



EUROPEAN FOREST  
INSTITUTE

# European forest bioeconomy: key sectors and principles

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*Young Leadership Programme 2019, 11 March 2019, Joensuu Science Park*

# Outline

1. Forest-based bioeconomy: definitions & facts
2. Why it matters how we define the bioeconomy?
3. Outlook for forest-based Bioeconomy in Europe

# Insights based on EFI Publication

FROM SCIENCE TO POLICY 5

科学到政策系列 5

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## Leading the way to a European circular bioeconomy strategy



Lauri Hetemäki, Marc Hanewinkel, Bart Muys,  
Markku Ollikainen, Marc Palahí and Antoni Trasobares

*Foreword*

Esko Aho, Cristina Narbona Ruiz, Göran Persson and Janez Potočnik

## 欧盟循环生物经济战略 发展之路



Lauri Hetemäki, Marc Hanewinkel, Bart Muys,  
Markku Ollikainen, Marc Palahí and Antoni Trasobares

序言

Esko Aho, Cristina Narbona Ruiz, Göran Persson and Janez Potočnik

## На пути к европейской стратегии по созданию биоэкономики замкнутого цикла



Лаури Хетемяки, Марк Ханевинкель, Барт Муйс,  
Маркку Олликайнен, Марк Палаи и Антони Трасобарес

*Предисловие*

Эско Ахо, Кристина Нарбона Руис, Горан Перссон и Янез Поточник

Summary also in *French, German, Italian and Spanish*. Download here:

<https://www.efi.int/publications-bank/leading-way-european-circular-bioeconomy-strategy>

# Some terminology and concepts

- **Traditional Forest Sector**

forestry and forest industry (*wood products, pulp and paper*)



- **Forest-Based Sector**

*forest sector* + textiles, biofuels, engineered wood products, biochemicals, etc. + services



- **Forest-Based Bioeconomy**

forest-based sector, *but especially emphasizes the role of new and innovative biomass-based products and services in transforming societies to low-carbon and SDGs*



LOWER CARBON FOOTPRINT



# European Union Bioeconomy in 2015



Of which traditional forest sector represents:

- **2.5 mil. jobs**
- **411 € billion turnover**

(EU annual budget 2015 = 145 € billion)

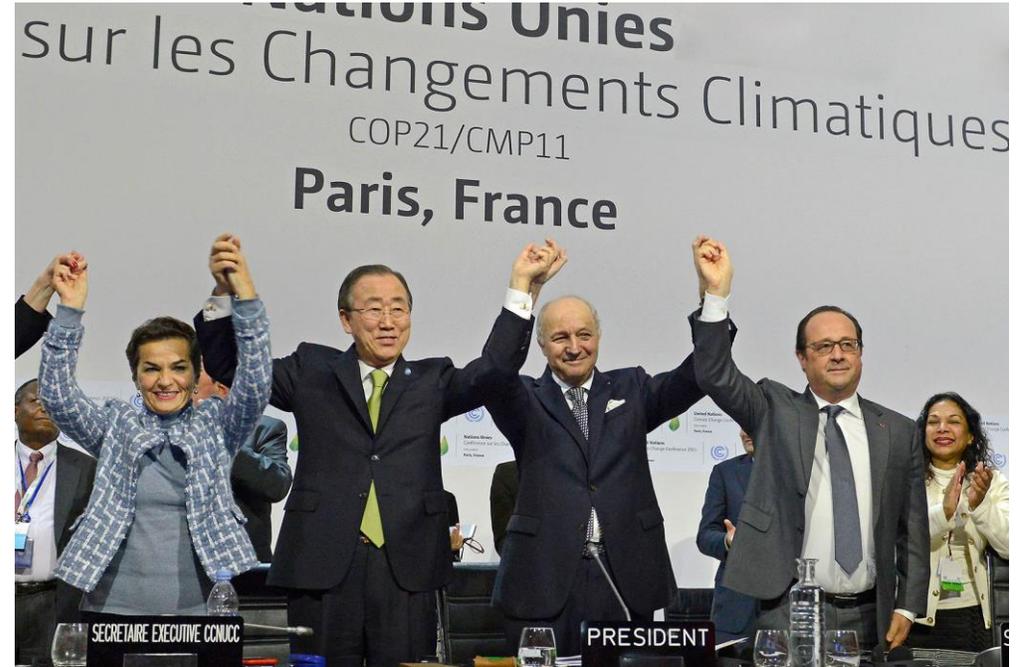
Including other forest-based products, such as, *bio-based textiles, biochemicals, biofuels*, etc. increases significantly these numbers

