EUROPEAN FOREST INSTITUTE

The Role of Forest Sector in Circular Bioeconomy

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www.efi.int

Palju Õnne 100-aastasele Eestile!

Purpose and outline of the presentation

1. Introduce the circular bioeconomy strategy: Why, what, and how?
2. What role does forest sector play in this?
3. What could it mean for Estonia?

Presentation based on:

European Forest Institute report published
7 November 2017 in Brussels

download here:
http://www.efi.int/files/attachments/publications/efi_fstp_5_2017.pdf

Why the report & what are its objectives?

Why:

- EU is updating its Bioeconomy Strategy in 2018
- Support drafting/updating national and regional bioeconomy strategies

Objectives:

1. What are the *gaps* in existing bioeconomy strategies?
2. Why it is important to link the *bioeconomy* and *circular economy strategies*, instead of advancing them separately?
3. What are the *key strategic elements* that a successful circular bioeconomy strategy would need to have?

Table 1. Selected bioeconomy strategies in chronological order.

Country	Strategy	Year
OECD-countries	The Bioeconomy to 2030 – Designing a policy agenda	2009
EU	Innovating for Sustainable Growth – A Bioeconomy for Europe	2012
The Netherlands	Framework Memorandum on the Bio-Based Economy	2012
Sweden	Swedish Research and Innovation – Strategy for a Bio-Based Economy	2012
USA	National Bioeconomy Blueprint	2012
Malaysia	Bioeconomy Transformation Program – Enriching the Nation, Securing the Future	2013
South Africa	The Bio-economy Strategy	2013
Germany	National Policy Strategy on Bioeconomy	2014
Finland	Sustainable Growth from Bioeconomy – The Finnish Bioeconomy Strategy	2014
West Nordic countries*	Future Opportunities for Bioeconomy in the West Nordic Countries	2014
France	A Bioeconomy Strategy for France	2016
Italy	BIT – Bioeconomy in Italy	2016
Spain	Spanish Strategy on Bioeconomy Horizon 2030	2016
Norway	Familiar Resources – Undreamt of Possibilities	2016

* West Nordic countries comprise Greenland, Faroe Islands and Iceland. Source: Priefer et al. 2017. The strategies of Italy, Spain and Norway have been added by the authors to the table provided by Priefer.

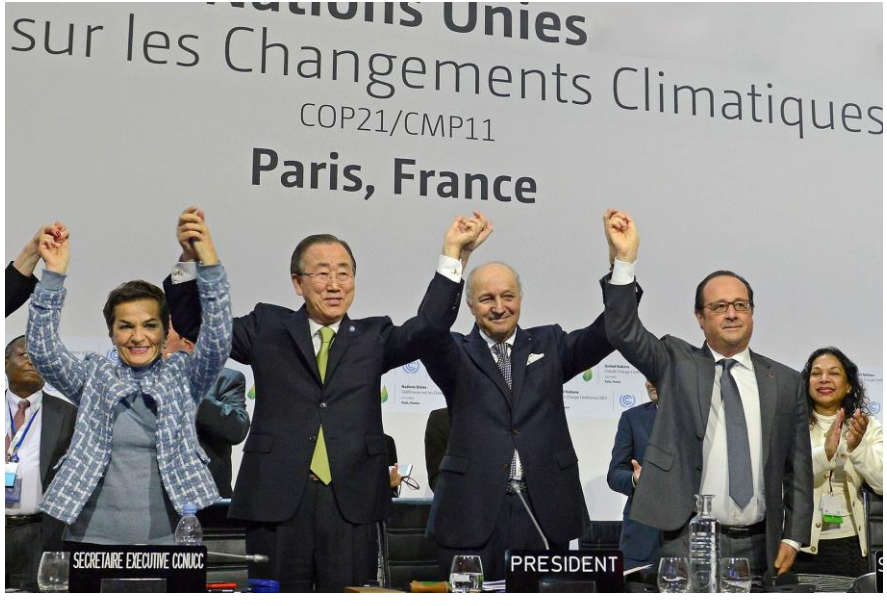
- Existing bioeconomy strategies have been helpful in demonstrating the need to advance the use of renewable biomass to substitute for fossil-based raw materials and products to create a more sustainable society, but…..

