



# **BLADE LIFE CYCLE - TODAY'S REALITY AND TOMORROW'S DEMAND**

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# LM Wind Power

## A leading blade supplier to the wind industry



**15** blade  
factories

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**13,998** people worldwide  
year start - 2019

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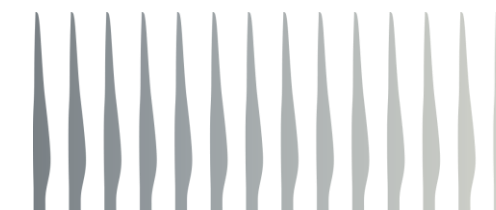
**1/5** turbines in the world  
have LM Wind Power blades

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Global capacity and supply chain

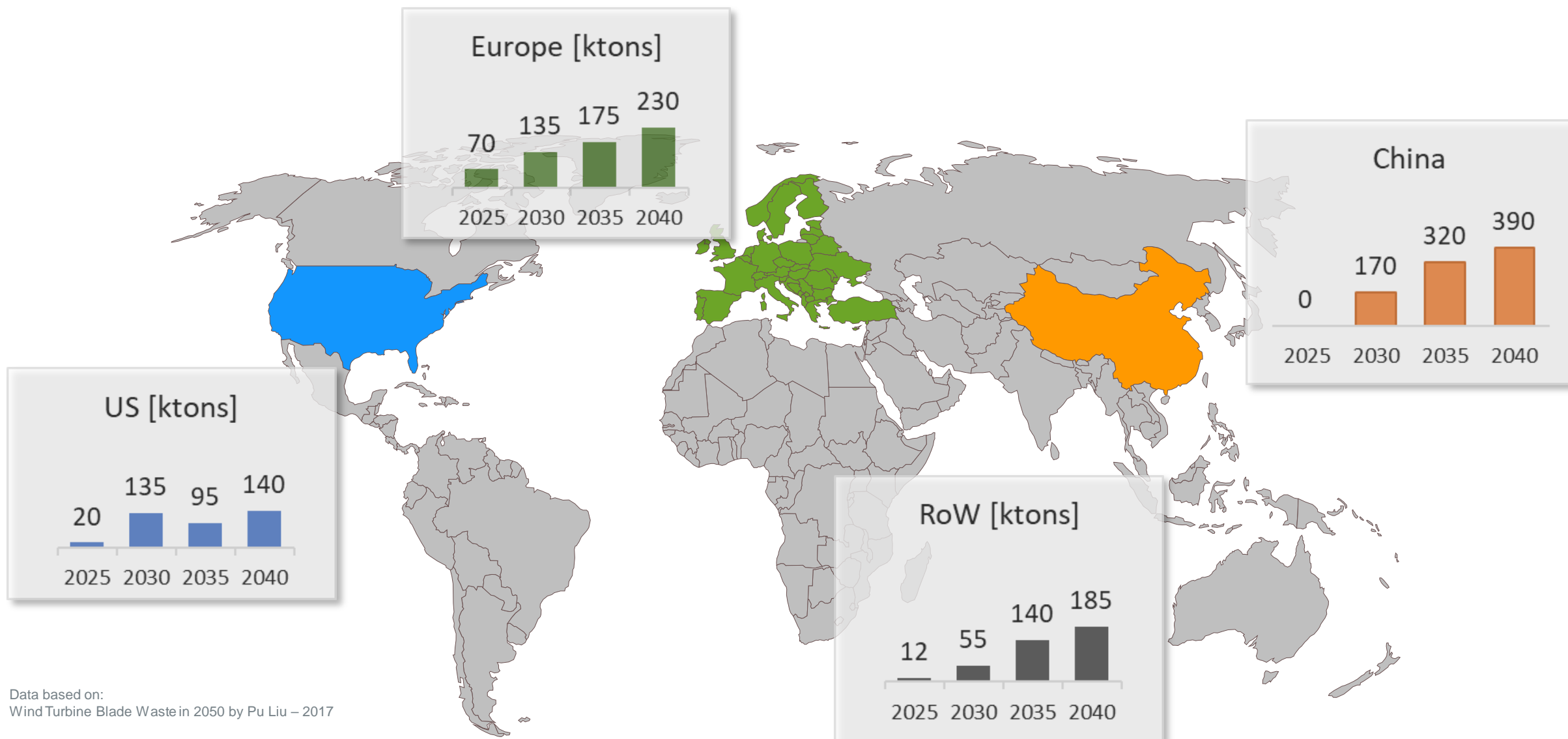
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**215,000** blades produced  
since 1978