# Bioeconomy is not an end itself, but a necessary tool to achieve the global targets

## SDGs



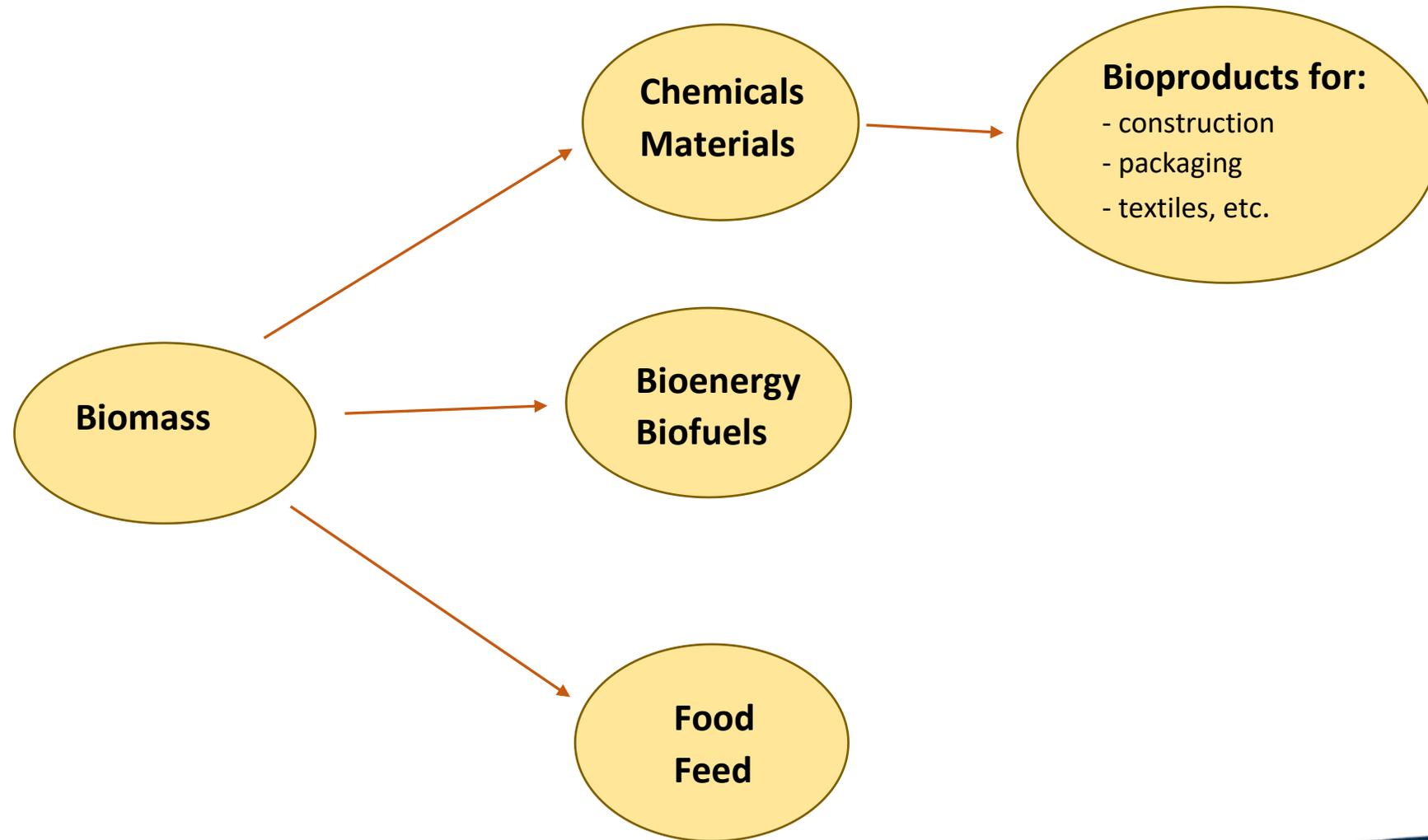
Keeping global temperature rise  
this century well below 2°C



