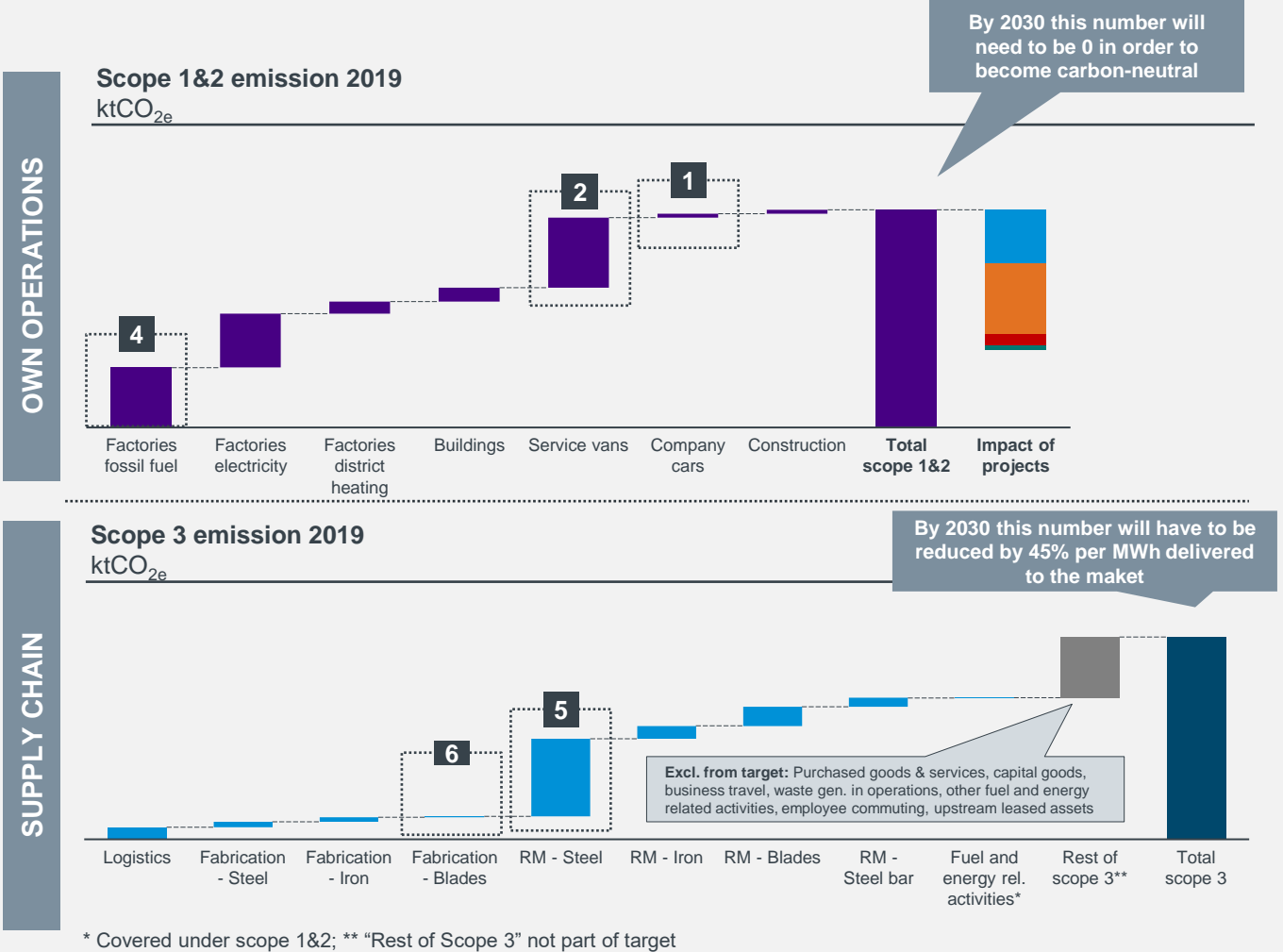
KEY FOR SUCCESS

- 1. Concrete sustainability optimization projects** that deliver results for us (and our customers) in the short/medium term – this is not only a vision
- 2. Sustainability partnerships/collaboration with suppliers and customers** – this is a joint journey
- 3. Delivery require coordination and commitment across all EVP areas** – a strong cross-functional organisational set-up is key

