Forest-based Sector
Technology Platform

Recommendations

for the Work Programme 2018-2020 of Horizon 2020

Societal Challenge 3

Secure, Clean and Efficient Energy

October 2016

SOCIETAL CHALLENGE 3
Secure, Clean and Efficient Energy

The activities of the forest-based sector cover much of the scope of **Societal Challenge 3: Secure, Clean and Efficient Energy** – from the primary biomass production (EU forests supply around 97% of solid biomass used for energy in the EU) to downstream industries. However, the forest-based sector has agreed to emphasise three topics for action in the WP2018-2020:

Fuel, Forest, Freight

The forest-based sector offers Europe's transport system liquid and gaseous biofuels on a large scale for road, marine and air transport. Technical and non-technical barriers include future automotive fuel standards, internal combustion engines adapted to biofuels, fuel cells or batteries, and new public transport systems.

The amount of carbon stored in European forests is currently increasing but on a longer timeframe, the uptake and release of CO2 from European forests will reach a steady-state.

Therefore, the strongest carbon footprint reduction originates from substituting fossil-based or energy-intensive materials with renewable wood materials and the second strongest effect come the contribution of wood products as carbon sinks. This should be considered when supporting the development of innovative products and technologies.

Advanced light-weight buildings with low embodied energy

The embodied energy should be a very important performance indicator for energy efficient buildings. Partly substituting energy-intensive materials with renewable and light-weight construction elements might be the most sensible investments the EU can do on the path to fulfil its commitments under the COP21 Paris Agreement.

The percentage of new wooden frame (multi-storey) buildings are around 9% in the EU (with significant differences between Member States) compared to e.g. 30-40% in North America and Japan.

Despite this, the technical competence of European wood construction industries is world leading. This creates a unique opportunity to address both job creation and competitiveness and climate change at the same time. Wood-based construction materials have several advantages compared to steel and concrete; they are light-weight, insulate well, are modularized and only assembly remain at the construction site. All this have great secondary positive environmental effects on logistics and transport.

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Reducing energy consumption and carbon footprint in the paper and saw milling processes

The forest-based industries produce renewable paper products, packaging, construction, furniture, transport, textiles and hygiene products. Developing design concepts for ensuring recyclability of increasingly more complex products and the separation and reuse of used material components are high on the agenda.

Table of proposed Call Topics for SC3 in 2018, 2019 and 2020

Proposed Call Topic title	Description and potential impact 5-10 years	Possible participation from other WPs
Alternative fuels and mobile energy sources		
Fuel, Forest, Freight	The bioenergy sustainability framework supports intelligent ways to mobilise unused "homegrown" biomass. In combination with break-throughs in transport and logistics, a reduction of the carbon footprint of more than 80% in the EU transport fleet can be foreseen until 2030.	○ Transport
Energy-efficient Buildings		
Advanced biobased construction products	○ Substituting energy-intensive materials with renewable and resource efficient biotic materials would reduce carbon footprint with more than 60% in an average multi-storey building. ○ Embodied energy has come to be considered as an important performance indicator for energy efficient buildings from cradle to cradle.	○ NMBP (EeB PPP) ○ Bioeconomy ○ Circular Economy
Reducing energy consumption and carbon footprint		
Reducing energy consumption and carbon footprint in the paper and saw milling processes	○ Hundreds of thousands of saw-mills and integrated pulp mills are in operation globally. Any efficiency gain will have significant impact on global energy demands. ○ Recycling and end-of-life use (cradle to cradle), paving the way to a circular economy. ○ Focus on light weight products, clever use of the CO2 from lime kilns and industry 4.0 could be envisioned.	○ BBI JU ○ Circular Economy

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Annexes
Stakeholders' priorities for 2018-2020 indexed according the FTP Strategic Research & Innovation Agenda 2020

Stakeholder priorities concluded in the 2016 Prioritization Process (for action in 2018-2020).
The research and innovation activities are organised according the Research Areas of the FTP SRA.

Annex to SC3 priorities

3.2 Renewable energy solutions
A. Quantify the green energy potential of present production sites including their biomass supply potential
F. Maximizing value of by-products to fast-growing green energy markets
B. Engineer new technologies to increase energy production and reduce energy consumption

2.4 Secured wood supply, forest operations and logistics
E. Develop intelligent forest operation systems and new solutions for human–machine–terrain interactions
A. Develop new inventory techniques for determining quantity, quality, dimensions and specific properties of forest resources

3.1 Resource efficiency in manufacturing
E. Develop production technologies with significantly optimised energy efficiency and energy management in defibration of wood, drying of sawn timber, production of panels, paper and board or in transportation.
F. Develop enhanced separation and fractionation technologies for material components to enable their optimal use in layered or composite structures

3.5 New business models and service concepts
G. Research new business models between local communities of forest owners, forest operators and industries for the creation of new value chains.
H. Create business models based on opening up the raw material pool and conversion of traditional mills to new markets

4.1 Advanced wood-based construction
A. Identify barriers to sustainable and environmentally-friendly construction and develop further urban building solutions
D. Develop cost-effective integrated prefabricated timber building systems including hybrid and composite materials
K. Develop advanced wooden structure joints to improve performance and broaden the applicability of wooden structures to substitute for carbon-intensive materials.
F. Develop design concepts taking into account changing building services during the building's lifetime.
G. Improve building physics, indoor air quality and the behaviour of wooden constructions
I. Develop advanced scientifically-justified lightweight wood and fibre-based products, engineered wood products and composite materials with superior performance, low emissions, produced with novel, high quality environmentally-friendly biobased adhesives
M. Develop construction systems and biobased treatments to enhance the long-term durability of high performance wood-based products.

4.2 Indoor environment and functional furniture
F. Develop and establish design criteria to ensure the full recyclability of packaging materials, in particular barrier layers and embedded electronics.
A. Enhance the material efficiency of packaging with, for example, new lightweight construction approaches.

C. Integrate sensor and information systems in packaging materials – printing applications using functional inks and tags carrying anti-counterfeiting information

About FTP

FTP is the European Technology Platform for the forest-based sector. The long-term strategy of FTP's stakeholders is established in the FTP *Vision 2030* to be implemented through the *Strategic Research and Innovation Agenda for 2020 (SRA)*. Since 2005, FTP has been organising European cooperation across the whole forest-based sector value chain. The FTP network consists of stakeholders organised in 25 National Support Groups; four shareholder Confederations/Associations: CEI-Bois, CEPF, CEPI and EUSTAFOR; and three Research Umbrella Organisations: EFI, EFPRO and InnovaWood. FTP is active in 25 countries.

The EU forest-based sector in figures

- 35% of the EU land area is covered by forests sustainably managed by 16 million forest owners
- The forest-based industries contribute 8% of EU's total manufacturing added value
- The sector supports 3-4 million industrial jobs in the areas of wood processing, transport, machinery, construction, instrumentation, ICT, chemicals and energy
- The woodworking industries employ some 2.4 million workers in 365 000 SME's
- € 81 billion was the total turnover of the European paper industries in 2010
- 70% of Europe's Freshwater repository comes from forest land

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The European hub for research and innovation in the forest bioeconomy

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FTP SHAREHOLDERS:

CEI-Bois
CEPF Confederation of European Forest Owners
cepi confederation of european paper industries
eustafor MANAGING STATE FORESTS RESPONSIBLY