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# Volume of end-of-life (EoL) blades will increase significantly in the coming years



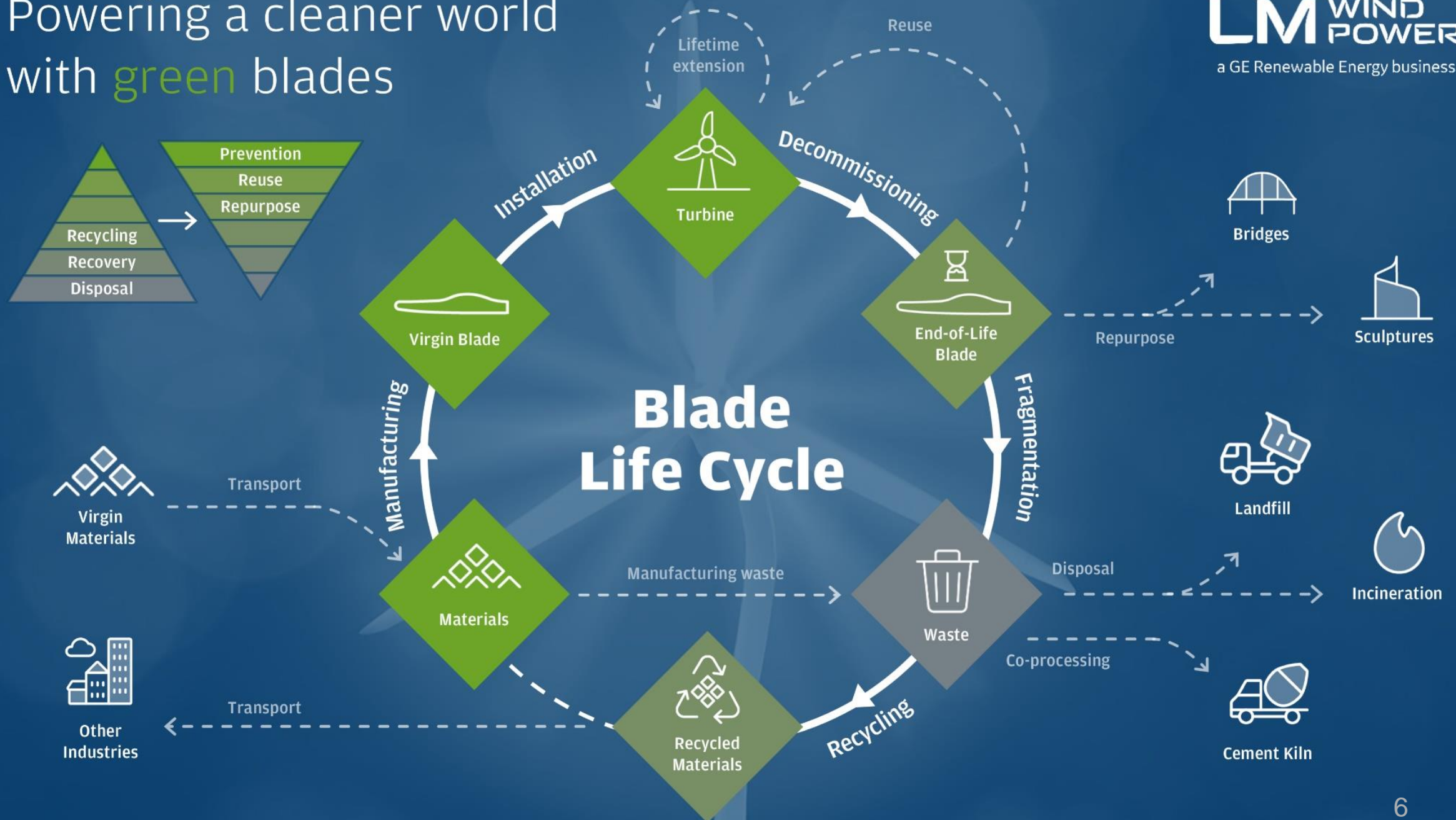
Data based on:  
Wind Turbine Blade Waste in 2050 by Pu Liu – 2017