Gaps in existing bioeconomy strategies:

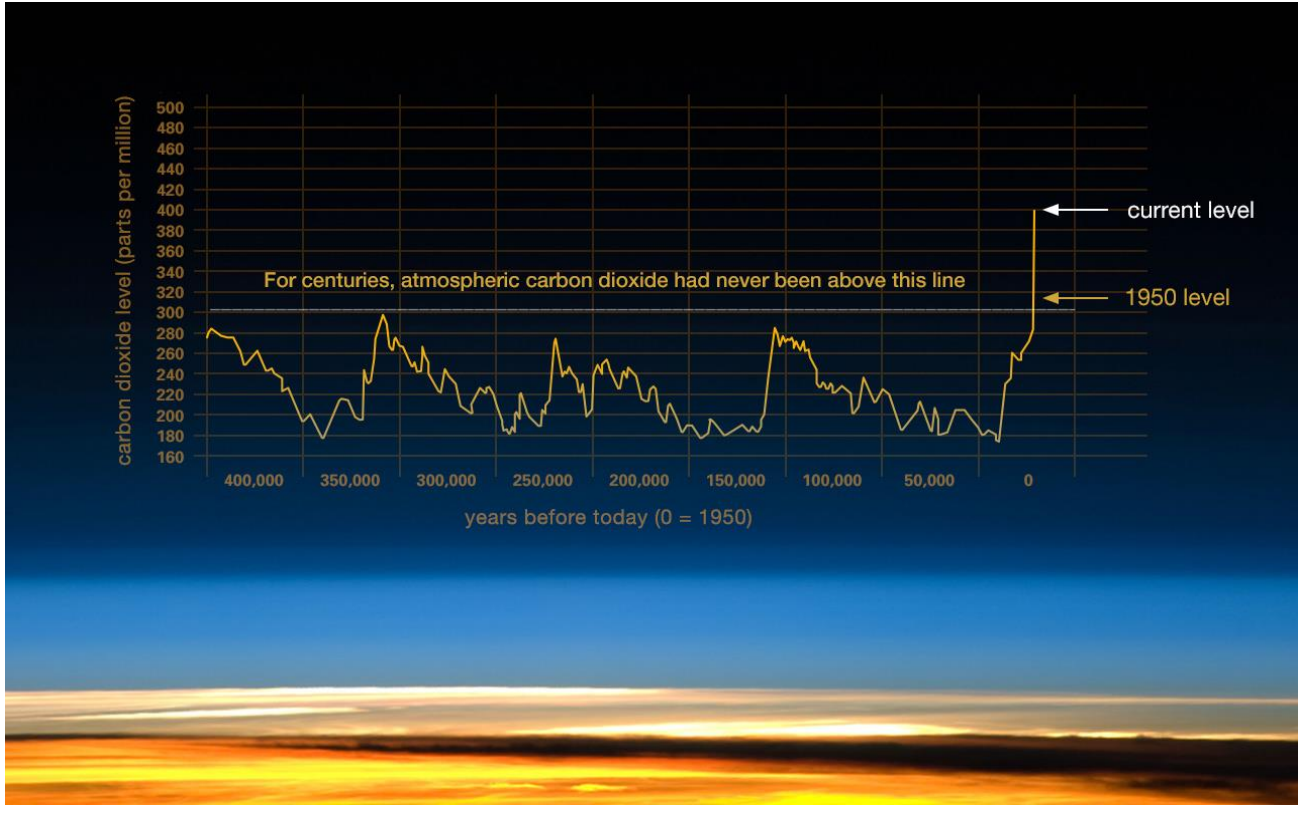
- Take sustainability as given *(biodiversity, social sustainability, etc.)*
- Lack of connection to climate and environmental policies
- Do not link the bioeconomy to the circular economy
- Agricultural and food sector dominates, at the cost of failing to acknowledge the potential of the forest-based sector
- Many of the ecosystem services forgotten
- Policies to maximize synergies and minimize trade-offs
- New global agreements *(see next slide)*