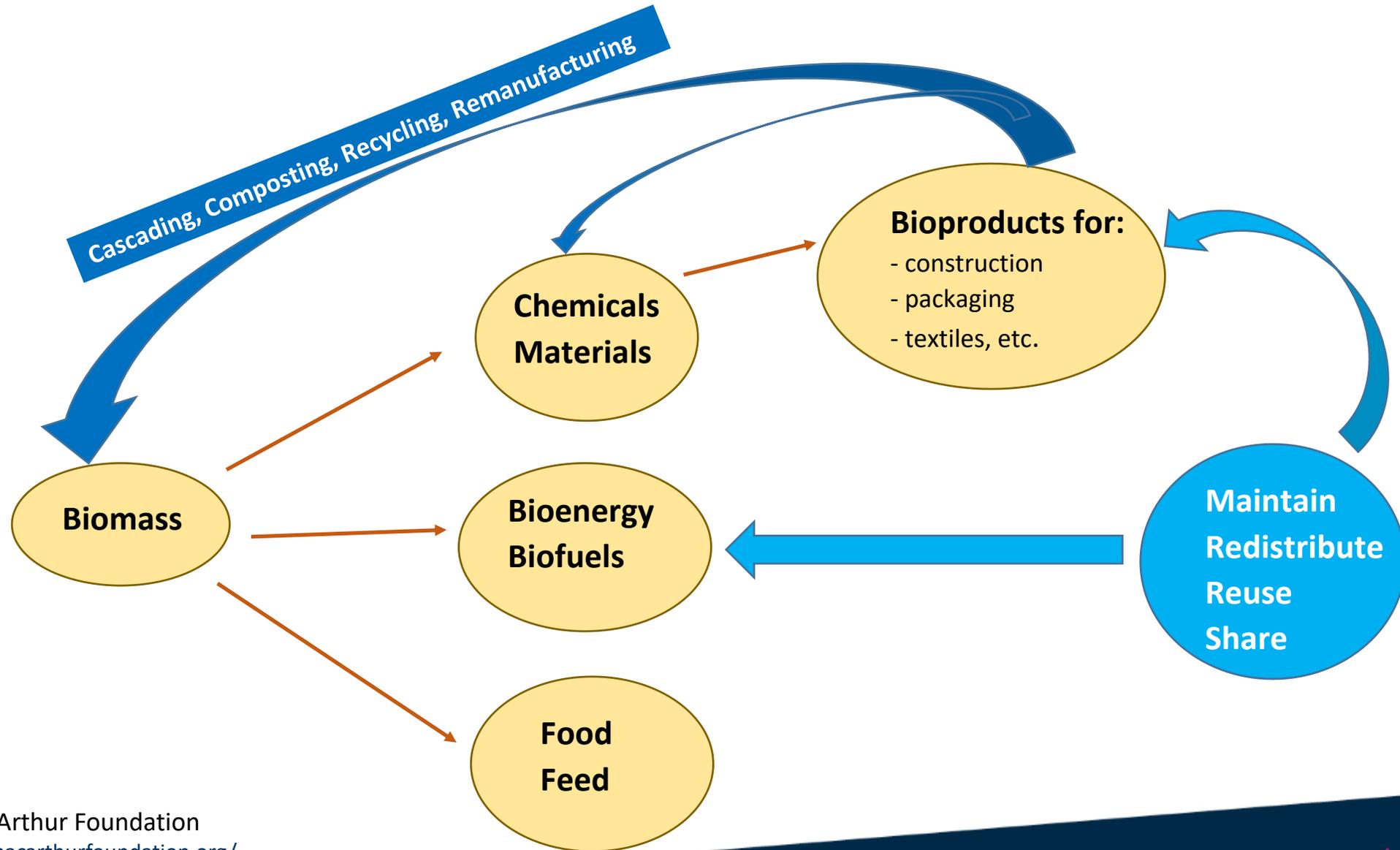
# How we define and understand bioeconomy matters