# EoL blades will represent a major part of the composite waste stream in Europe

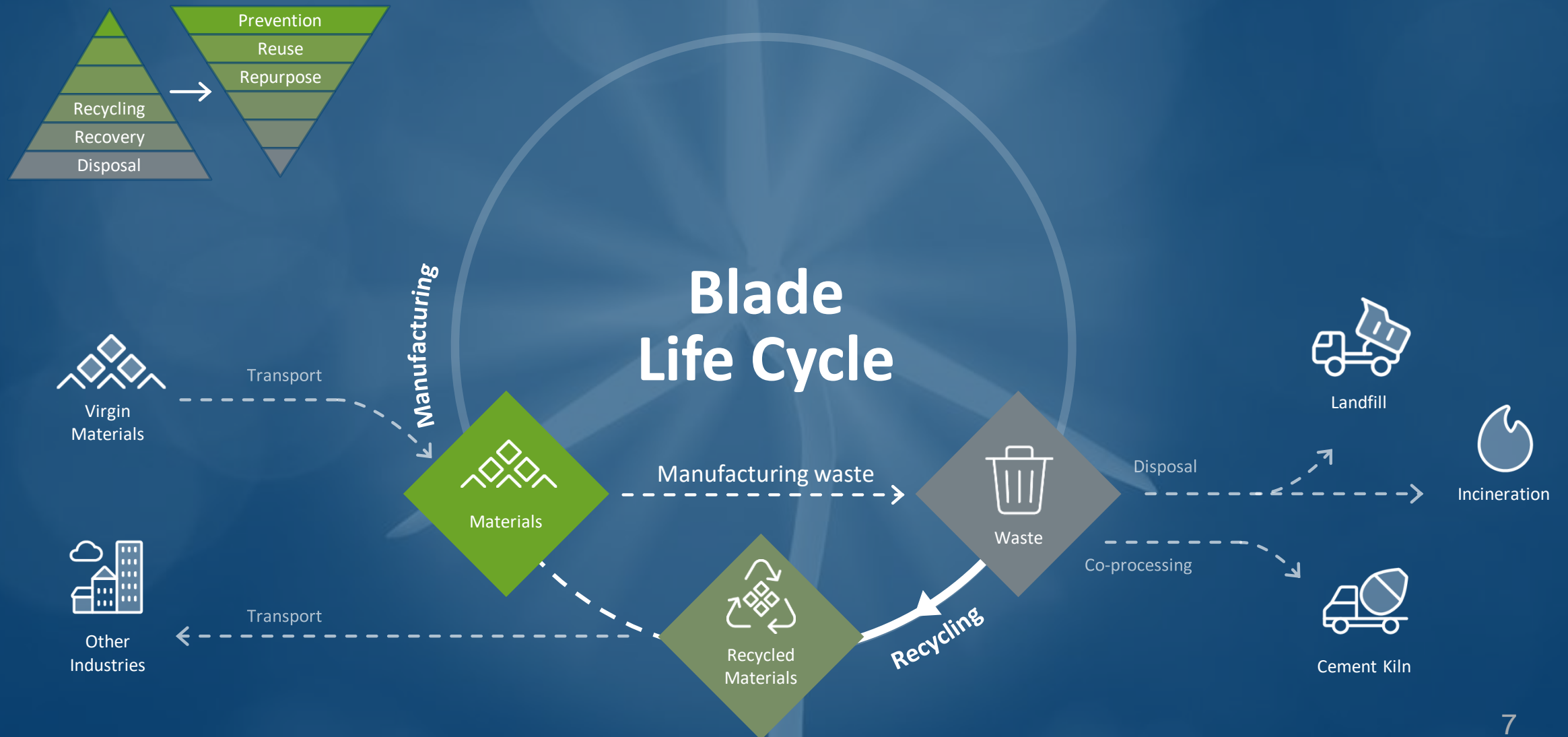
Estimated composite waste per sector (ktons)



