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Insights for updating the EU Bioeconomy Strategy

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Leading the way to a European circular bioeconomy strategy

by

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Unprecedented global interconnected challenges

Climate change &
Biodiversity loss

Water

Food

Raw
Materials

Energy

Growing population &
middle class
Urbanization

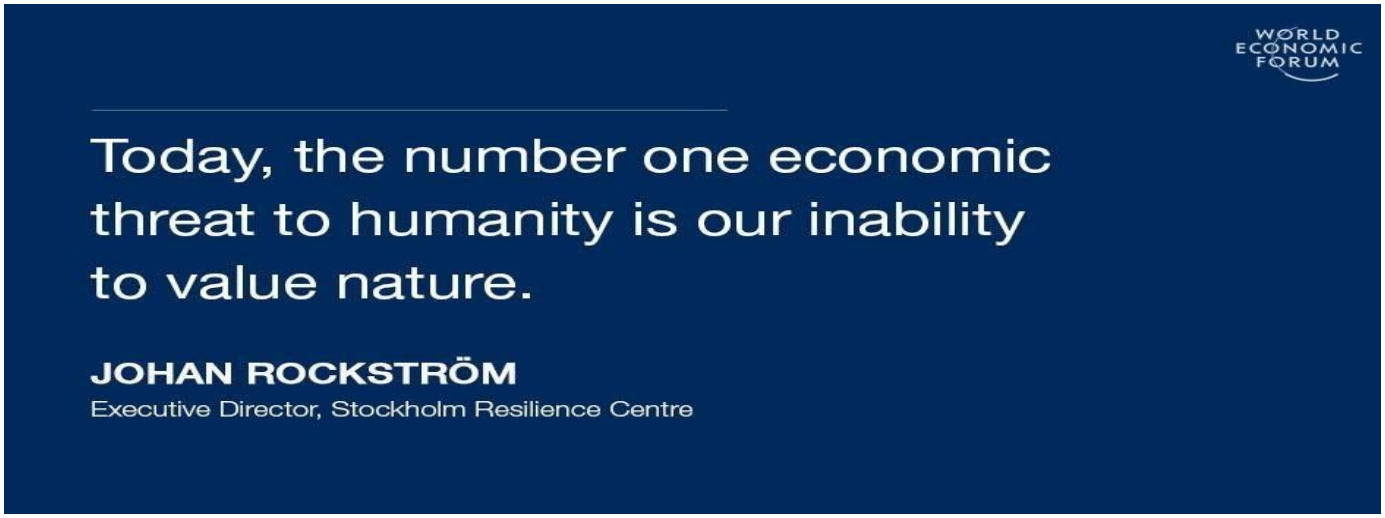
A new paradigm to ensure prosperity within planetary boundaries

Energy sector can be decarbonize but the production of materials will still depend on “carbon”

Bioeconomy become the engine for sustainable development

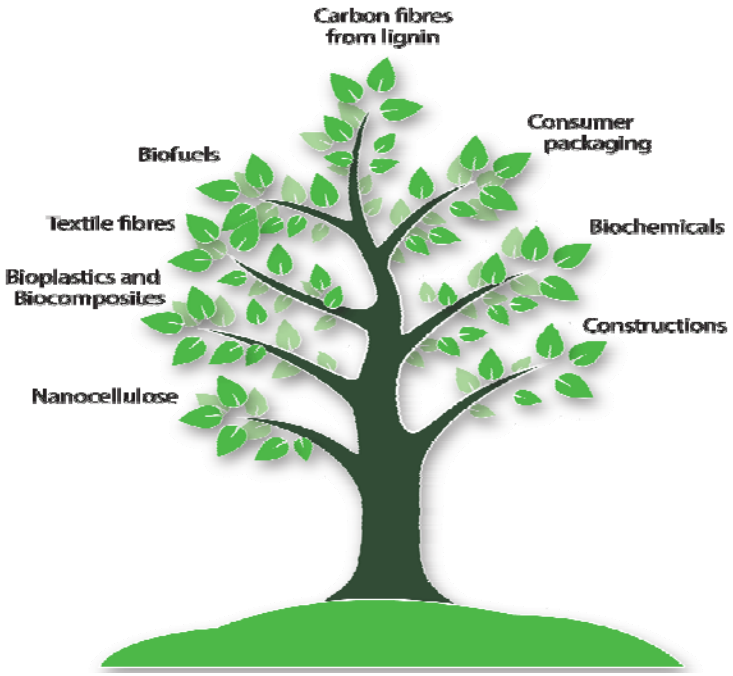
Circular bioeconomy

The bioeconomy?