# Bioeconomy: Conventional and EU strategy (2012) view



# Bioeconomy: Conventional with Circular Economy (EMF)



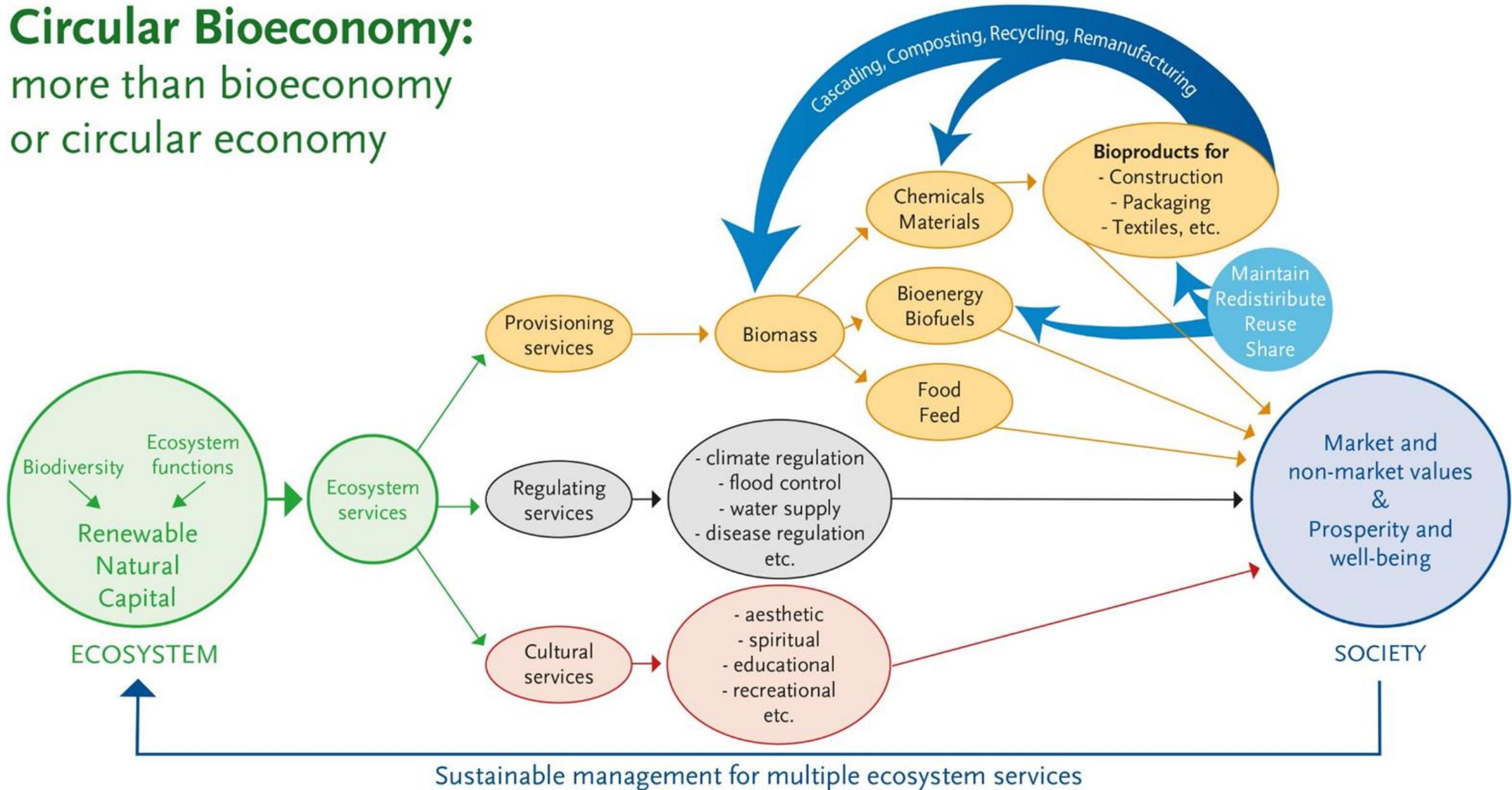
# But these are still too restrictive definitions....

- It is necessary also to include the *natural capital*\* concept and all the *ecosystem services*\*\* under circular bioeconomy
- Also, traditional circularity aspect (~EMF) needs to be complemented with the circularity of the society managing the nature (*e.g. forests*)

\* [https://en.wikipedia.org/wiki/Natural\\_capital](https://en.wikipedia.org/wiki/Natural_capital)

\*\* [https://en.wikipedia.org/wiki/Ecosystem\\_services](https://en.wikipedia.org/wiki/Ecosystem_services)

