



EUROPEAN FOREST INSTITUTE

Elias Hurmekoski, Lauri Hetemäki

# Structural changes in forest products markets – implications for outlook studies

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*Streamlining the next round of Forest Sector  
Outlook Studies in the UNECE region*

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# Outline

1. Structural changes in forest products markets
2. Implications for outlook study methods
3. Conclusions



# Structural changes in the European forest products markets



# “Creative destruction” (Joseph Schumpeter, 1940s)

## Destructive trends

- Mature pulp & paper and sawnwood markets in Europe
- Record long economic downturn (8 years)
- Investments shifting to fast-growing markets in Asia, or low-cost production regions like South America



## Creative trends

- Diversification
  - sawnwood to engineered wood products
  - Pulp & paper to biorefineries
- Diminishing industry boundaries
- Bioeconomy strategies & policies

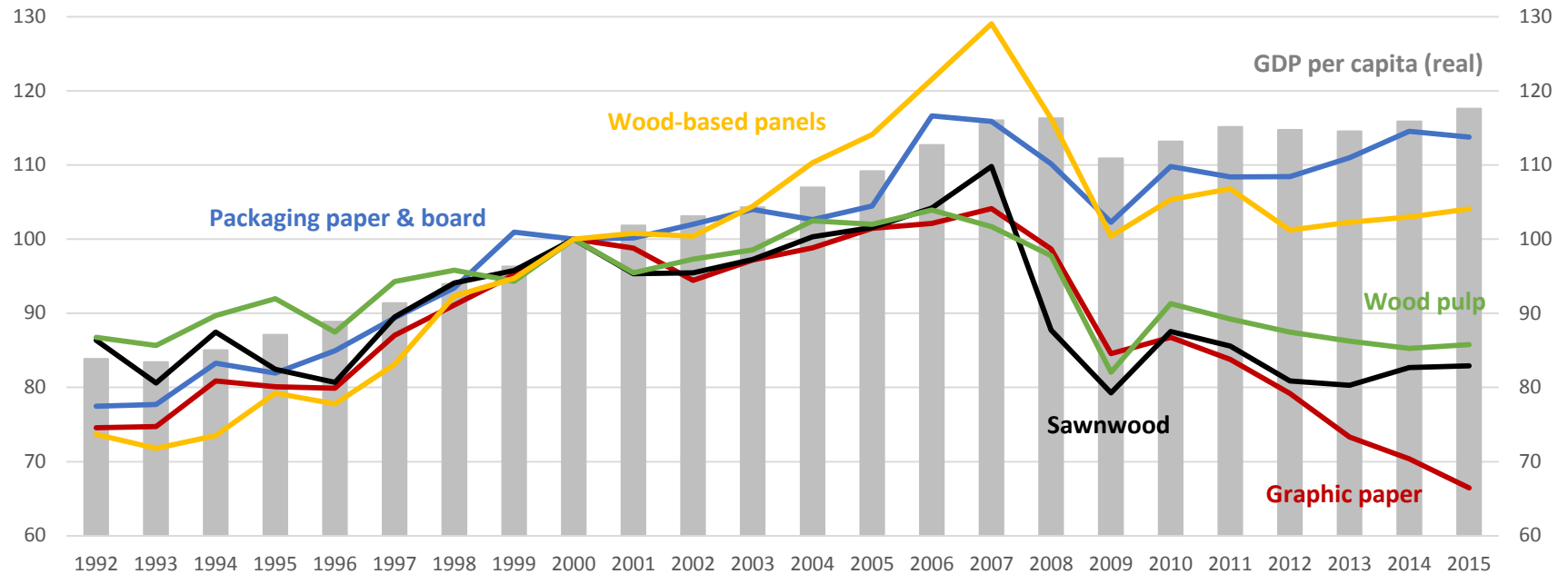
*Statistics are giving an increasingly misleading picture!*