# Powering a cleaner world with green blades

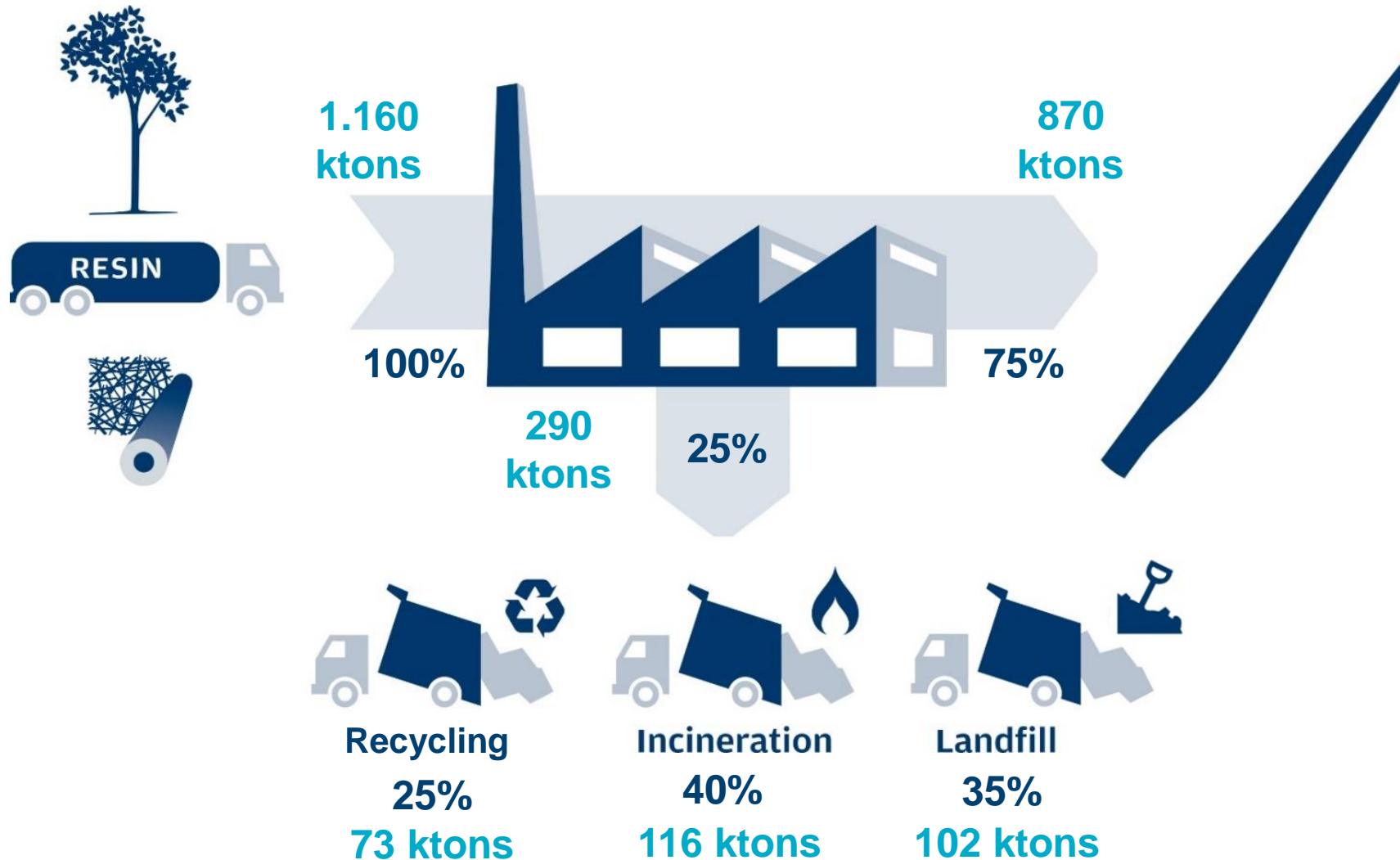


# Powering a cleaner world with **green** blades





# Waste reduction must occur across the full blade life cycle



# Recommendations for next steps

## Composite recycling technologies

- » Perform a study comparing the **economic viability** of recycling technologies, including **market barriers** associated with different end-uses
- » Set up a **large-scale demonstration** of industrialized **recycling of wind turbine blades** scalable to the upcoming volumes of end-of-life blades
- » **Demonstrate re-use of materials from recycled blades in other sectors**
- » Establish a **European cross sectorial platform** to share best practices in recycling composites

## Develop new materials for blades

- » Develop **new high-performance materials** matching or outperforming current state-of-the-art materials for wind turbine blades, while securing fully sustainable and easily recyclable blades at end-of-life
- » **Demonstrate the newly developed materials in sustainable design** of wind turbine blades
- » **Develop “smart” materials** with embedded sensors to **enable health monitoring and health forecasting capabilities**, aiming at increasing maintenance intervals and overall lifetime



# Thank you for your time

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