The world states have agreed 2 major agendas

Keeping global temperature rise this century well below 2˚C

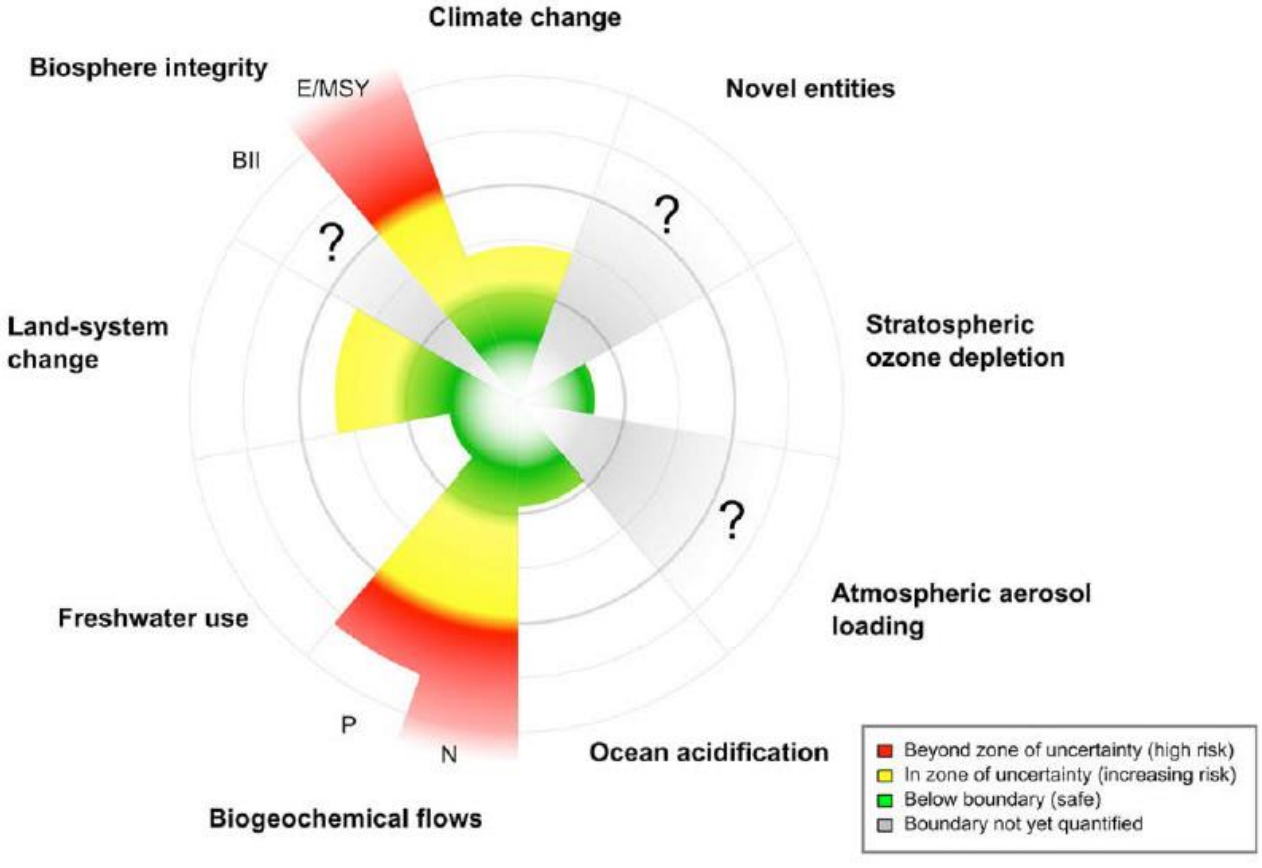


The Message from Paris Agreement: Fossil-based economy needs to be phased-out



By 2030, 2 billion more people in the global middle class

The Message from SDGs: We need to live within the planetary boundaries

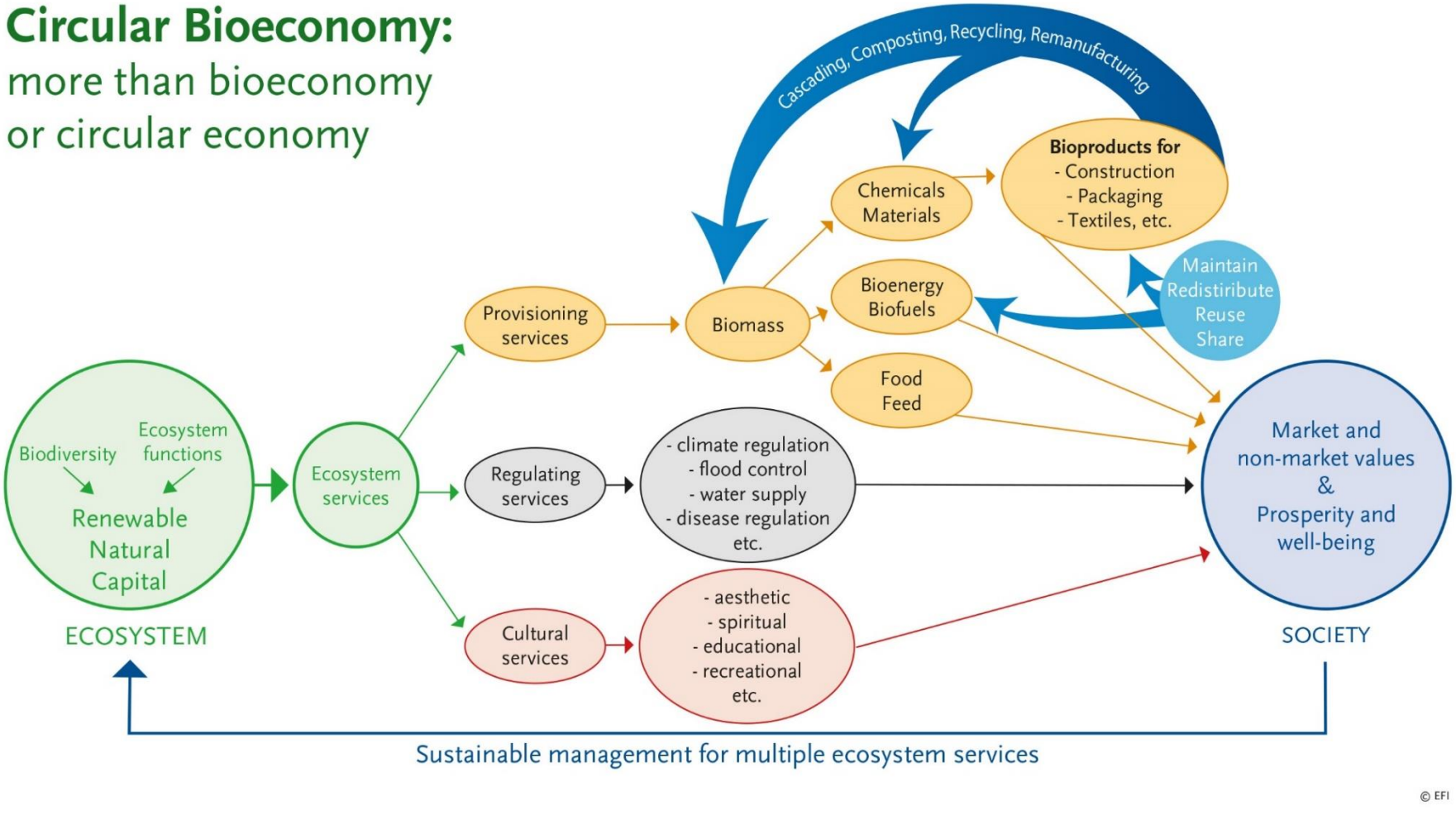


Source: Steffen et al., 2015. Planetary Boundaries: Guiding human development on a changing planet. *Science*

A socio-economic paradigm shift is necessary

- SDGs and Paris Agreement give a license to change the existing economic model, or how we advance societal well-being
- It would be utopia to expect the current economic structure to help us to reach Paris Agreement and the SDGs
- Realism is to change the economic model
- EFI report argues that a **circular bioeconomy** is a necessary part of this transformation

Circular Bioeconomy:
more than bioeconomy
or circular economy



Source: Hetemäki, L., Hanewinkel, M., Muys, B., Ollikainen, M., Palahí, M. and Trasobares, A. 2017. Leading the way to a European circular bioeconomy strategy. From Science to Policy 5. European Forest Institute.

