



REFRESH

smart dismantling, sorting and REcycling of
glass Fiber REinforced composite from wind
power Sector through Holistic approach

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Project Coordinator



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IMPROVING SUSTAINABILITY IN THE MANUFACTURING SECTORS

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Introduction to REFRESH Project

Topic title: Demonstration of innovative materials, supply cycles, recycling technologies to increase the overall circularity of wind energy technology and to reduce the primary use of critical raw materials.

Type: Innovation Action, TRL expected 6-7

Objective: Development of large-scale industrial demonstration of composite material recycling technologies to increase the circularity of wind technology, proposals are expected to demonstrate recycling technologies at large-scale in an operating environment.



Total Budget

13,5 M€



EC Co-funding

70%



Duration

4 Years (Start: 01/01/23 - End: 31/12/26)



REFRESH Consortium

11 partners from 5 different countries:

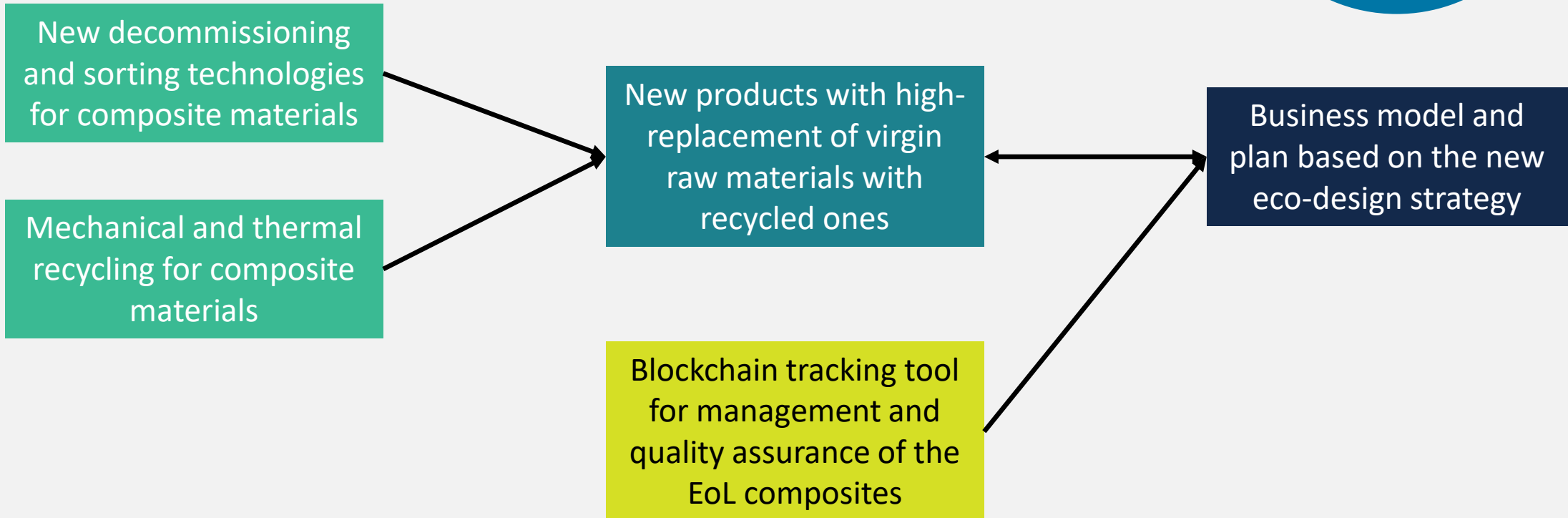
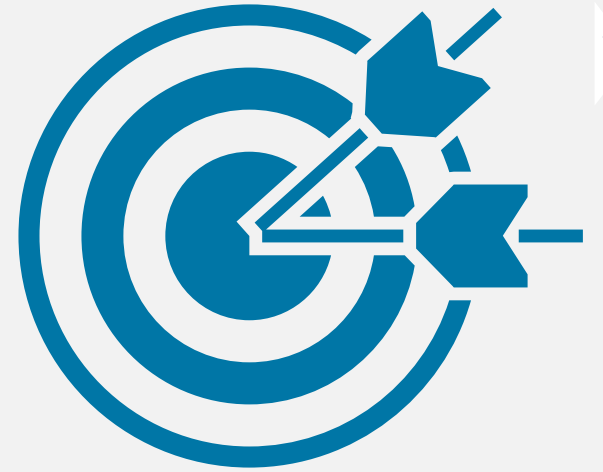
- Waste recycling and remanufacturing companies
- Engineering and consulting companies
- Research and development companies
- Access to stakeholders in the composites sector manufacturers

RINA is the project coordinator.

