



FTP SRA 2013: A Finnish perspective

by the Finnish National Support Group

Key EU-level research and innovation areas (RIAs) from a Finnish perspective

1. Wood availability

- Multi-purpose management of forests (RIA 2.1)
- Enhanced biomass production (RIA 2.3)
- Secured wood supply, forest operations and logistics (RIA 2.4)

2. Competitiveness of existing mills

- Resource efficiency in manufacturing (RIA 3.1)
- Renewable energy solutions (RIA 3.2)
- Biorefinery concepts (RIA 3.4)

3. New, customer-driven solutions

- New business models and service concepts (RIA 3.5)
- Building with wood (RIA 4.1)
- Intelligent packaging solutions (RIA 4.4)
- Hygienic, diagnostic and healthcare products (RIA 4.5)
- New biobased products (RIA 4.3)

4. Important R&I areas with an indirect effect on operations

- The performance of the sector in a perspective of global change (RIA 1.1)
- Citizen's perception of the sector (RIA 1.2)
- Policies and good governance (RIA 1.3)
- Indoor environment and functional furniture (RIA 4.2)

Multi-purpose management of forests

Summary:

- Support multi-purpose use of forests by improved management

Required research and innovation activities:

- Research into regionally and locally specific forest management regimes that are able to cope with climate change and at the same time fulfill local and global needs
- Try out new business models to activate small forest owners to improve their long-term social and economic sustainability

Enhanced biomass production

Summary:

- Maximise yield per hectare applying sustainable forest management

Required research and innovation activities:

- Develop new tree breeding strategies
- Develop tailor-made biomass production systems (i.e. specific wood for specific use)
- Pest control (forest health) to meet a changing climate

Secured wood supply, forest operations and logistics

Summary:

- Forest to mill gate

Required research and innovation activities:

- Develop new inventory techniques for determining quantity, quality, dimensions and specific properties of forest resources
- Develop intelligent forest operations systems and new solutions for human-machine-terrain interactions
- Develop innovative processing concepts to be carried out during transport
- Develop new (or adapt existing) ICT solutions for new, smart and integrated transport and logistics systems from local and regional to global scale

Resource efficiency in manufacturing

Summary:

- The competitiveness of existing mills is highly dependent on cost efficiency
- Raw material price is covered by RIAs 2.1, 2.3 and 2.4. In this RIA the main focus is increasing the yield of main product in a cost-efficient way

Required research and innovation activities:

- Develop new, resource efficient production technologies
 - Including raw material, water and energy efficiency
 - By applying, e.g., ICT solutions
- Develop simplified processes

Renewable energy solutions

Summary:

- Focusing here on production of power and heat, whilst RIA 4.3 covers transportation fuels

Required research and innovation activities:

- Improve efficiency and power-to-heat ratio
- Turn waste water treatment plants to biogas production facilities
- Develop concepts to use solar and wind power generation at existing mills

Biorefinery concepts

Summary:

- Focusing on integration of new processes at existing mills, thus producing new intermediate products such as sugar, lignin, product gas/syngas, crude pyrolysis oil, etc., or stand-alone (incl. repurposing)

Required research and innovation activities:

- Develop separation technologies, more specifically demonstrate concepts for the separation of valuable components from pulping spent liquors
- Demonstrate concepts based on thermal processing of biomass (gasification, flash pyrolysis, hydrothermal liquefaction, etc.)
- Demonstrate technologies enabling sugar platform concepts

New business models and service concepts

Summary:

- See heading (excluding technology development)

Required research and innovation activities:

- Develop foresight methodologies to predict market changes and consumer behavior
- Develop service concepts to be integrated into existing FBS value chains (supporting current products)
- Create business models that target evolving consumer needs and behaviors

Building with wood

Summary:

- Construction wood products: design, production and use

Required research and innovation activities:

- Identify barriers to sustainability and environmentally-friendly construction and develop further urban building solutions
- Improve outdoor performance of wood-based materials (panels, composites, etc.); develop new bio-based treatments; develop, document and offer training in methods for protecting wood through design solutions
- Improve building physics, indoor air quality and the behavior of wooden constructions, especially in low-energy houses
- Integrate information and production technologies in design and building information models for new generation wooden houses
- Development of norms and building codes

Intelligent packaging solutions

Summary:

- Wood and fibre-based packaging materials

Required research and innovation activities:

- Enhance the material efficiency of wood- and fibre-based packaging materials (incl. lightweight)
- Improve the performance of wood- and fibre-based packaging materials (mechanical incl. moldability, resistance to moisture and microbial contamination, other barrier properties, etc.)
- Improve recyclability of packaging materials through materials research. Introduce new materials which are easier to recycle and increase the share of renewables in packaging raw material base (e.g. new types of bio-based barrier materials)

Hygienic, diagnostic and healthcare products

Summary:

- Tissue products, towels, nappies, etc.

Required research and innovation activities:

- Develop methods to improve softness and strength of tissue products
- Wood-based materials to replace current fossil-based materials (absorbents, moisture barriers, etc.)
- Develop improved, fibre-based nonwoven materials
- Diagnostic products combining IT & fibre products, e.g. self-diagnostic applications

New bio-based products

Summary:

- This RIA is focusing on upgrading the intermediate products generated by new biorefinery concepts (cf. RIA 3.4). Products range from biochemicals to biofuels

Required research and innovation activities:

- Develop new fibre-based products (MFC, novel pulp, regenerated fibres, etc.)
- Develop new products from lignin and hydroxy acids
- Develop technologies for production of cost-efficient drop-in fuels for road, aviation and maritime transport
- Develop new sugar-based high-value products

The performance of the sector in a perspective of global change

Summary:

- Role of forest as a carbon sink vs. replacement of fossil-based products by bio-based products

Required research and innovation activities:

- Develop and use scenarios for the availability and valorisation of forest-based raw materials in Europe in the global context under changing economic, social and climate conditions
- Assess climate change mitigation effects of various usages of forest biomass
- Provide an overall economic valuation method (incl. self-sufficiency) for all products, employment, and ecological and common welfare services of the forest-based sector compared to the other sectors at national and European level

Citizen's perception of the sector

Summary:

- How to communicate the sector's benefits to the public

Required research and innovation activities:

- Create science-based information on role of the forest-based sector in a biobased society (incl. role in terms of climate change)
- Strengthen citizen's knowledge by improved communication
- Improve future communication methods by monitoring studies of on-going communication/perception/future demands

Policies and good governance

Summary:

- European and national law → steering the forest-based sector (should support the activities of FBS)

Required research and innovation activities:

- Develop impact assessment tools for policies affecting the forest-based sector (esp. land-use, energy production, energy saving and recycling)
- Develop improved policies that are fair towards both the wood refining sector (into paper, board, wood products, etc.) and the bioenergy production sector

Indoor environment and functional furniture

Summary:

- Question of confirming arguments for promotion and marketing of wood
- Design

Required research and innovation activities:

- Clarify the role of wood and wood-based products in securing good indoor environments and contributing to perceived comfort (quality of life in terms of indoor environment)
- Educational research on the use of wood