



Science Perspective to Bioeconomy Strategies

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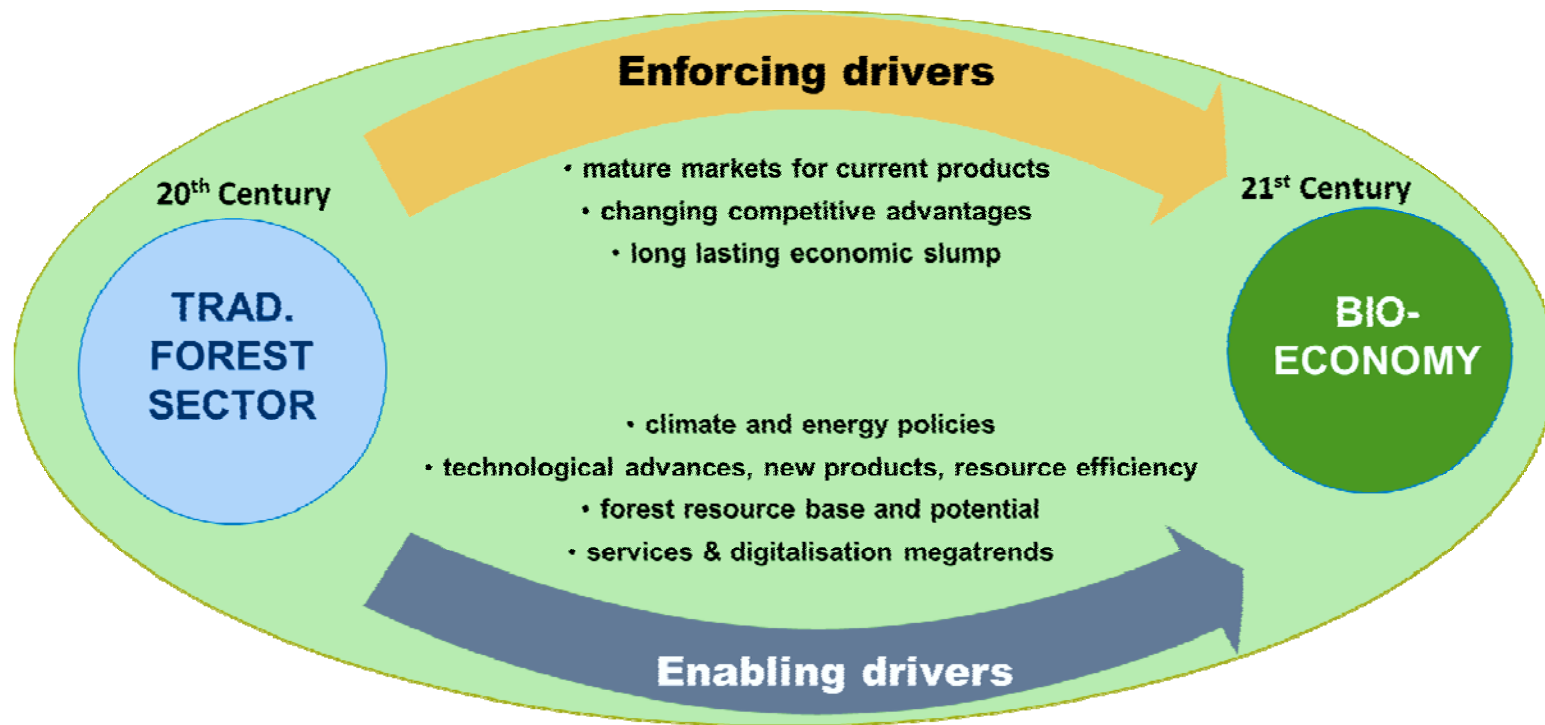
Bioeconomy & Science

- **Bioeconomy notion shapes our understanding of policies**
- **Bioeconomy - a policy slogan:**
 - a challenge to scientists
 - a puzzle for research
- **Research**
 - Motivation and meaning of the concept
 - Relation to other policies
 - Producers' attitudes
- **This presentation presents some highlights of this work**