VESTAS SUSTAINABILITY PRIORITY PROJECTS

Six projects selected for 2020/21 based on CO2 reduction impact, customer demand & opportunities

| 2020/21 PROJECTS | |
|------------------|---------------------------------|
| 1 | BENEFIT CARS 2020-2025 |
| 2 | SERVICE VEHICLES 2020-2025 |
| 3 | CHARGERS |
| 4 | PILOT – REDUCE CO2 FROM HEATING |
| 5 | CO2 REDUCED STEEL IN TOWER |
| 6 | BLADE RECYCLING PROJECTS |



SUSTAINABILITY GOVERNANCE

Our Board of Directors (BoD) has the ultimate responsibility and oversight over Vestas sustainability performance through its different committees.

Our Executive Management reports to the BoD, sets the strategic sustainability and exercises oversight over the performance. To reflect the strategic importance of sustainability to our business, in 2020 the Head of Sustainability, Lisa Malmquist Ekstrand, started reporting directly to the Group President and CEO, Henrik Andersen, on a monthly basis.

The Sustainability Committee prioritises, oversees, and coordinates cross-functional sustainability initiatives across the entire organisation. The Committee represents Vestas in its entirety, so each member speaks for their respective function or department.

Our Sustainability Strategy department is responsible for preparing and coordinating our sustainability strategy. The department reports to the Sustainability Committee multiple times a year and to our Executive Management and Board of Directors at least once a year.



SUSTAINABILITY HIGHLIGHTS IN 2020

ENVIRONMENTAL



Carbon footprint

- Our installed fleet displaced 187 million tonnes of CO₂e in 2020 – equal to removing almost half of the registered EU passenger cars for a year
- Reduced scope 1&2 emissions by 33%
- Replaced 35% of benefit car fleet with EVs/PHEVs, and introduced 127 sustainably fuelled service vehicles
- Signed a partnership with Enel X to accelerate the electrification of our company fleet



Circularity

- Launched the cross-industrial and interdisciplinary project DecomBlades, designed to help expand and scale the value chain for blade recycling
- Implemented waste reduction initiatives and targets across Manufacturing in anticipation of launching a comprehensive circular economy strategy in 2021



Suppliers

- Set expectations to 27 suppliers to use 100% renewable electricity, measure waste and carbon emissions and set ambitious reduction targets in those areas

SOCIAL



Safety

- Minimized risks to keep our employees safe in the COVID- 19 pandemic, while providing essential work to keep a globally stable energy supply
- Reduced Total Recordable Injury Rate to an all-time low of 3.3



Diversity & Inclusion

- Found no structural issues of pay inequality in our external pay audit of seven major markets
- Reviewed our recruitment processes, provided unconscious bias trainings to all our recruiters and invested in technology capable of identifying biased language in our job ads

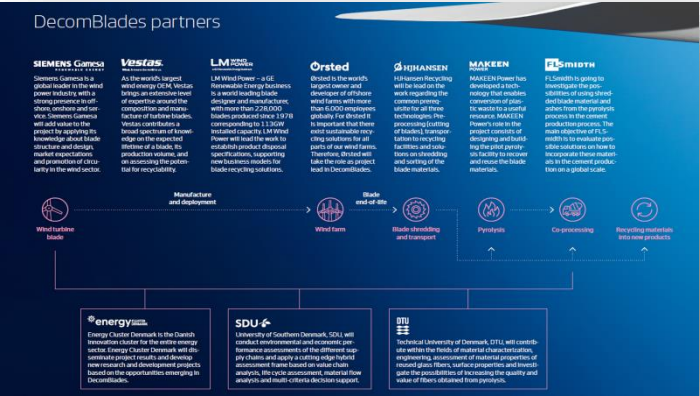


Corporate Social Responsibility

- Launched a three-pillar approach for business-related human rights under the heading “Leading a responsible and inclusive energy transition”
- Ranked #1 for our approach to human rights among twenty large Danish companies by the Danish Institute for Human Right.

