

20 European

sector associations

Direct employment >4 million Europeans

Annual turnover >520 billion euro

1 in every 5 manufacturing companies in EU



Choose competitiveness of strategic EU industries

- Security of supply and resilience
- Supporting net positive impact and regenerative businesses
- Safeguarding against greenwashing





Choose regenerative products and materials

- Product substitution towards renewable, biogenic carbon (biomass/bioCO2)
- Carbon storage in product and permanent material stocks
- Empower consumers choose hetter



Choose future proof investments

- Rule-based markets and free and fair trade
- · Competitiveness checks inregulation and RDI funding programmes
- · Industrial Alliance and Transition Pathways for the sector

Choose enhanced natural capital and sustainable forests

- Respecting differences in natural vegetation zones; one size does not fit the policy
- Caring for biodiversity and ecosystems services
- · Avoid global biodiversity leakage















Use cases

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Fiber based packaging materials and solutions are always recyclable (70-90%) whereas today >90% of plastic material is not recycled to original application





FIBER BASED PACKAGING

State-of-the-art

- Fiber-based packaging materials are based on either recycled fiber or virgin fiber
- Fiber-based packaging solutions include 1) rigid containers, 2) flexible films and 3) cushion materials
- Recycling of fiber products is a very well established and feasible system in Europe.

Need:

- Wood based packaging is a viable and competitive alternative for fossil-based plastics
 - Recyclability brings sustainability over many other raw material alternative especially in single-use products
 - Combatting against the microplastic challenge in global perspective
 - Enables sustainable growth for the forest sector

New fiber-based solutions are related to e.g.:

- Light weight packaging
- Flexible and transparent packaging
- Cushion materials
- Cellulose-based films as barrier materials
- Wood-based recyclable plastics

Policy Suggestions:

current regulation equalizes
fossil-based plastic and wood-based
materials -> regulation should support all
the efforts to maximize renewable content

PPWD

proposed regulation will increase utilization of fossil-based plastics and logistical emissions -> regulation should emphasize recycled content with minimum emissions





Wood based textile fibers are recyclable and compliments the Sustainable textiles EU strategy





Drivers:

- Cotton and fossil based polyester fibers do not fulfil the requirements of EU's sustainable textile strategy
- Consumers demand high quality products from renewable raw material sources produced in a sustainable way

Current situation:

- Several companies are either on pilot scale or demo scale demonstrating their fiber spinning technologies
 - → larger investments expected during 2023 2030

TEXTILE RECYCLING

Driver:

- Without textile recycling the utilization of fossil based textile fibers will increase drastically
- Textile recycling as a key enabler for EU's Sustainable textile strategy

Gap:

- Missing waste management and recycling systems for discarded clothes
- Incineration will generate CO2 emissions

Current situation:

 Several companies demonstrating their technologies for mechanical and chemical recycling
 → larger investments started already since 2021



Wood based construction materials are carbon storages and enables convertible buildings





LIGNIN-BASED CHEMICALS

- Lignin-based chemicals generate added value and lignin side-streams can be upgraded for many applications. It should not be regarded only as an energy source.
 - Phenolic resins for wood products
 - Dispersant and surface active agent for paints and coatings
 - Thermoplastic material for composites
 - Antioxidant and antimicrobial compounds
 - UV-shielding compounds
 - Energy storages

WOOD BASED INSULATION

- Manufacturing of glass wool and rock wool requires ample of energy
- Although glass wool and rock wool are made by using recyclable raw material those are not made by using renewable raw materials and recycling of them is challenging
- Recyclable wood based fibers are well suited to produce fiber based insulation materials at a much lower CO2 footprint (lower energy demand)
- Wood based additives used to improve hydrophobicity and antibacterial properties for recyclable wood / cellulose fibers



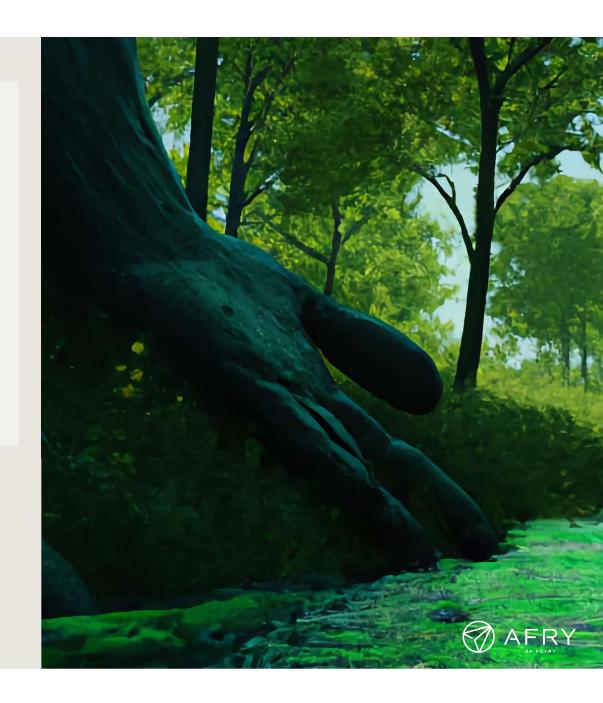
Policy Suggestions:

EU wide requirement to utilize wood as a construction material e.g. in public buildings
-> current situation is limiting possibilities to re-purpose buildings
-> wood building enables energy efficient housing

GREEN ACCELERATOR USE CASES

A BALANCED 2024 VIEW

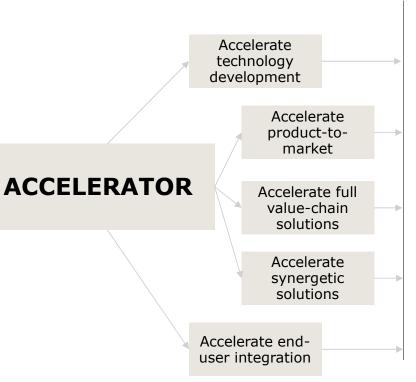
MARCH 2023 DR. PETRI VASARA, VP, AFRY



ACCELERATOR SYNERGY

Synergy as part of a set of use cases

The accelerator roles in different cases overlap, for efficiency, and likewise there are some mutual multiactor/industry benefits built into synergies between the cases



Case BioBridge: by 2024, a demonstration of modular multiactor BioBridge from many forest industry components

Case AntiBacPack/Triple-Safe: by 2024, a demonstration of combined multiactor and multisector antibacterial/chemically safe/cybersafe food packaging platform of use for industry and very many actors

Case LignEco – the lignin sidestream ecosystem: a demonstration of accelerating the ecosystem around a modern, kraft lignin-based biorefinery ecosystem for the most varied end uses from cosmetics to automotive and fuels. Accelerating the ecosystem accelerates sidestream use

Case PuMP - pulp mill park pumping out innovations in new materials: by 2024, a demonstration of a kraft lignin "pump" with at least two material-based end uses built around end users, developers, digital operators and of course pulp players

Case ResCirc: Resiliently Circular Packaging and Hygiene Demonstrate by 2024 packaging and/or hygiene materials from a new mix of recovered paper, and their market-readiness and properties. A common-interest sustainable answer to a changed recycling situation





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