# Mature markets – both *cyclical* and *structural* reasons

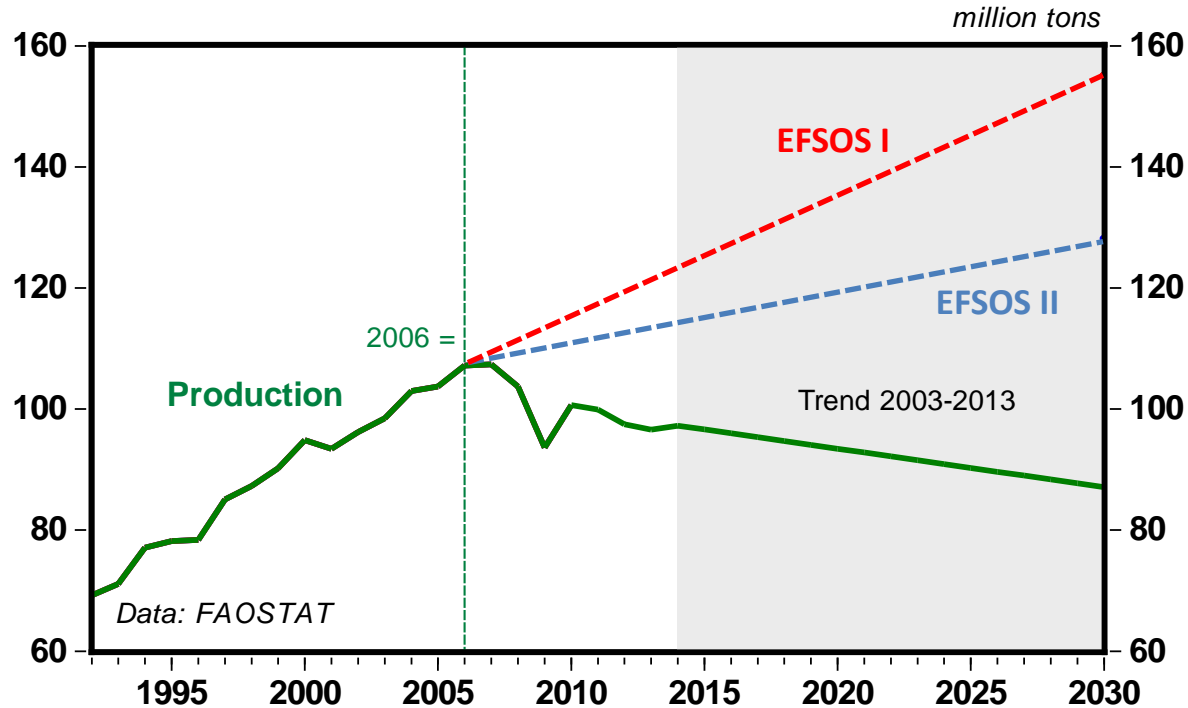
## Consumption per capita in Europe (excl. Russia)