SUSTAINABILITY COLLABORATIONS ANNOUNCED SINCE JAN 2020

Examples



Vestas to electrify vehicle fleet as wind giant and Enel X start energy transition collaboration

Danish group moves to decarbonise company cars and service fleet as it explores new opportunities with Enel unit

Vestas and Hempel join forces to protect turbine surfaces

Partnership to reduce treatment costs and find sustainable coating solutions

16 September 2020 | Onshore Wind

RELATED STORIES

Vestas and coating solutions supplier Hempel have formed a new strategic partnership to cooperate around innovative solutions for surface protection of wind turbines.

The joint Vestas and Hempel ambition is to reduce surface treatment costs and support sustainable coating solutions.

Vestas invests in Swedish firm that builds wooden towers for wind turbines

PUBLISHED THU, FEB 18 2021 9:25 AM EST

Amir Farooqi

KEY POINTS

- Danish turbine maker says it has become a minority investor in Modvion, which uses laminated veneer lumber, or LVL, to make turbine towers.
- As technology develops, the size of wind turbines is increasing, but this poses challenges when it comes to the logistics of deployment.

RELATED

22:40

Vestas 522 289 följare 10 tim ·

At Vestas, we are taking the lead for sustainable supply chains, and we are proud that no less than 27 of our suppliers have agreed to partner with us on this journey. Already in 2021, these suppliers are committing to:

- 100 percent renewable electricity
- Calculating and reporting carbon emissions for products delivered to Vestas
- Setting targets for scope 1 and 2 emission reductions by 2030 without using offsets
- Measuring and reporting production waste for products delivered to Vestas

By 2022, they will also calculate and set targets for emissions from their supply chain (scope 3).

Together we'll deliver on our sustainability strategy, Sustainability in Everything We Do, and reach our goals of reducing carbon emissions from our supply chain by 45 percent per MWh generated by 2030 and zero-waste wind turbines by 2040. The 27 strategic suppliers cover 30 percent of our material spend.

Want to find out more? Click here: <https://fclid.ly/vr3dhh>

Se översättning

Vestas

A big thank you to the **27 suppliers** embracing our journey towards **sustainable leadership** in our supply chain