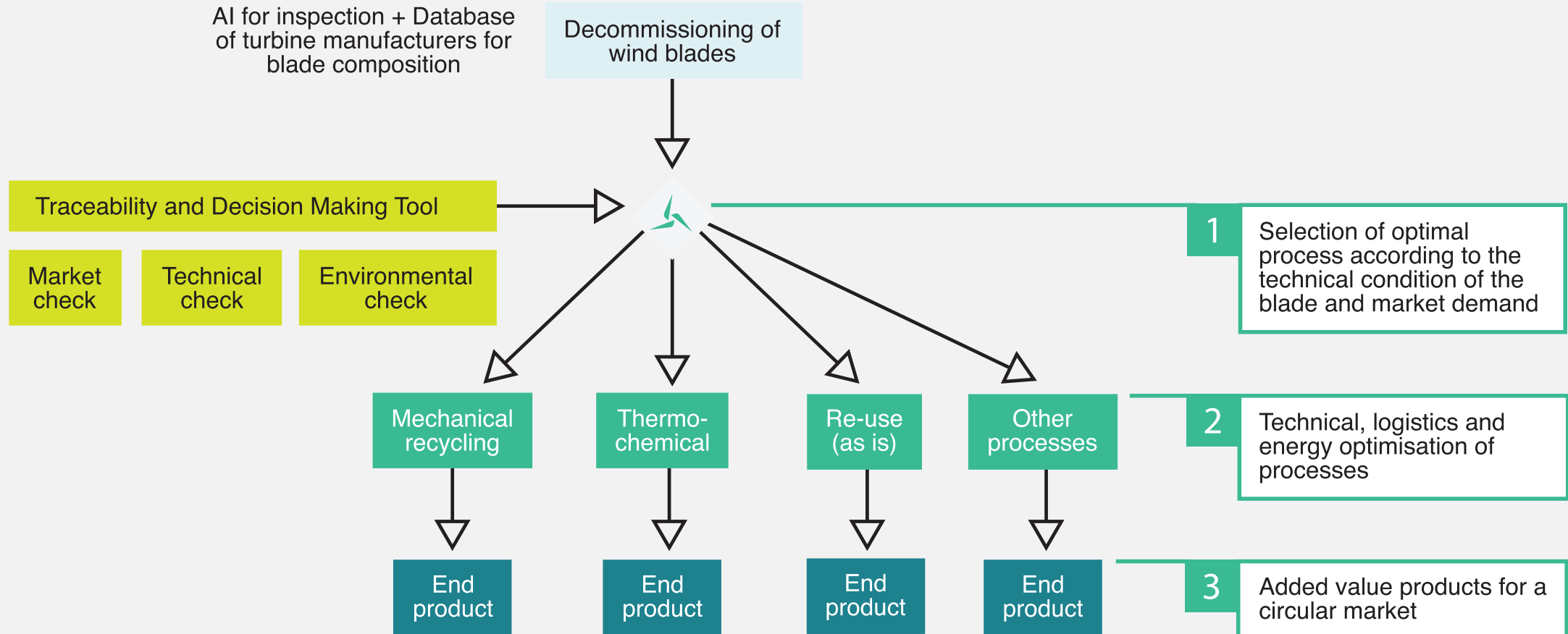


Objectives and Scope

REFRESH aims to develop and demonstrate a novel circular, smart system for an improved **recycling (>90%) of glass fiber-reinforced composites** derived from wind turbine dismantling or re-blading, **with high purity level**.



Methodology – The REFRESH Concept



Expected impacts

Reduced use of virgin raw materials

	Potential Virgin Raw Material Savings				
REFRESH Product	Benchmark Products	PENETRATION RATE OF 5% - 5 Y FROM PROJECT END		PENETRATION RATE OF 12% - 8 Y FROM PROJECT END	
Products manufactured with mechanically recycled G-FRC					
Rigid Panels	solid surface raw materials	5.5	Mton	13.3	Mton
Composites structures and components	GFRC	5.5	Mton	13.3	Mton
	Polyurethane	1.5	Mton	3.6	Mton
Indoor acoustic panels	wood panels fiber	3.5	Mton	8.5	Mton

Increased amount of recycled composite materials from wind power sector

	PENETRATION RATE OF 5% - 5 Y FROM PROJECT END		PENETRATION RATE OF 12% - 8 Y FROM PROJECT END	
GFRC	22	Mton	53	Mton
Insulation	5	Mton	12	Mton

New job opportunities in:

- waste management
- eco-design
- digital
- re-manufacturing

	New Jobs
2029	173
2030	1477
2031	2307
2032	4806

Main project solutions and exploitation perspective after project end

Solutions	Partners	How	Time to market
Decommissioning and advanced sorting technology	STD, MTB	Portable system for dismantling and shredding of wind blades	4 years after the conclusion of further demonstration activities
Mechanical recycling	GEES	Technology and formulation for secondary raw materials recycling	2 years after the conclusion of further demonstration activities
MW-assisted Thermal Cracking system	CIRCE	Technology to obtain chopped glass fibres	3 years after the conclusion of further demonstration activities
Electric Thermal Cracking system	GJENKRAFT	Technology to obtain chopped glass fibres and added value chemicals	3 years after the conclusion of further demonstration activities
Cloud Traceability Platform (CTP)	TECNALIA	Traceability services based on blockchain	3 years after project end
Eco-Design Strategy	CETMA	Strategy products manufacturing	Just after project end
3D printing	TECNALIA	New process and technology for additive manufacturing with secondary glass fiber	5 years after project end
Optimized composite materials for infrastructure application	ACCIONA	Structural and non-structural components for infrastructure	5 years after project end

The background of the slide is a photograph of a wind farm. Several large white wind turbines are visible, silhouetted against a bright, hazy sunset sky. The sun is low on the horizon, creating a strong orange and yellow glow. The turbines are situated on a hillside covered in green vegetation. In the foreground, a dirt road or path leads up towards the turbines. The overall scene is peaceful and scenic.

Thank you for your attention

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