Challenges to the humankind

- **Climate change**
 - Reduce CO₂ emissions, keep temperature increase well below 2^o C
 - By 2050 emissions and sinks must be in balance
- **Population and middle class growth**
 - By 2050 we will be 9 billion; by 2030 2 billion new middle class people
 - Safeguarding food supply and energy and resource availability
- **Poverty eradication**
 - Difficult socio-economic and political problem
 - Combating famine, improving rural income
- **Economic growth & jobs**
 - How to foster growth in transition to low carbon economies

Road to bioeconomy: Creative destruction in forest-based sector



Destructive forces

- Demand for
 - communication paper products decreases
 - a number of other forest products stagnates
- Long economic slump in the EU since 2008
- Relocation of some forest industry investments
 - fast-growing markets in Asia,
 - low-cost production regions like South America
- Link to economic growth (GDP) still prevails for many EU forest products

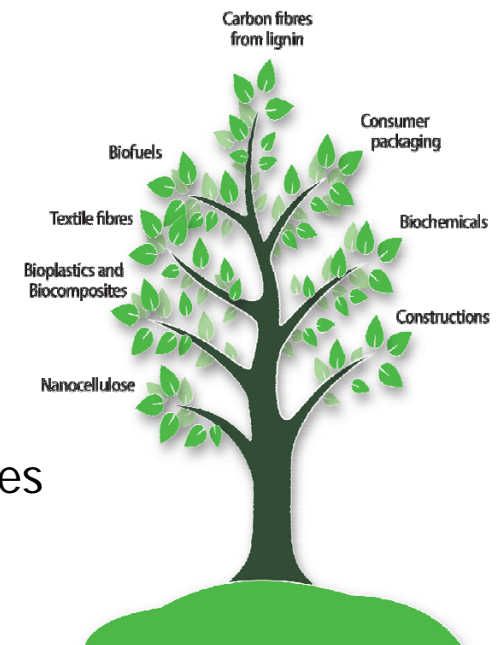
Creative forces

- Forest industry and other industries are changing their strategies and business models, investing in new forest-based products
- New demand for old products, such as dissolving pulp for textiles or tall oil for biodiesel
- Demand is driven by the need to use forest-based materials to replace non-sustainable products or raw materials that compete with food production
- Wood fibre can provide the same products as fossil raw materials

Set a new goal

Competitive, advanced & climate-smart forest bioeconomy

- New business models (*consumers*)
 - New bioproducts and industries (*textile, pharmaceutical*)
 - Services (*most rapidly growing industry*)
 - Traditional products (*pulp and paper, biofuels & bioenergy*)
 - Higher value-added, lower dependence on business cycles
- > Many challenges lie ahead...



Challenge 1. Climate change

- Climate policy shapes the forest sector and forest management:
 - Carbon price impacts now directly (*bioenergy, biofuels, biomaterials*) and indirectly (*forest management*)
- Incentives needed to promote the forest sector's role in climate mitigation
 - Must be planned carefully
 - Forest sector can contribute more than now
- ***Balance wisely wood use, enhanced sink & material substitution***

Carbon neutrality

Challenge 2. Trade-offs in the short and long run

- Bioenergy important up to 2030, but role may decrease over time
 - Increase of wind & solar, electric cars
- Harvesting, emissions and sink in short and long-run
 - Carbon debt: emissions for first 50 years, benefits after 100 years
 - Scientists' opinions differ on the importance of the time aspect
- Investing in "old" in short run may promote "new" in long run
 - Profits from current production funds investments to "new bioeconomy"
 - New bioproducts need to find their niches in joint production with pulp

Challenge 3. Improving policy coherence

- Policy program targeting a given sector should support policies targeting another sector, and vice versa
 - *Climate and bioeconomy* policies must be policy coherent
 - *Biodiversity and other environmental aspect and bioeconomy* must be better synchronized – sustainable bioeconomy
- Coherent policies create synergies for forest bioeconomy targets
- Create and find synergies with other policies and initiatives
 - Innovation programs
 - Industrial programs

Summing up



A welcome policy initiative

Goes beyond the current performance

Boosts creative forces in forest sector