Advantages of combining bioeconomy and circular economy:

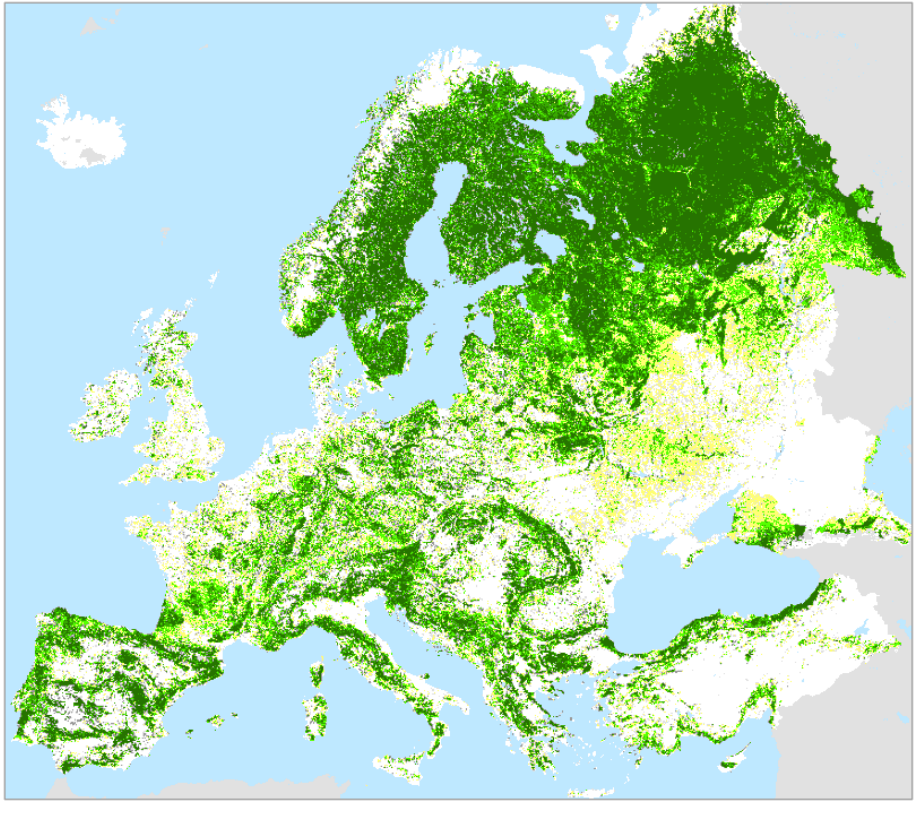
- Circularity makes bioeconomy more than *business-as-usual*
- Bioeconomy based on renewable biobased materials. Offer better circularity (renewability), biodegradability, less or no toxicity, that circularity alone cannot offer
- Combine rural to urban
- Streamline research agendas
- Reduce silos thinking and administration

What is forest-based bioeconomy?

- Many definitions of "bioeconomy". To put it simply, using renewable *biomass* and *forests* for materials, energy *and services*

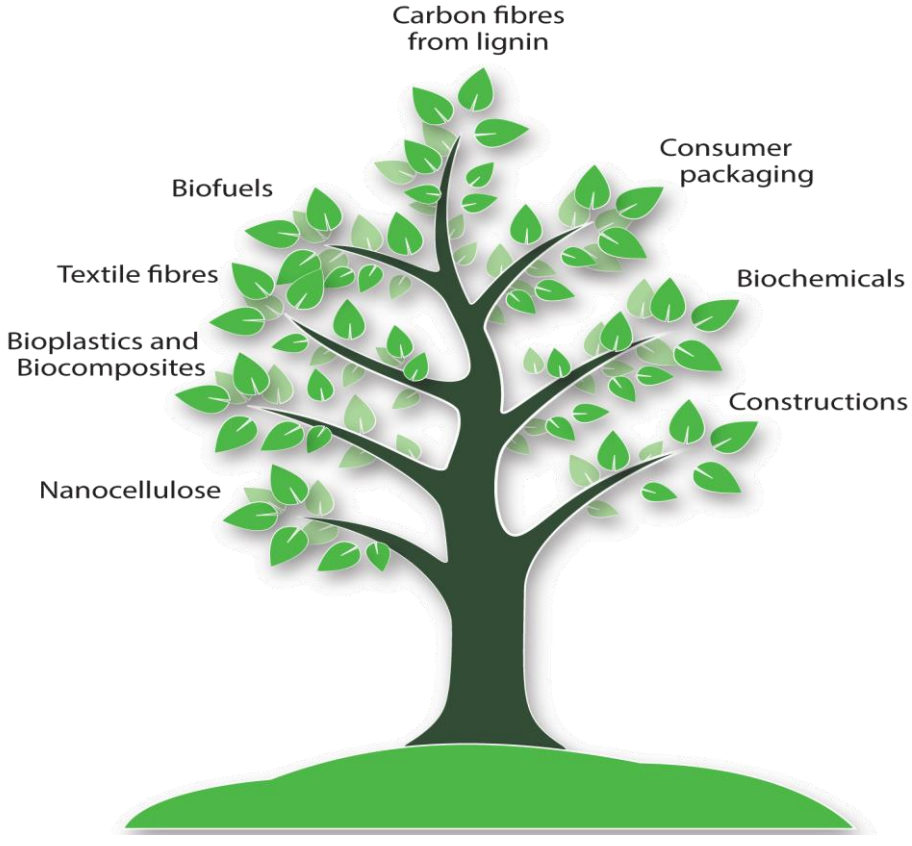
- Difference to past is new innovative, more resource-efficient and circular products and processes. They are a necessary for climate change mitigation, sustainability and helping world to live within the boundaries of our planet and resources (*circular bioeconomy*)