Index 2000 = 100



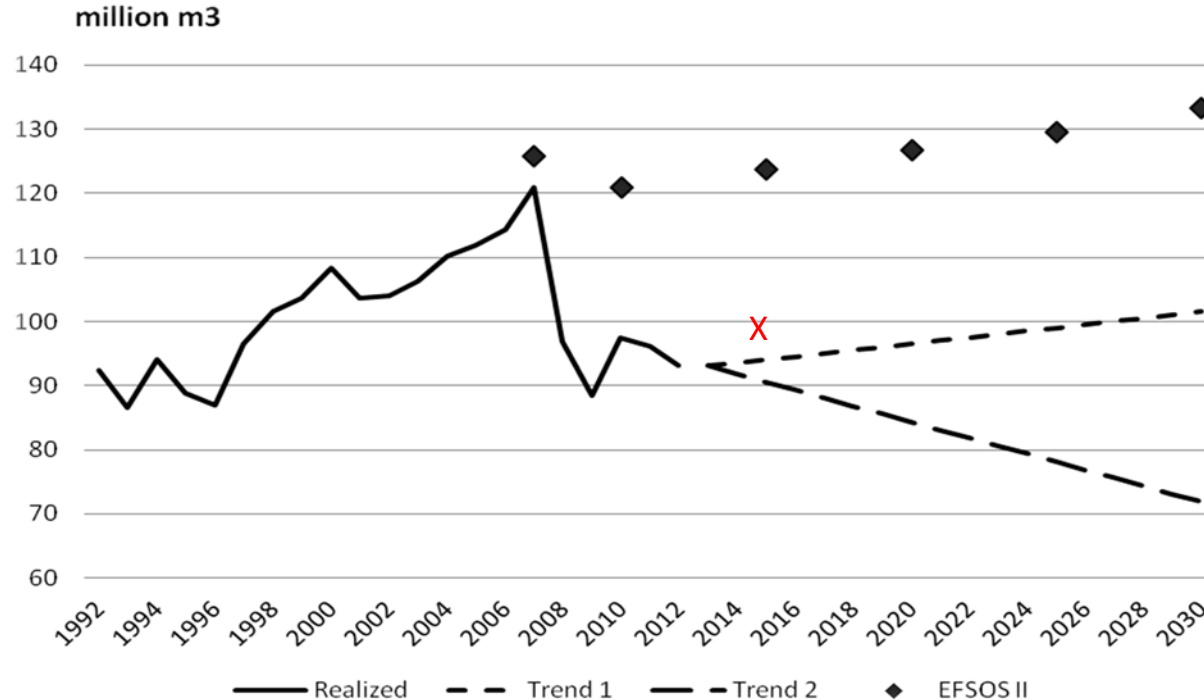
# Outlook for European Paper and Paperboard Changing (excl. Russia)