The **bioeconomy** is an opportunity to build **a synergistic relationship between economy and ecology.**

European forests: the key biological infrastructure



- Covering **43% of EU** land
- Key for the sustainability of: **biodiversity, water and soil**
- Capturing **13% of CO_2 emissions**
- **Main source** of non-food, non-feed **renewable biological resources**

Economic relevance of EU forest industry

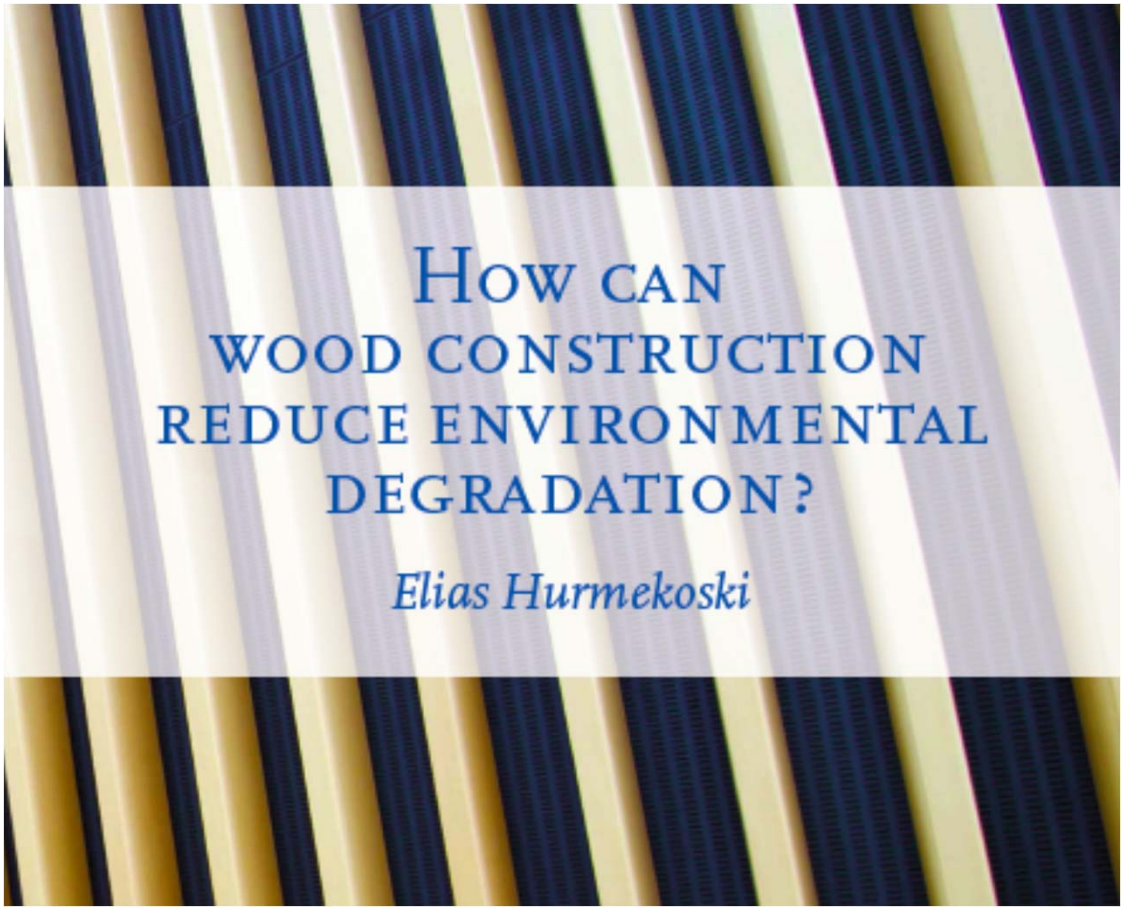
	Textiles Industry	Plastics Industry	Steel Industry	Forest Industry
Turnover value *(2014, in billion euros)*	166	320	170	**302**
Employment *(2013, millions of workers)*	1.70	1.45	0.33	**1.45**