European forests: most important land biological infrastructure



- Covering ~ **40% of the land area**
- Capturing ~ **10% of CO_2 emissions**
- Renewable resources for
  - **25% of EU Bioeconomy**
  - **44% of renewable energy**
- Key for the sustainability of: **biodiversity, water and soil**

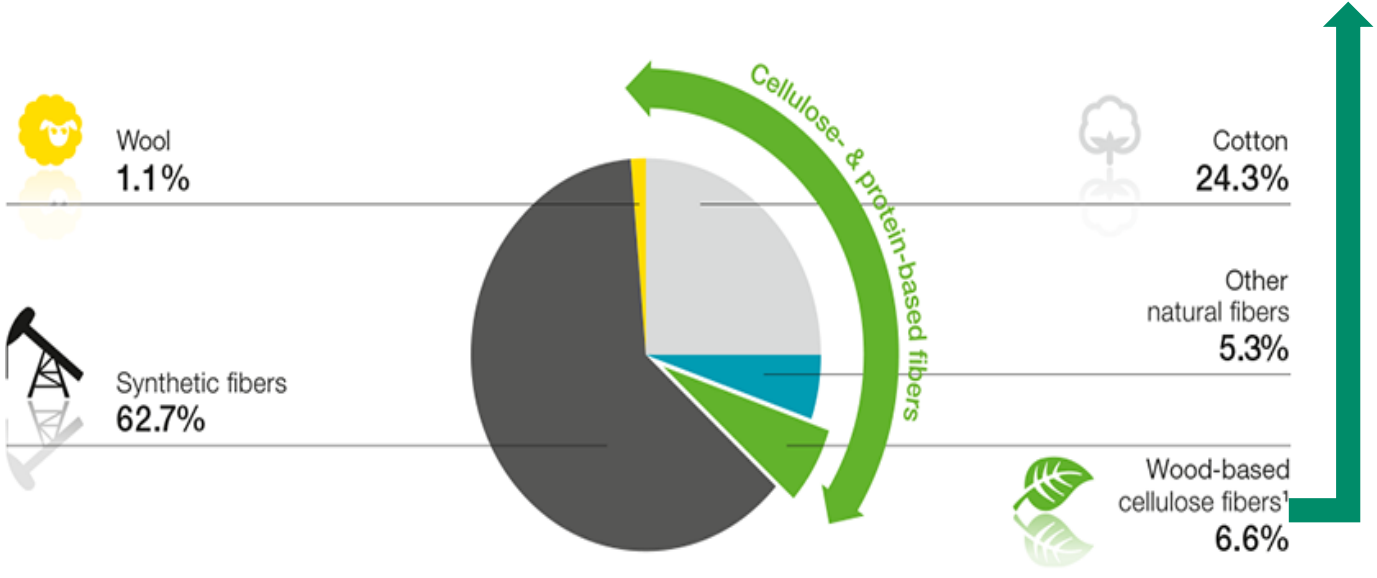
Societies demand renewable raw materials and sustainable products



Wood-based textiles for sustainable clothing

- Global production of textile fibres:
  - **93 Mt (2015)**

- **Carbon footprint from new wood-based fibres up to 9 times lower than synthetic**