## EFSOS (2005, 2011) & Trend Projections to 2030



# Similar situation for wood products markets

## Sawnwood Consumption in Europe (excl. Russia)

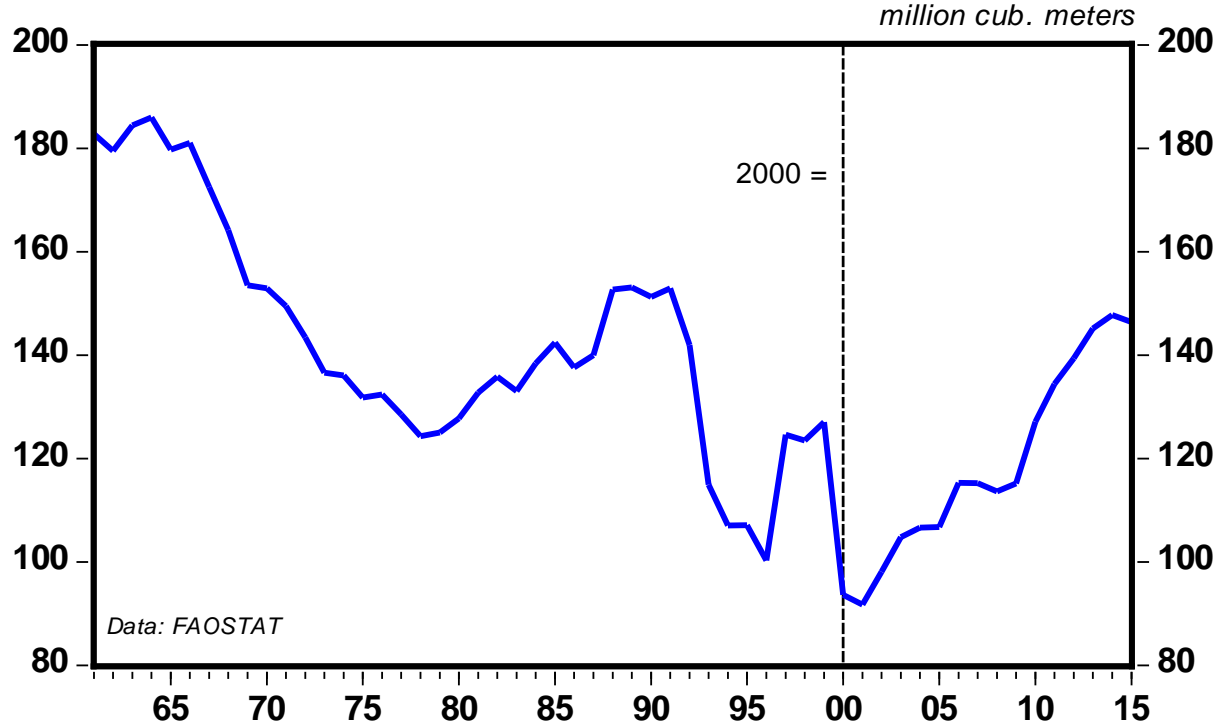


“Trend 1” refers to the trend from 1992–2012, and “Trend 2” refers to 2000–2012 trend

Source: Hänninen et al. 2014, *European Forest Industry and Forest Bioenergy Outlook up to 2050: A Synthesis*, Cleen/Fibic Research Report no D 1.1. 1, Helsinki, Finland, 2014.

# European energy wood production again increasing

## European Wood Fuel Production 1961-2015



50% of *wood fuel* comes from *wood residues*, and most of the rest form *logging residues*, *thinnings* and *coppice*

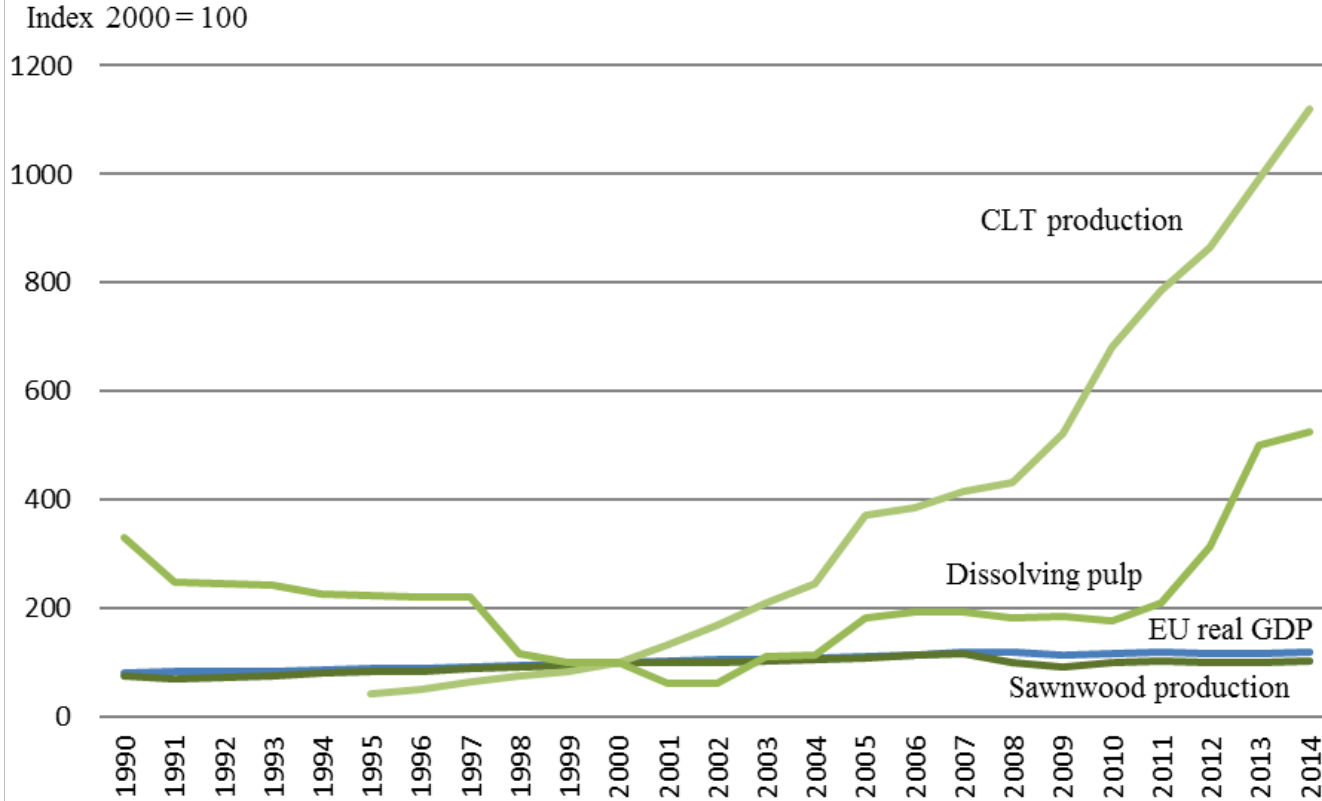
Growing wood residues consumption implies increasing resource-efficiency and cascading use

