Forest-based Sector
Technology Platform

Recommendations

for the Work Programme 2018-2020 of Horizon 2020

Societal Challenge 2

Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research, and the Bioeconomy

October 2016

SOCIETAL CHALLENGE 2
Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research, and the Bioeconomy

In the scope of SC2, around 40 FTP SRA activities have been prioritised for 2018-2020, this notwithstanding activities that fall in the scope of the Biobased Industries Joint Undertaking (BBI JU) such as "*New biobased products*", "*Intelligent packaging solutions*", "*Biorefinery concepts*" and partially also the area *Integration of "new solutions in printed products"*). The prioritised research and innovation activities sort under the following proposed topics:

- *Enhanced forest biomass production*
- *Secured wood supply, forest operations and logistics*
- *Advanced biobased construction products*
- *Biobased indoor products and furniture*
- *Citizens' perceptions of the forest-based sector and its products*
- *Multi-purpose management of forests*
- *The performance of the sector in a perspective of global change*
- *Forest-ecology and ecosystem services*

Sustainable and resilient primary biomass production is fundamental for an emerging circular bioeconomy that substitutes resource-intensive, non-renewable products with resource-efficient, biobased products and services. In a growing bioeconomy, an increase of the harvested timber volumes would be expected. However, contrary to commonly held beliefs, wood harvesting volumes in the EU is still significantly lower than before the global financial crisis in 2007-2008. Reliable foresight models do not predict a return to pre-2008 harvesting levels anytime soon. Still, it is true that many times the incentives for forest-owners to harvest are insufficient.

FTP argues that a significant limitation to growing the forest-based bioeconomy is market related. This is also reflected in our stakeholders' prioritisation of advanced, biobased construction systems.

FTP recommends that the SC2 WP2018-2020 reflects that advanced biobased construction systems and innovative wood products are also part of a circular bioeconomy. Green and sustainable building practices could be increased all over Europe by a more systematic approach. An increase of new multi-storey biobased buildings would in fact be one of the most economical investments on the path to fulfil EU's commitments under the COP21 Paris Agreement.

FTP recommends a cross-sectoral cooperation with the Industrial Technologies and the Energy Efficient Buildings PPP to launch demonstration and innovation actions in the area of advanced biobased construction. Hybrid-material construction systems, improved performance and broadened applicability of biobased building materials have not so far been properly considered in Horizon 2020 or the Work Programmes of the Energy Efficient Buildings PPP.

Forest-based Sector
Technology Platform

Table of proposed Call Topics for SC2 in 2018, 2019 and 2020

Proposed Call Topic title	Description and potential impact 5-10 years	Possible participation from other WPs
Enhanced forest biomass production	Sustainable harvesting possibilities in Europe have increased by 30% until 2030 (bearing in mind the full range of demands and production constraints on forests).	○ Climate Action ○ Space ○ Biotech
Secured wood supply, forest operations and logistics	Recovery, reuse and recycling of forest-based products account for 70% of all recyclable material.	○ Circular Economy ○ Raw Materials ○ Climate Action ○ ICT
Advanced biobased construction products	○ Biobased construction products in the EU has doubled its market share from 2010 level due to a more widespread use of energy-saving modular housing structures & functional furniture ○ Wood-based construction is perceived as a cornerstone of the biobased economy, generally credited as low carbon footprint construction	○ NMBP ○ SC3 Energy ○ Energy-efficient Buildings
Biobased indoor products and furniture	E.g. creating new functional bio-based and composite products for home and urban furniture	○ Industrial Technologies (NMBP) ○ Energy-efficient Buildings
Citizens' perceptions of the forest-based sector and its products	○ Map the emotional vs fact-based societal perceptions of forest management practices, reused and recycled wood-based products, bio- and nanotechnology and its derived products. ○ Develop foresight methodologies to predict market changes and consumer behaviour and create business models that target evolving consumer needs and behaviours.	○ Socio-economic ○ Sciences
Multi-purpose management of forests	Support decision-making processes by increasing knowledge transfer between forest managers, science and citizens (including civil society, customers and policymakers).	○ Environment ○ Space
The performance of the forest bioeconomy in a perspective of global change	A better understanding of the availability and valorisation of forest-based raw materials in Europe in the global context under changing economic, social and climatic conditions.	○ Socio-economics
Forest-ecology and ecosystem services	New markets for non-wood forest goods & services (berries, clean water, eco-tourism...) is well on its way to reach the 2030 target of a 10-fold increase	○ Environment ○ Socio-economics ○ Space

Forest-based Sector
Technology Platform

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 Societal Challenge 2 priorities

1.1 The performance of the sector in a perspective of global change

A. Assess and develop scenarios for the availability and valorisation of forest-based raw materials in Europe in the global context under changing economic, social and climatic conditions.