# Circular Bioeconomy: more than bioeconomy or circular economy

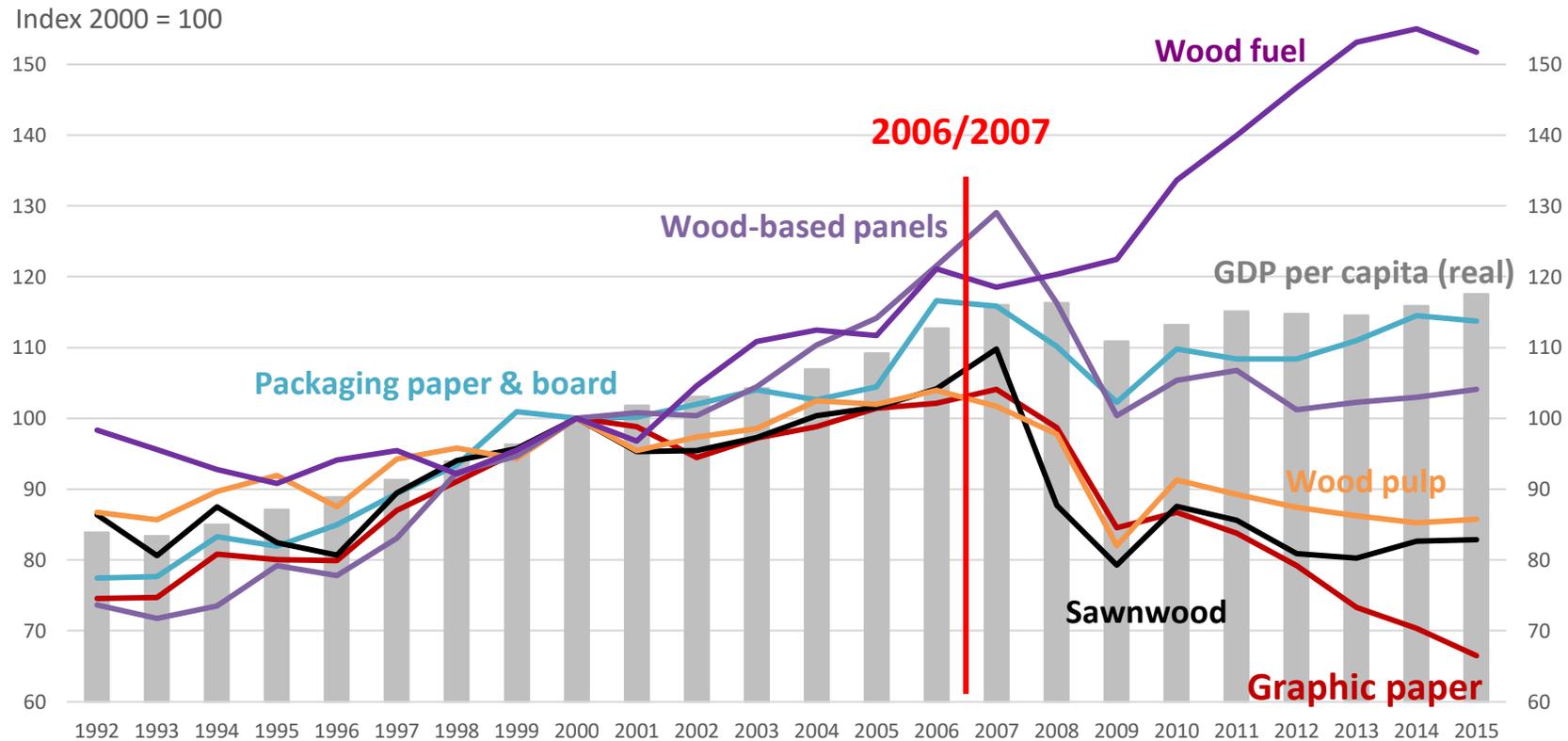


# How does the outlook for European forest bioeconomy look



# Traditional forest bioeconomy products consumption in Europe has been slow, stagnating or declining since 2006/2007

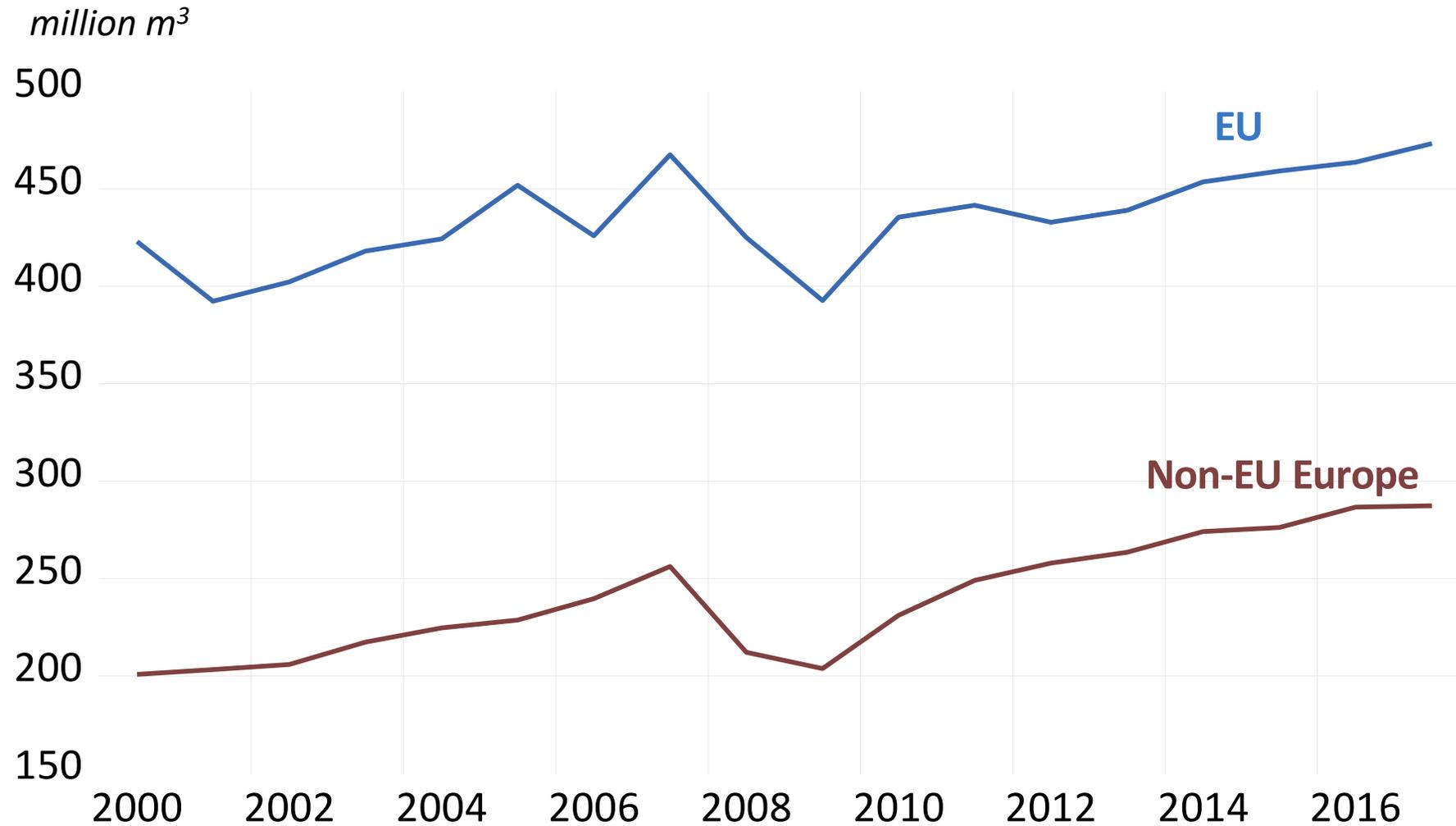
Consumption per capita in Europe (excl. Russia) in 1992-2015



Source: Jonsson, R., Hurmekoski, E., Hetemäki, L. & Prestemon, J. 2017. What is the current state of forest product markets and how will they develop in the future? In Winkel, G. (ed.) What Science Can Tell Us, no. 8, European Forest Institute.

<https://www.efi.int/publications-bank/towards-sustainable-european-forest-based-bioeconomy-assessment-and-way-forward>