**Wood fuels** = all types of biofuels originating from woody biomass, e.g., firewood, log wood, wood chips, wood pellets, wood briquettes (FAO def.). These come from forests, plantations (*coppice*), urban forests, by-products (*chips, bark, etc.*), post-consumer wood.





# Emerging products



**Cross Laminated Timber (CLT)**  
> 15 % average annual growth rate since 2007, despite the economic downturn!  
> Clear sign of different life cycle stage compared to sawnwood!

**Dissolving pulp**  
> Pöyry (2015) expects the global demand to double by 2030

Hetemäki & Hurmekoski (2016)



## 3 categories of “new forest products”

1. Old products with newly increasing demand due to changes in the operating environment: e.g. dissolving pulp for textiles
2. Old products with incremental improvements (lighter weight or reduced costs): e.g., paper and packaging products
3. Novel products: e.g. based on nanocellulose - fibers exhibit new properties in nano scale, such as transparency and high absorptive capacity





# Implications for outlook studies



# Validity of methods depends on the research questions

Important viewpoints typically considered in the forest sector include:

- The *availability / sufficiency of wood* resources
- What can be *technically* produced from wood
- Short-term *business cycles*

However, there are questions of equal importance, yet receiving less emphasis:

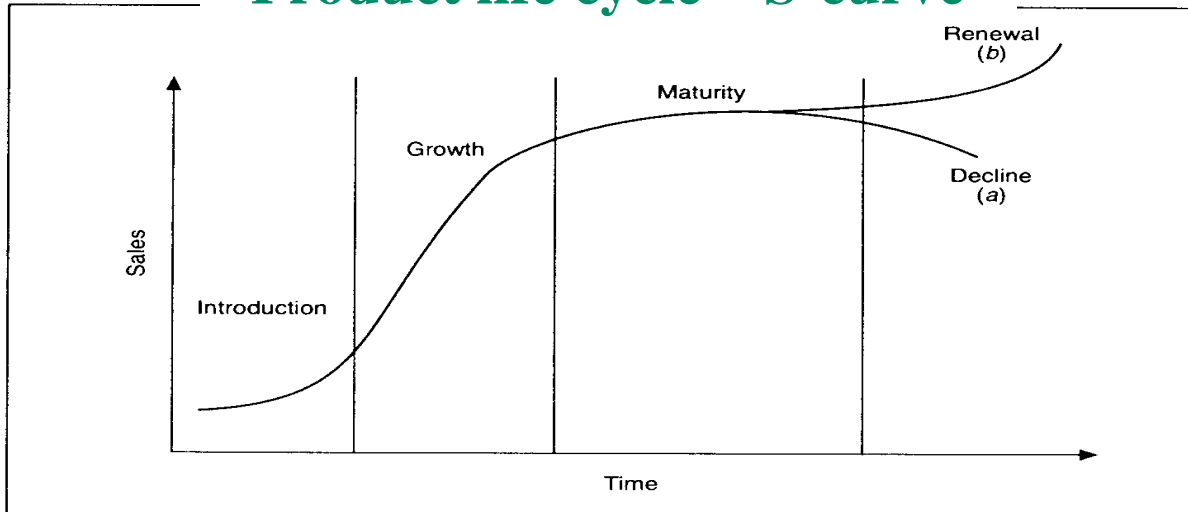
- The *demand* for goods and services
- Prospects for *employment, value creation, etc.*
- Long-term *structural changes*



