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

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WindEurope EoLIS 2023

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Photo by Nicholas Doherty on Unsplash

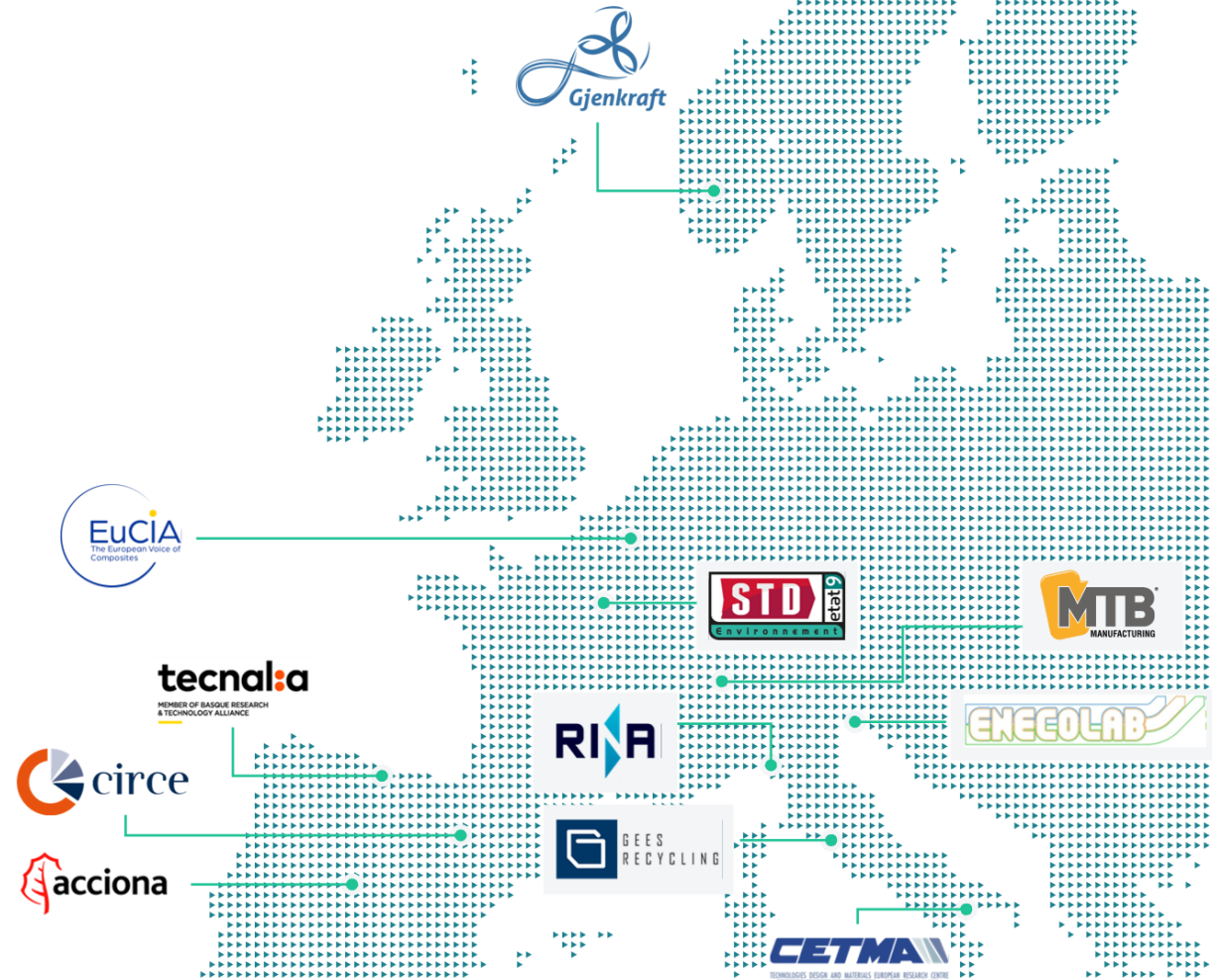
REFRESH Consortium

Horizon Europe
101096858

11 partners from 5 different countries:

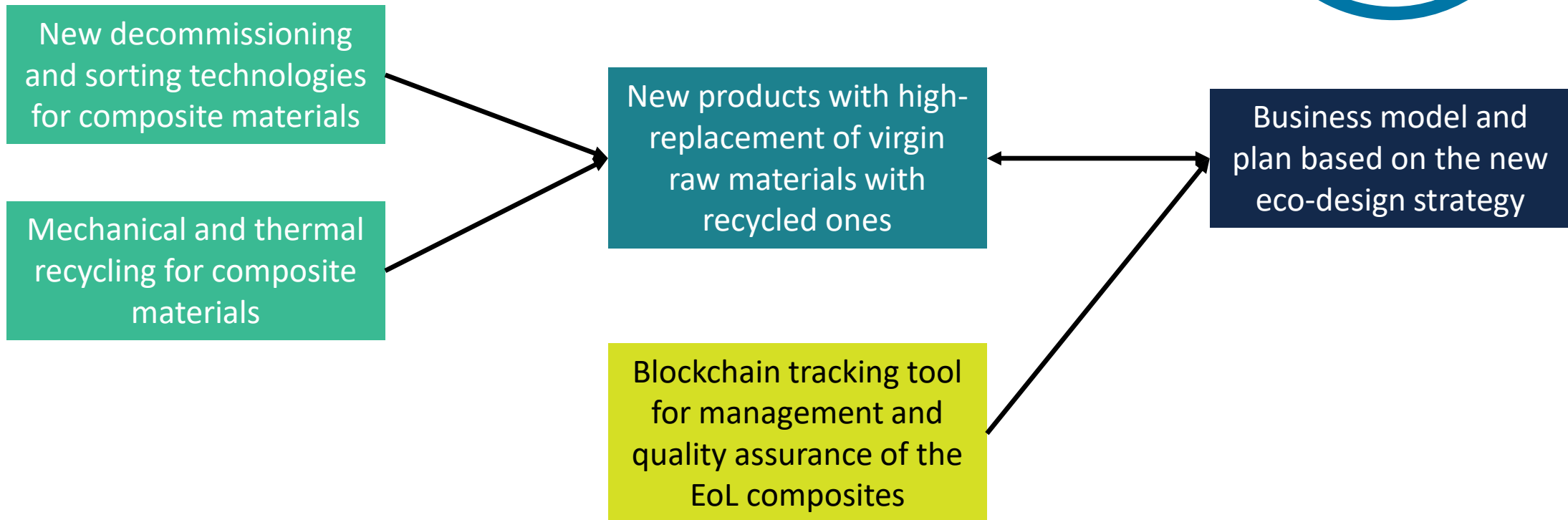
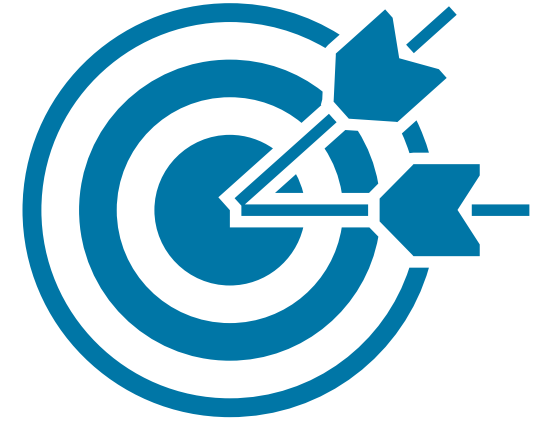
- Waste recycling and remanufacturing companies
- Engineering and consulting companies
- Research and development companies
- Access to stakeholders in the composites sector manufacturers

RINA is the project coordinator.

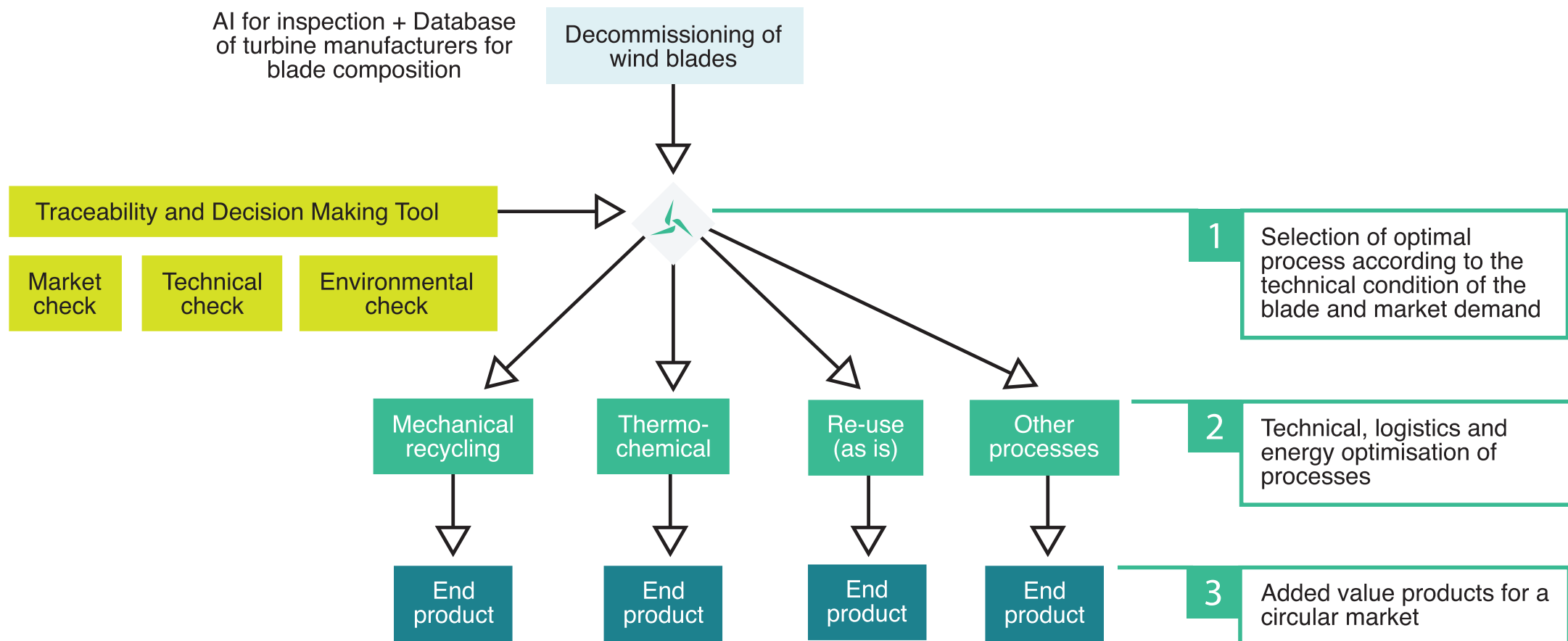


Objectives and Scope

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 fiber panels	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



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Thank you for your attention!

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