# Roundwood Production 2000-2017



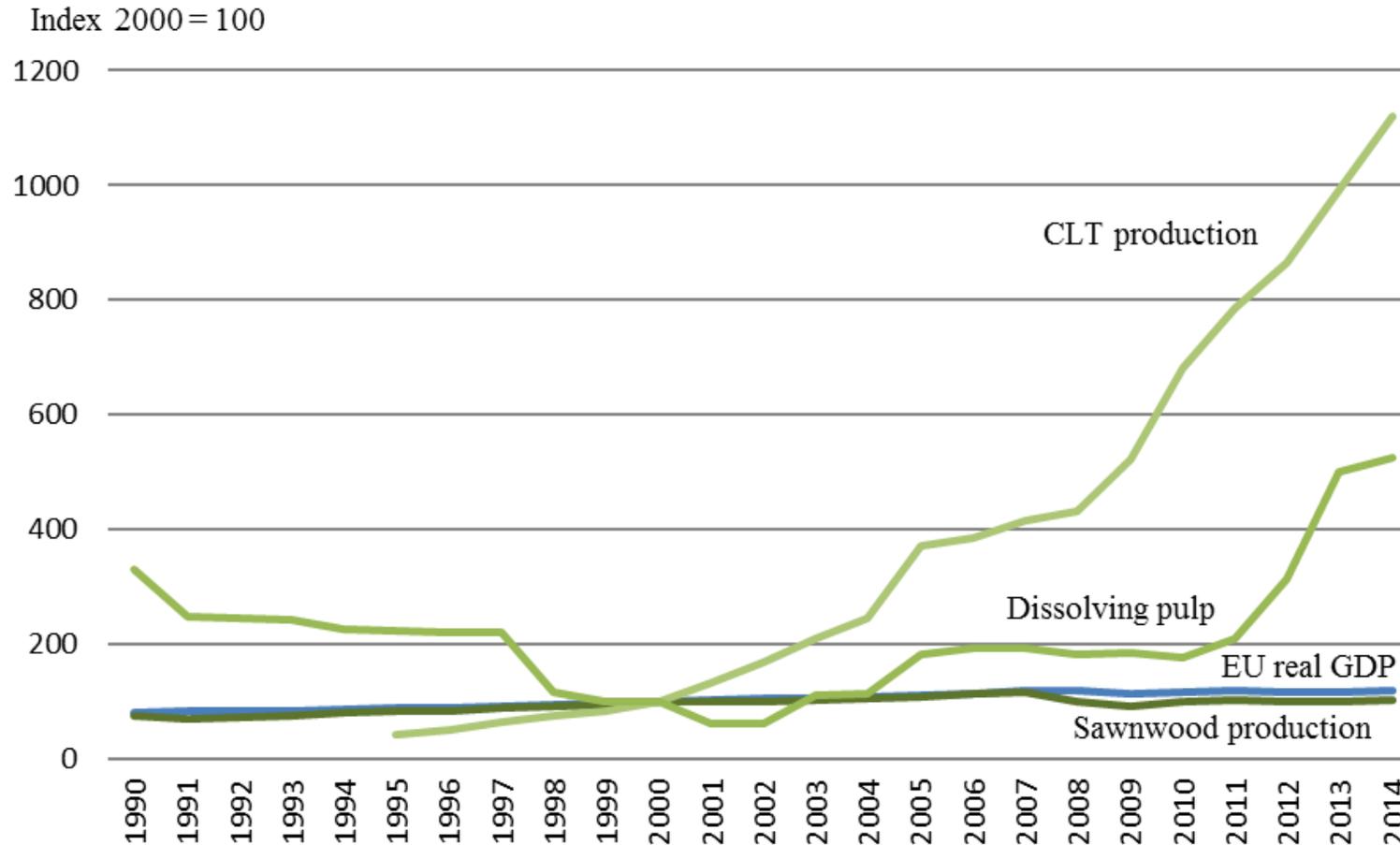
**No big changes in EU trend in this century**

**Increasing trend in Non-EU Europe in this century**

Data: FAOSTAT

# Growth determined also by other factors than GDP

## EU production 1990-2014



### Cross Laminated Timber (CLT)

> 15 % average annual growth rate since 2007, despite the economic downturn!

### Dissolving pulp

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

# All ecosystem services need to be advanced under circular bioeconomy, because:

- To succeed as an tool, and to gain political support
- We will not be able to engage urban population - 75% EU citizens - without advancing also regulating and cultural services (*recreation, water supply, public health, etc.*)
- To find *synergies* and address *trade-offs* between different ecosystem services and biodiversity
- In the end, it will be the role of political process to find acceptable balance between the different needs