# Global changes in forest products markets

1. Shifting economic power (*GDP, competitiveness*)
  2. Environmental issues and climate and environmental policies (*externalities*)
  3. Creative destruction (*substitution, new products*)
    1. Declining paper markets in OECD countries (and China)
    2. New markets (biofuels, construction solutions, etc.)
- *Typical way of determining demand for forest products:  $D = f(p, GDP)$*
  - *Is the dominant evidence-based methodology able to consider these aspects?*

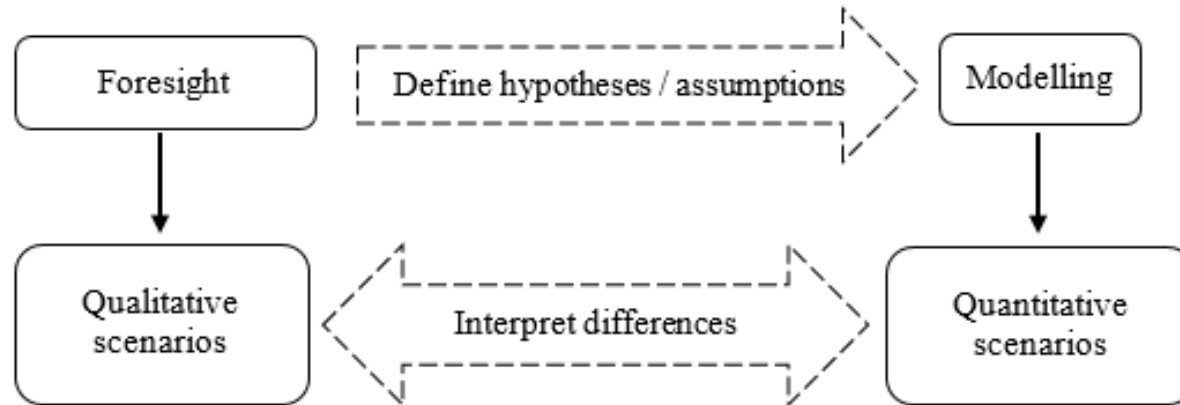
# Product life cycle – S-curve



	Introduction	Growth	Maturity	Decline	Renewal
Product example	Bioplastics	EWPs	Sawnwood	Newsprint	Textiles
Market characteristics & affecting factors	Technical and economic barriers; uncertainty; hype	Growth independent of GDP	Business cycle dependency; stable or small growth rate	Decline in demand, due to substitution for superior products	Rebound in demand due to new drivers; cf. growth phase products
Methods	Qualitative scenario analysis	Logistic replacement models; Agent-based modelling	Econometrics	Substitution models; Bayesian econometrics	Substitution models; Bayesian econometrics



# Integration of approaches



Based on Fortes et al. (2015)



# Conclusions





# EU forest biomass demand in 2030 likely to be overestimated in previous studies

1. **Structural changes:** Likely to decrease demand for industrial wood in EU, rather than increase, by 2030
2. **Market adjustments:** International trade and prices clear potential gaps for forest biomass
  - A gap between supply and demand is not possible!
3. EU and global climate and energy policies are one of the **key uncertainties**
  - Points 1. and 2. will significantly reduce forest biomass demand

# How to better capture structural changes and explore the uncertainties?

1. Update income elasticities and add omitted variables in demand equations
  2. Introduce complementary research approaches – e.g., agent-based modelling and purely qualitative methods
- *Need for a critical mass of researchers and funding!*



# Thank you!

[elias.hurmekoski@efi.int](mailto:elias.hurmekoski@efi.int)

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