Circular Economy

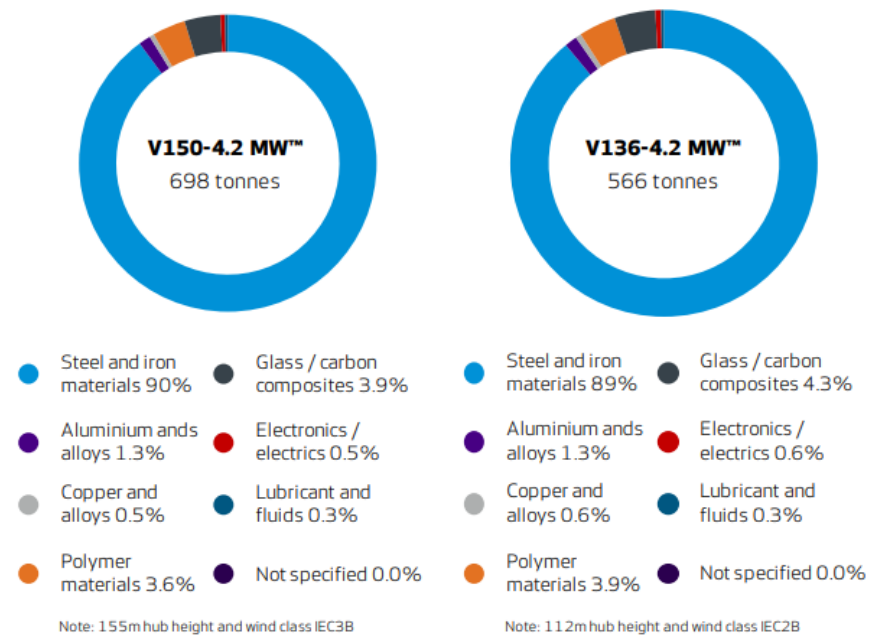
Peter Garrett

Global QSE

MATERIAL COMPOSITION

By knowing how materials contribute to environmental performance
it is possible to make fact-based and informed decisions

4 MW Platform Turbines



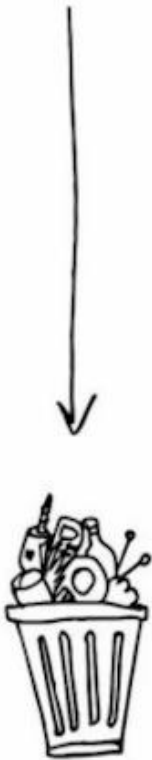
Managing Materials at End-of-Life

- By weight, around **80-90% of a Vestas wind turbine is recyclable**, depending on turbine type¹
- Life Cycle Assessment is used to provide **detailed knowledge regarding material composition**, where **around 25,000 parts are mapped per turbine**
- Being in control of chemicals and hazardous substances for the development, manufacturing and service of Vestas turbines is a core part of our operations and managed through the **Vestas Chemical and Material Blacklist**

¹ Vestas 4 MW Platform

WHAT DO WE MEAN BY CIRCULARITY?

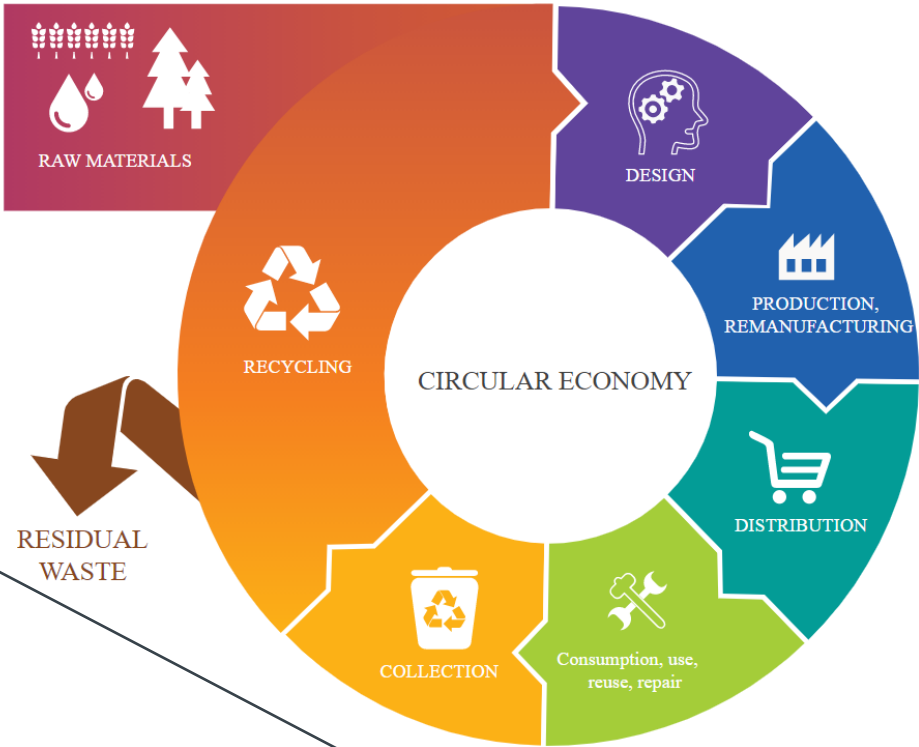
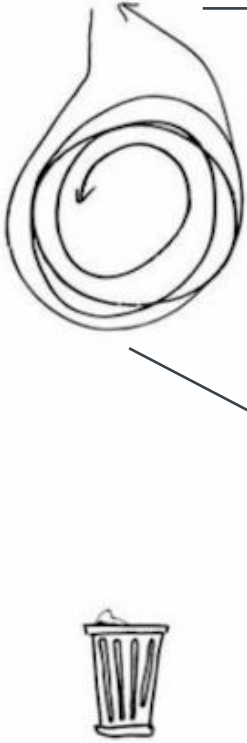
LINEAR ECONOMY