Forest bioeconomy examples

1. Wood construction
2. Wood-based Textiles
3. Bioplastics

Wood construction for building the circular bioeconomy

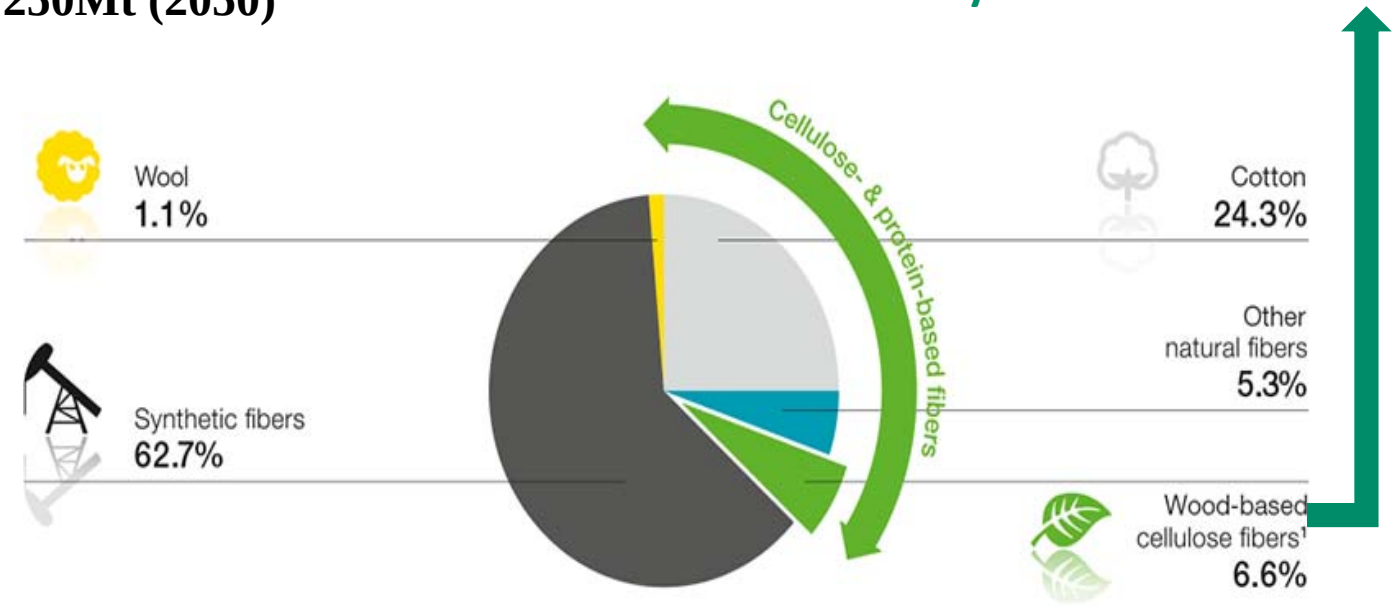
- **2 t of CO_2 are avoided by using 1 t of wood** instead of Portland cement
- Better **thermal efficiency**
- **Material use** is reduced by 50% compared to concrete
- Industrial prefabrication:
  - Increase **safety** and installation **time**
  - From demolition to **deconstruction**