1.2 Citizens' perceptions of the forest-based sector and its products

A consumer-inclusive research area developing a new kind of partnership with customers and citizens would have four action areas:

A. Raise public awareness of the role of forest biomass and forest-based products in climate change mitigation.
B. Strengthen citizens' knowledge of the role of forest-based industries in a biobased society.
C. Monitor emotional and fact-based societal perceptions of forest management practices, reused and recycled wood-based products, bio- and nanotechnology and its derived products.
D. Improve decision-making processes and knowledge transfer systems by taking into account both scientific knowledge and citizens' perceptions (including civil society, customers, forest managers and policymakers).

2.1 Multi-purpose management of forests

D. Try out new business models to activate small forest owners to improve their long-term social and economic sustainability
E. Research the raw material requirements of the production of wood products, as well as new forest-based products, specialised products and the provision of a variety of non-wood products and ecosystem services.

2.2 Forest ecology and ecosystem services

C. Improve the understanding of biodiversity development in managed forests, and the role of biodiversity for the production and variety of raw materials, prevention of pests and diseases, water quality and water-related services, soil protection and other eco-system services.
A. Improve understanding of the complex system dynamics of forests in relation to human society and global change, considering non-linearity of processes, threshold phenomena, feedback and feed forward loops, resulting in alternative stable states; derive improved concepts of resilience to disturbances and adaptive capacity
E. Develop criteria and indicator tools to quantify ecosystem services, identify their trade-offs, estimate the value of socio-economic benefits and assess the social and human impacts of rural, urban and peri-urban forests.
F. Improve insight into the value of environmental services to society in an integrated land use setting and analyse efficiency of various financial incentive systems and instruments for enhanced provision of these, including payment for ecosystem services (PES) and PES-like schemes

2.3 Enhanced biomass production

D. Develop new tree breeding strategies that include quantitative and molecular genetic tools aiming at sustainable and high yield of biomass, improved wood quality and resistance to stress.
B. Improve existing and develop new techniques for silviculture and efficient forest management systems to reduce vulnerability to climate change including changing fire and storm patterns.
J. Translate scientific information into a risk-management framework for resource managers.
A. Improve monitoring, empirical modelling and space technology tools for assessing forest growth and biomass production trends on different spatial and temporal scales.

C. Develop decision support tools to help forest managers optimise growth, resource efficiency and water productivity in changing environmental conditions.
F. Study molecular, biochemical and physiological processes, determining wood and fibre properties and matrix architecture, as well as pest and disease resistance, water efficiency and nutrient biology.

2.4 Secured wood supply, forest operations and logistics – Wood mobilisation

G. Develop decision support systems for optimised supply chain management, including reuse of wood, fibres and biomass, linked to forest planning tools for multifunctional forest management.
B. Assess the future availability of woody biomass for different uses.
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.

4.1 Building with wood

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, glue-lam, cross-lam and similar composite products.
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, especially in low-energy houses.
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

K. Create new functional wood and composite products for home and urban furniture
B. Clarify the role of wood and wood-based products in securing good indoor environments and contributing to perceived comfort.
F. Develop environmentally-friendly multifunctional varnishes and lasuring coatings with micro-encapsulations (aromas, biocides, UV filter absorbents and fire retardants)
G. Develop intelligent furniture surfaces (integrated sensors and electrical conductivity) and use a 'learning from nature' approach towards state-of-the-art surface qualities, durability and mechanical properties of wood-based materials
I. Develop natural bio-adhesives and other biopolymers to enhance bonding in furniture components
J. Continue to develop environmentally-friendly methods for modifying wood and improving the long-term properties of wood-polymer composites to increase their resistance to deterioration.
M. Develop biobased lightweight 3D furniture components

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

Forest-based Sector
Technology Platform

The European hub for research and innovation in the forest bioeconomy

FOREST-BASED SECTOR TECHNOLOGY PLATFORM - FTP sprl
The European Forestry House
66, rue du Luxembourg
BE-1000 Brussels
Belgium
+32 (0) 2 239 23 08
mail@forestplatform.org

www.forestplatform.org
www.forestplatform.net

@ForestETP
https://www.linkedin.com/company/forest-based-sector-technology-platform

FTP SHAREHOLDERS:

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