RECYCLING ECONOMY

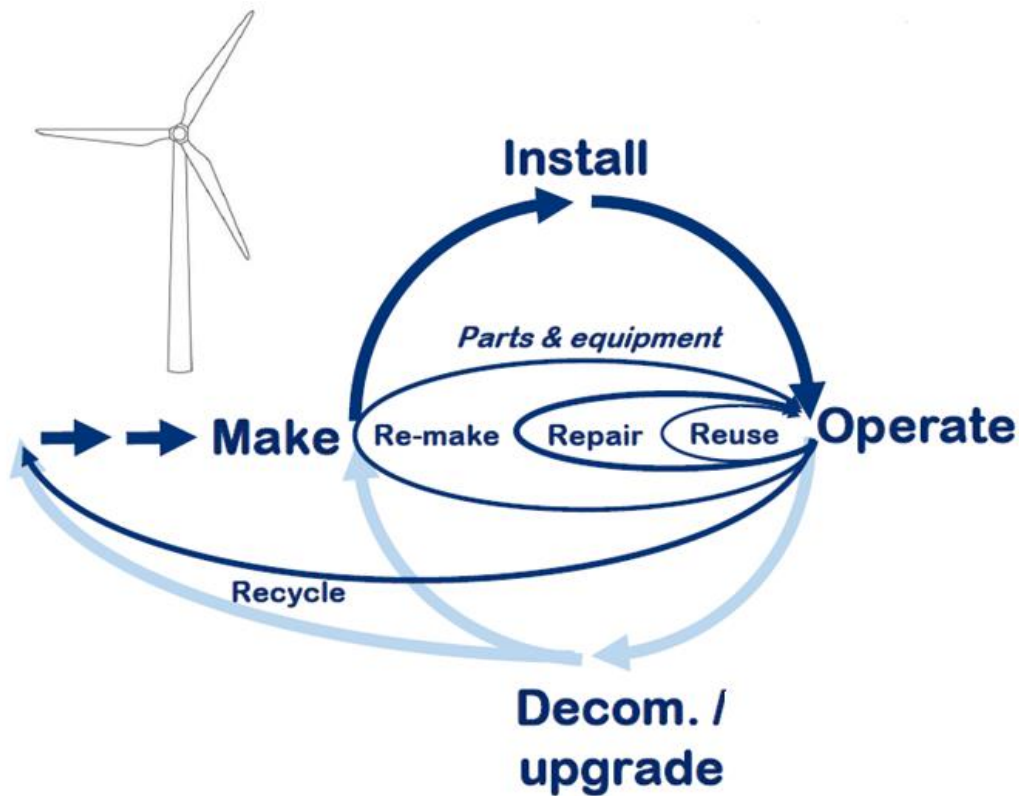


CIRCULAR ECONOMY



MINDSET FOR CIRCULARITY: VESTAS WASTE HOT SPOTS

Focus is to minimise waste in the value-chain and end-of-life



| | |
|-------------------------------|--|
| 1. Minimise value chain waste | Production waste: Blades: 20-40% Towers: 1-5% Remainder: 1-5% |
| 2. Increase Recycled Content | Recycled content: 26% of mass |
| 3. Maximise End-of-Life Value | Turbine Recyclability: 87% Recyclable Composite non-recyclable: ~10% |