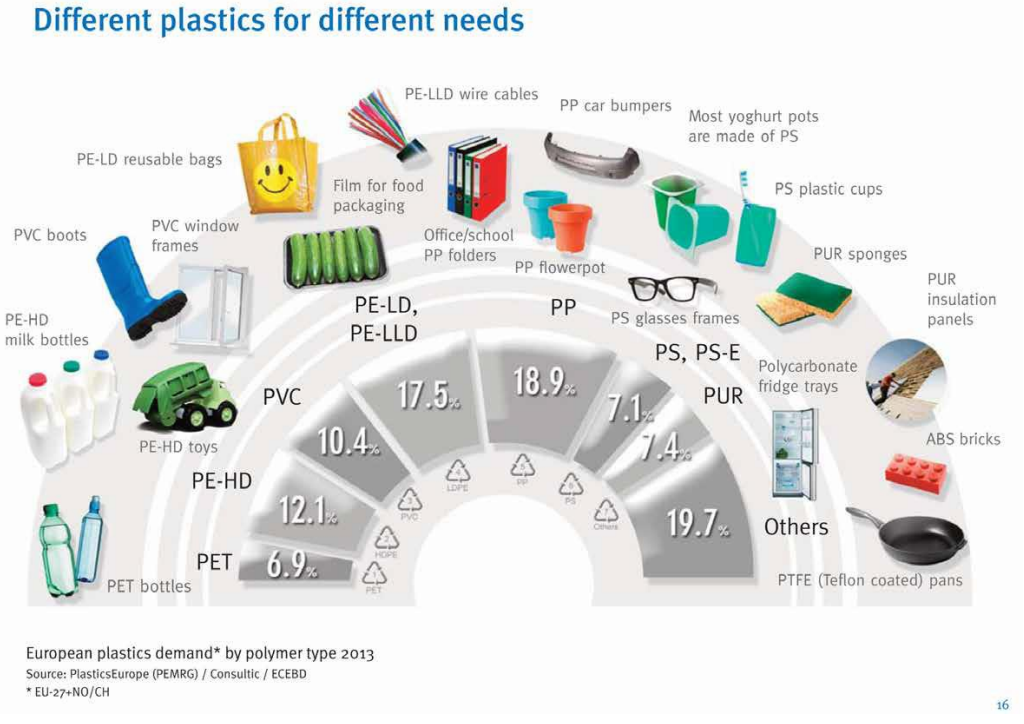
Sources: ICAC, CIRFS, TFY, FEB, Lenzing estimates

Wood-based fibers for consumer goods: Case plastics

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

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

- **20%** of the overall oil consumption
- **More plastic than fish in oceans by 2050 with current trend**



The new plastics economy, Ellen MacArthur Foundation

Forests for a sustainable urban environment

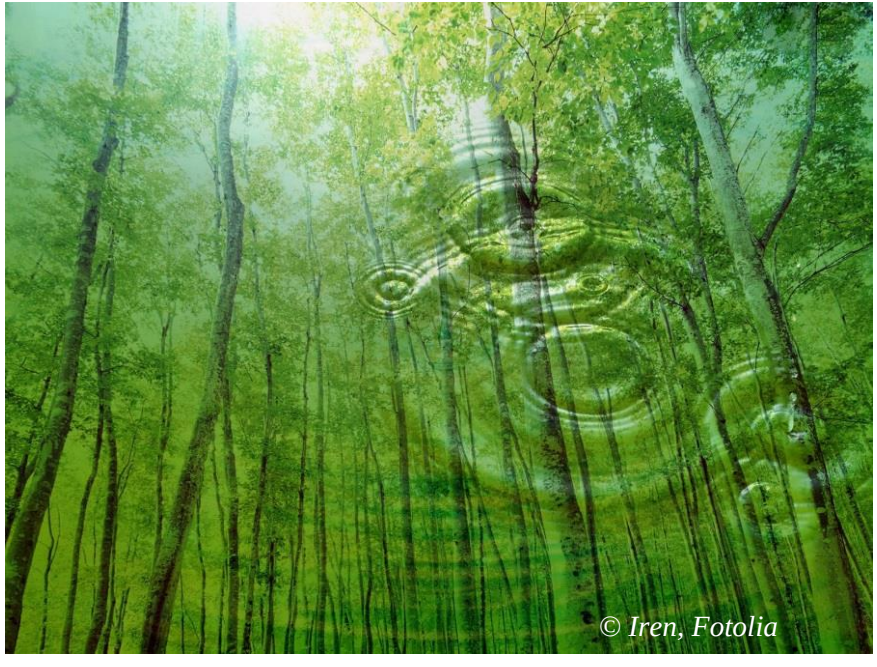
Wood is the only significant construction material that can be grown sustainably