How can
wood construction
reduce environmental
degradation?
Elias Hurmekoski

Wood-based fibres for a sustainable textile industry

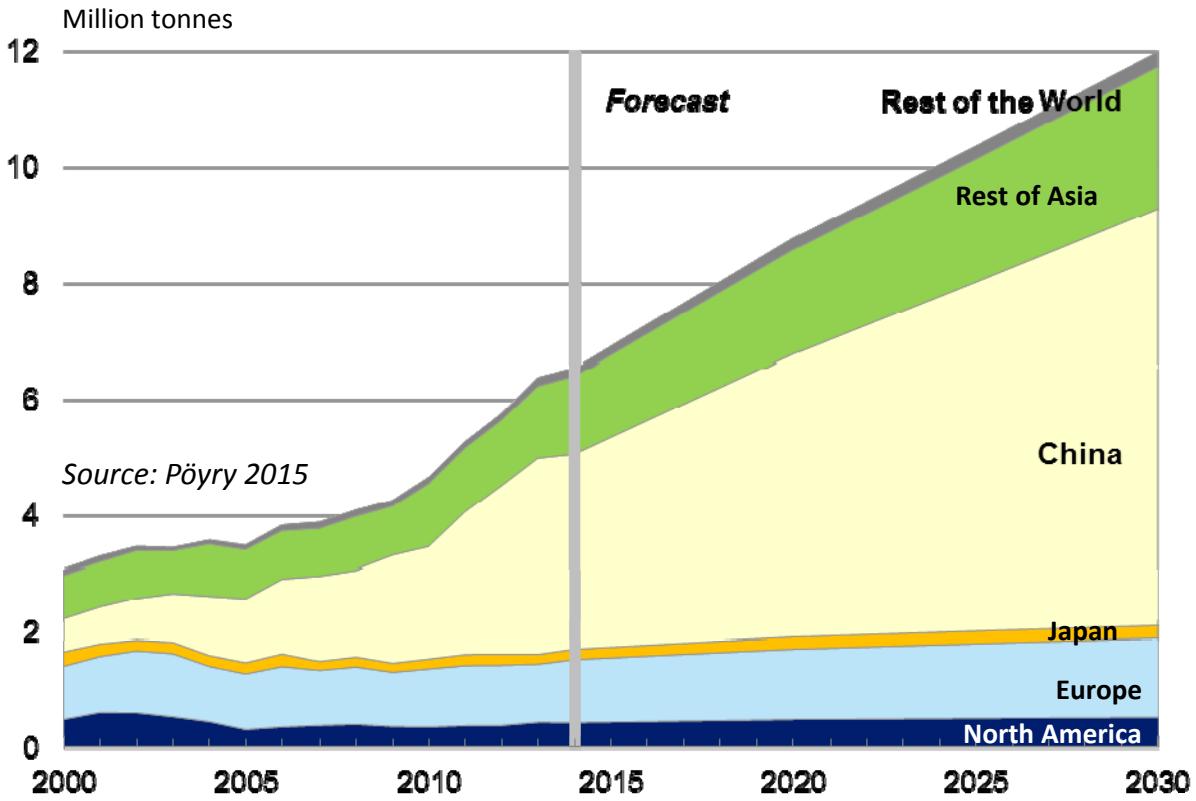
- **Global production of textile fibres:**
  - **93 Mt (2016)**
  - **250Mt (2050)**

- **Carbon footprint from “new” wood-based textile fibres can be up to 9 times lower than synthetic ones**



Sources: ICAC, CIRFS, TFY, FEB, Lenzing estimates

Dissolving pulp consumption outlook to 2030



World demand to grow by 3.9%/a, driven mainly by China

The plastics economy: an inconvenient truth?

- Global production of plastics: **311 Mt**
- Resulting in **390 Mt CO2** and **8 Mt** of plastics **to the ocean** every year

By **2050**, demand for plastics **400% higher**:

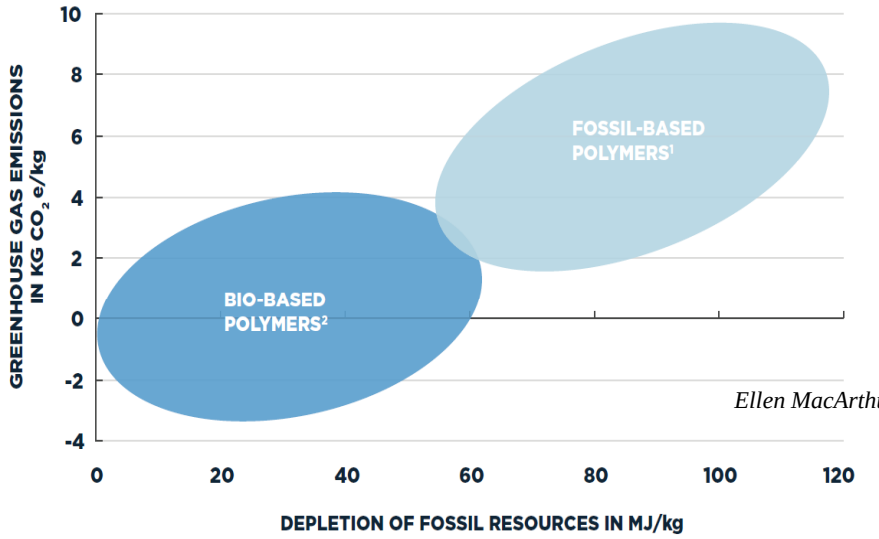
- **20%** of oil consumption
- **15%** of CO2 emissions
- **More plastic than fish in oceans**