V136-4.2MW
Turbine weight: 560 tonnes
Balance of Plant weight: 1650 tonnes
Source: Life Cycle Assessment V136-4.2MW <https://www.vestas.com/en/about/sustainability#!available-reports>

VESTAS DEFINITION OF ZERO WASTE INITIATIVE

ZERO WASTE DEFINITION

Zero waste **aspires to prevent waste and develop a circular economy by:**

- Designing out waste
- Keeping materials in use
- Regenerating natural systems

It aims to **rethink, redesign, reduce, reuse and recycle**, without use of incineration or landfilling.

ZERO WASTE VALUE-CHAIN

Waste equals costs for **all Vestas operations and suppliers**

Our initiatives **focus on the full value-chain** and the **complete wind turbine and power plant**.

Focus is on **composite materials by:**

Production of a recyclable wind turbine blade and **prevention of waste** in production.

ZERO WASTE TARGETS

We have set **zero waste targets** for specific areas:

Supplier waste reporting:

Suppliers to **report waste by 2021** and waste **targets** to be set

Rotor recyclability(hub and blades):

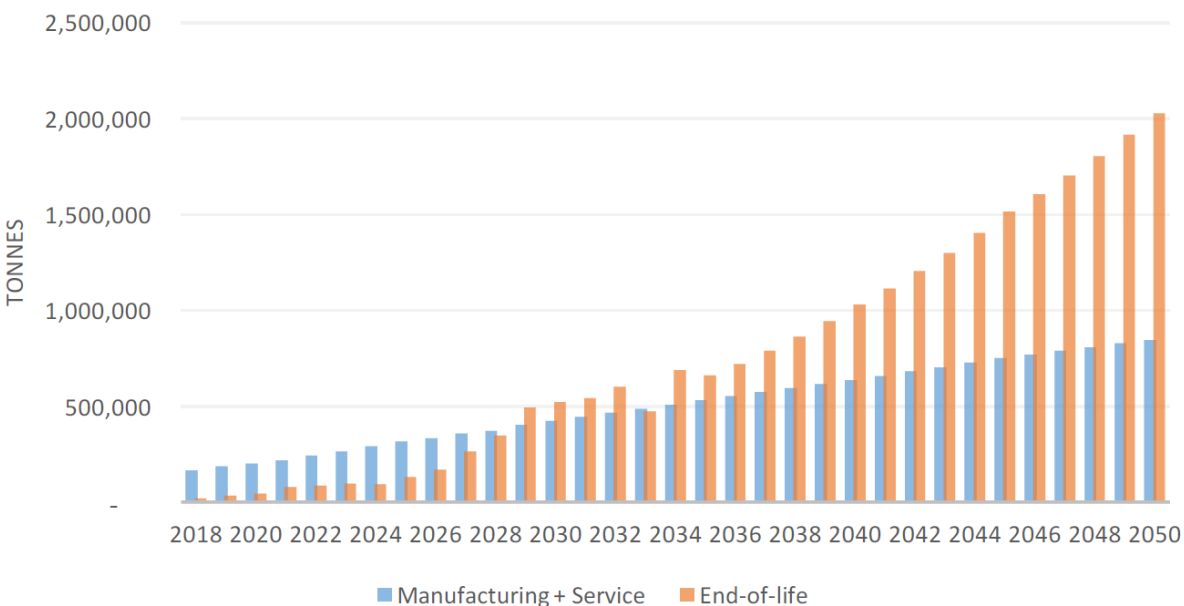
To increase from 42% to **50% in 2025** and **55% in 2030** (by mass)

References:

- [Zero Waste International Alliance \(ZWIA\)](#)
- [Ellen MacArthur Foundation](#)
- [EU Waste Prevention](#)