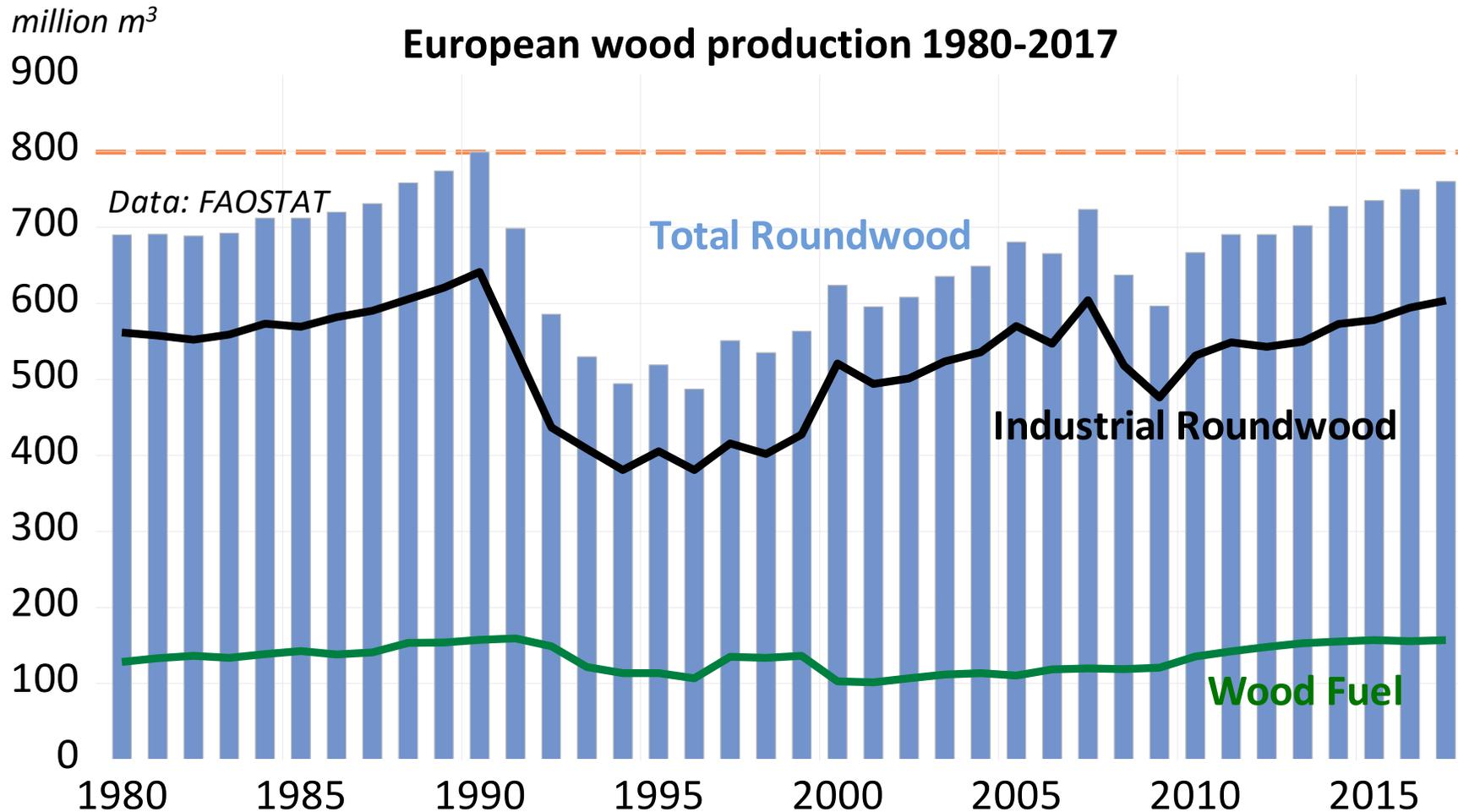


# Forest Bioeconomy Outlook in Europe

PRODUCT / SERVICE	TREND	TURNOVER	EMPLOYMENT	MARKET STAGE
<b>Communication paper</b>	declining	big	big	in market
<b>Packaging paper &amp; board</b>	steadily increasing	big	big	in market + new emerging
<b>Sawnwood &amp; plywood</b>	slowly increasing	big	big	in market
<b>Heat &amp; Power (bioenergy)</b>	slightly increasing	moderate	moderate	in market
<b>Engineered wood products</b>	rapidly increasing	still low	still low	in market + new emerging
<b>Biofules</b>	increasing	still low	still low	in market + new emerging
<b>Biochemicals</b>	increasing	still low	still low	in market + new emerging
<b>Textiles raw material</b>	rapidly increasing	still low	still low	in market + new emerging
<b>Recreation &amp; tourism</b>	increasing	moderate	moderate	in market
<b>Hunting, berries, mushrooms,...</b>	increasing	still low	still low	in market
<b>Biodiversity</b>	increasing	still low	still low	in market
<b>Carbon sequestration in forests</b>	increasing	not yet	not yet	not yet in Europe

*Turnover and employment refer to the current situation*

# Bioeconomy development does not necessarily mean significant increase in wood harvests in Europe



Increasing (+) or decreasing (-)  
roundwood demand:

- + new products
- + some trad. products
- some trad. products
- bioenergy by 2040
- increasing use of residues & cascading
- resource efficiency
- forest carbon sinks

> Net effect by 2040 unclear?

# Key messages



- Bioeconomy is not an end itself, but a *tool*
- How bioeconomy is defined and understood, makes a difference
- Circular bioeconomy needs to include all ecosystem services + management of natural resource (forest)
- Outlook for European Bioeconomy: diversification + growth
- Bioeconomy growth does not necessarily mean significant increase in wood harvests in Europe

***Thank you!***