The new plastics economy, Ellen MacArthur Foundation

The case for bioplastics

- Only 0.6% of total production are bio-based plastics
- Biobased plastics result in lower carbon footprint
- Main challenge: **not cost-competitive**
  - 30-100% more costly
  - Operations not yet scale and optimised

FIGURE 20: ENVIRONMENTAL IMPACTS OF DIFFERENT POLYMERS IN TWO IMPACT CATEGORIES



Ellen MacArthur Foundation

1 PP = Polypropylene, HDPE = High density polyethylene, LDPE = Low density polyethylene, PET = Polyethylene terephthalate, PS Polystyrene, PC = Polycarb

2 Bio-based PLA (Polylactic acid), bio-based PHA (Polyhydroxyalkanoate), bio-based PE (Polyethylene)

Source: nova-institut.

The case for bioplastics

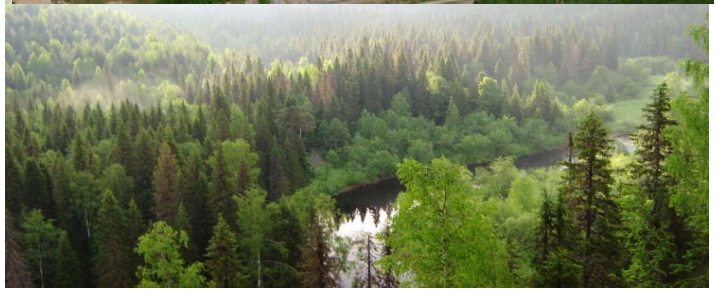
Car manufacturer Mazda developed bioplastic for interior and exterior use

Bioeconomy´s potential for sustainable development

Inclusive economic development
Rural & industrial jobs and infrastructures

Climate smart and resilient cities
Buildings, mobility and green infrastructures

Biodiversity and ecosystem services
Sustainable biomass need resilient ecosystems

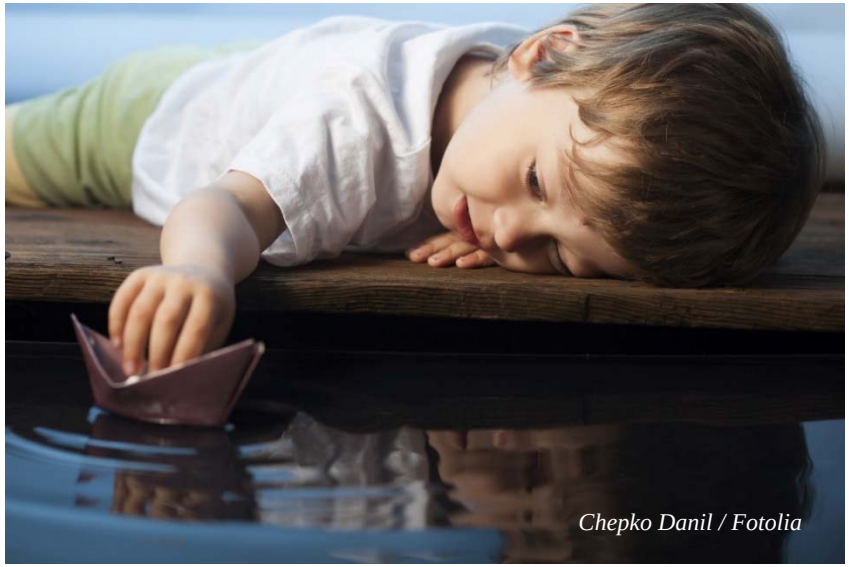


A European Circular Bioeconomy Strategy

A **Narrative** that connects with **urban** societies and offer new opportunities for **rural** areas

Proactively connects with key **policies**: forestry, climate change, biodiversity, agriculture, industry and rural & urban affairs

Define clearly strategic **goals, targets and key sectors** as well as the **key enabling environment**


Chepko Danil / Fotolia

EFI Study: key enabling environment

- Research, technology and skills
- Regulatory environment
- Risk taking capacity
- Quality and safety standards
- Business and government collaboration

Göran Persson “**without an active forest policy it will not be possible to improve a green growth economy in Europe**.”

ThinkForest, 2012

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