The challenge: End of life blades

Catalyse the value-chain for end-of-life

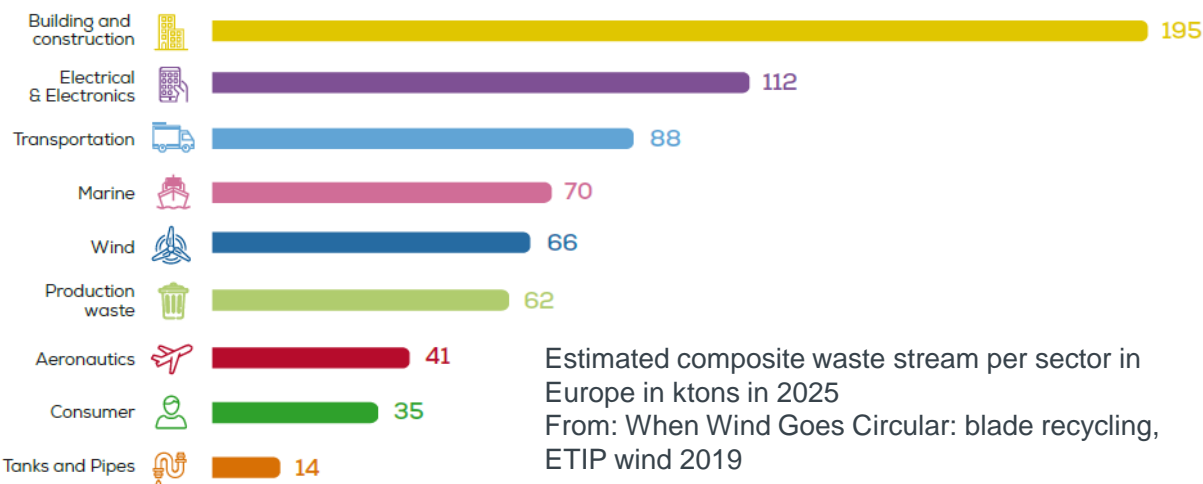


Global wind turbine blade waste projection up to 2050. Liu and Barlow 2017.

Blade waste in the news:

- <https://www.information.dk/debat/2020/02/vindmoelleindustrien-styr-paa-farlige-affald-foer-kan-kalde-groen>
- <https://www.bbc.com/news/business-51325101>
- <https://www.bloomberg.com/news/features/2020-02-05/wind-turbine-blades-can-t-be-recycled-so-they-re-piling-up-in-landfills>
- <https://www.americanexperiment.org/2019/08/wind-turbine-landfill-mass-grave-report-decide/>
- <https://www.welt.de/wirtschaft/plus202835056/Windrad-Schrott-Das-70-000-Tonnen-Problem-der-Energiewende.html>
- <https://www.eike-klima-energie.eu/2019/02/07/entsorgung-ungeklaert-wohin-mit-den-fluegeln-ausrangierter-windturbinen/>

Estimated composite waste stream per sector in ktons in 2025



Estimated composite waste stream per sector in Europe in ktons in 2025
From: When Wind Goes Circular: blade recycling, ETIP wind 2019



The challenge: End of life blades

DecomBlades consortium awarded funding for a large, cross-sector wind turbine blade recycling project

DecomBlades partners



Siemens Gamesa is a global leader in the wind power industry, with a strong presence in off-shore, onshore and service. Siemens Gamesa will add value to the project by applying its knowledge about blade structure and design, market expectations and promotion of circularity in the wind sector.



As the world's largest wind energy OEM, Vestas brings an extensive level of expertise around the composition and manufacture of turbine blades. Vestas contributes a broad spectrum of knowledge on the expected lifetime of a blade, its production volume, and on assessing the potential for recyclability.



