



FOREST-BASED BIOECONOMY

– Benefits for climate, jobs and growth

University of Eastern Finland (UEF) and LUKE Natural Resources Institute Finland held an event “Forest-based bioeconomy - benefits for climate, jobs and growth” in Brussels 8 November 2017. The event called for an increased role and identification of research needs of forest-based circular bioeconomy to address climate change, substitution of fossil-based materials, multiple use of forests and governance of bioresources. This document summarizes the outcome of the event and contributes to the development of ideas with respect to the revision of the EU bioeconomy strategy.

SUSTAINABLE, RESILIENT AND CLIMATE-SMART FORESTRY MEETS THE CHALLENGES OF CHANGING CLIMATE

- Multiple-use forests have a dual role in combating climate change. The forests sequester and store carbon, while wood based materials can act as carbon sinks and reduce carbon emissions by substituting fossil-based materials and energy.
- Climate-smart Europe needs research on dynamics and multi-objective management of forest ecosystems, impact of forest management practices on biodiversity and assessments of risks in changing climate. These research topics are all linked with life-cycle assessment, forest inventory and modelling and optimizing tools.
- Open source software tools and web-based services linked with almost real-time data from different sectors support both sustainable management of natural resources and development of bio-based industries.

MULTIPLE USE OF FORESTS OFFER BUSINESS POTENTIAL

- More research on health benefits of forests and other types of natural environments is needed. Ongoing urbanization increases the demand for new business concepts and added-value services based on immaterial values of forests.
- Research on public perception, acceptance of bio-based products and future consumption behavior is required to develop forest-based bioeconomy. The trade-offs related to the competing use of material and immaterial benefits of forests need to be investigated and reconciled
- Novel policies, business models and funding mechanisms, such as payment schemes for cultural ecosystem services need to be studied and piloted to enhance an adequate supply of amenity values of forests.
- The importance of non-timber products (e.g. game, mushrooms, berries and wild herbs) and immaterial values of forests (e.g. scenic values, recreation and tourism) is growing in Europe. Targeted research activities can help to develop product concepts from these forest products. Better understanding of new value networks, international markets and business concepts is crucial for the growth of forest-based bioeconomy.
- Sustainable wood production is economically the most important use of forests. Thus, research on improving the efficiency and profitability of forestry and wood procurement are crucial for the future development of the forest sector.

TRANSFORMATION FROM NON-RENEWABLES TOWARDS SUSTAINABLE BIO-BASED MATERIALS

- Forest value chain provides a multitude of product opportunities from different wood components, feedstock materials and side streams.
- Transformation of wood components to edible protein, food hydrocolloids or other food ingredients can improve the EU food or feed trade balance.
- There is a global demand to develop renewable and bio-degradable packaging materials. Intelligent reconstitution of wood biomass components to e.g. multilayer packaging materials offer an environment-friendly solution to reduce plastic waste in the oceans.

RESPONSIVE MULTI-ACTOR FOREST GOVERNANCE SUPPORTS TRANSITION TOWARDS BIOECONOMY

- The implementation of bioeconomy strategies (in EU) should be based on multidisciplinary research and multi-actor involvement. It is important to understand the impacts of different scenarios; for example, in case of utilization of forest resources, biodiversity protection and social sustainability.
- Research on multi-actor and cross-sectoral responsive approaches and on the possibilities and limitations of collaborative governance and participation are needed in order to find new ways to manage the conflicts of interest and to support responsive multi-actor governance.
- Participation of citizens requires sufficient participatory rights, an interactive collaborative approach to empower various institutions and public debate on the development of people's living environment and environmental capability (i.e. those bioeconomy opportunities to achieve outcomes people value).

Policy and decision making should be based on solid scientific evidence. LUKE and UEF support the development of forest-based bioeconomy by providing:

- ✓ long tradition in multi-disciplinary R&I activities on sustainable forestry at European and global levels.
- ✓ understanding of the whole value chain from raw materials to end-products and consumers.
- ✓ global proactivity, leadership and high-impact R&I as well as new ways to manage the conflicts of interest.
- ✓ collaboration, partnerships (public-private-people) and new ways of creating and sharing information.