LM Wind Power – a GE Renewable Energy business is a world leading blade designer and manufacturer, with more than 228,000 blades produced since 1978 corresponding to 113GW installed capacity. LM Wind Power will lead the work to establish product disposal specifications, supporting new business models for blade recycling solutions.



Ørsted is the world's largest owner and developer of offshore wind farms with more than 6,000 employees globally. For Ørsted it is important that there exist sustainable recycling solutions for all parts of our wind farms. Therefore, Ørsted will take the role as project lead in DecomBlades.



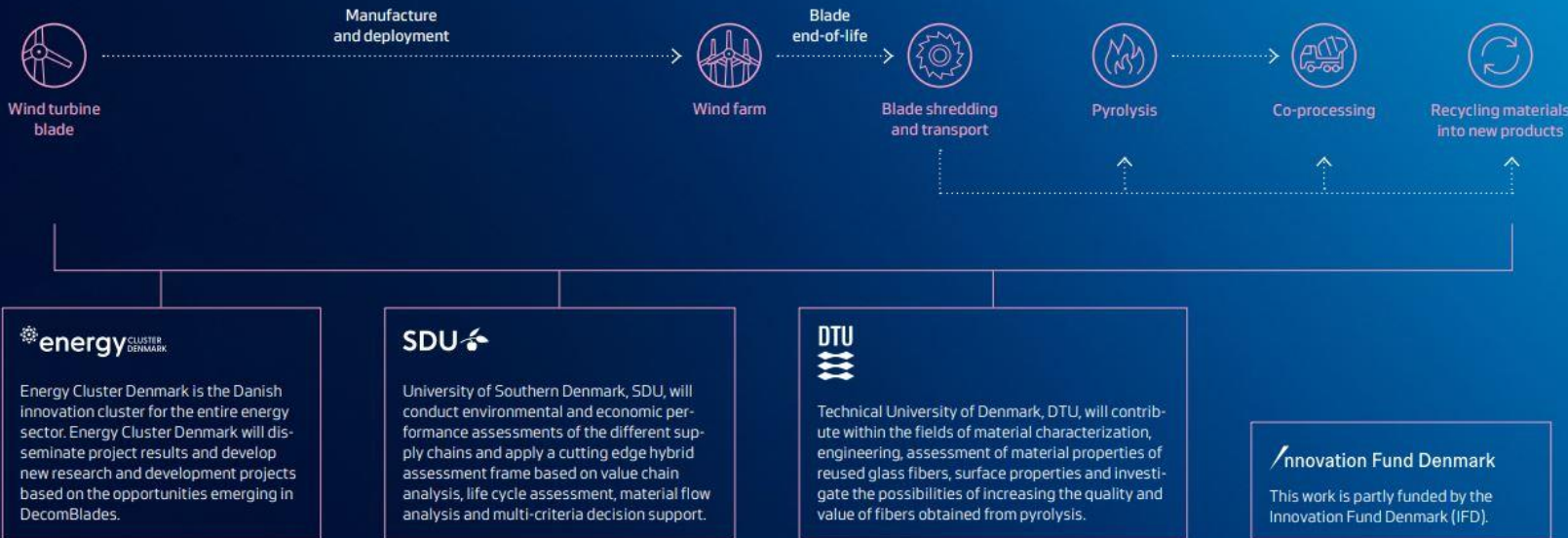
HJ Hansen Recycling will be lead on the work regarding the common prerequisite for all three technologies: Pre-processing (cutting of blades), transportation to recycling facilities and solutions on shredding and sorting of the blade materials.



MAKEEN Power has developed a technology that enables conversion of plastic waste to a useful resource. MAKEEN Power's role in the project consists of designing and building the pilot pyrolysis facility to recover and reuse the blade materials.



FLSmidth is going to investigate the possibilities of using shredded blade material and ashes from the pyrolysis process in the cement production process. The main objective of FLSmidth is to evaluate possible solutions on how to incorporate these materials in the cement production on a global scale.



Thank you for your attention.