- Reduces **CO_2 emissions and material use** compared to a concrete & steel building

- **Trees and urban forests** reduce the energy needs of buildings and the "urban heat island" effect

Forest bioeconomy services: all growing, but often forgotten

Example:
Forests are the main terrestrial sources of precipitation



- Forests are key "water infrastructures" providing **75% of the world´s accessible fresh water** for human needs
- Helps to control flooding

Policy objective: maximize synergies and minimize trade-offs between different ecosystem services

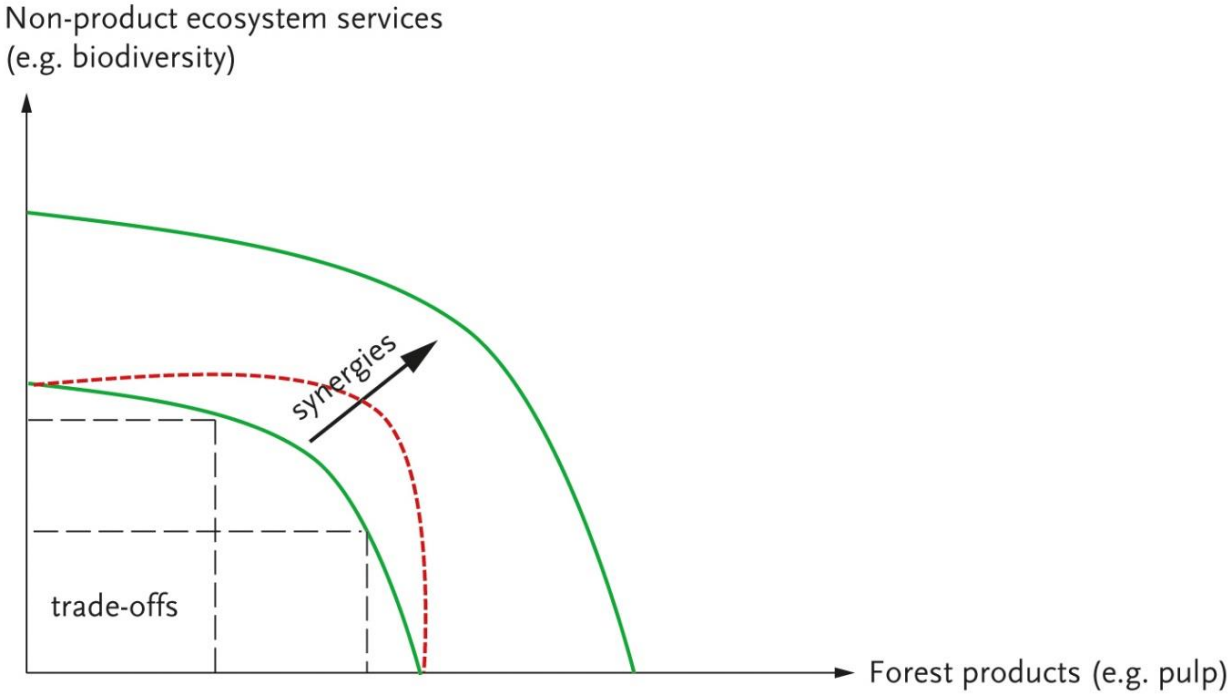


Figure 5. Illustration of forest-based bioeconomy production possibility frontier with trade-offs and synergies between forest products and non-product ecosystem services.

Source: Hetemäki, L., Hanewinkel, M., Muys, B., Ollikainen, M., Palahí, M. and Trasobares, A. 2017. Leading the way to a European circular bioeconomy strategy. From Science to Policy 5. European Forest Institute.

Bioeconomy and biodiversity can support each other

- Adaptation to climate change is likely to require bioeconomy to provide incentives and resources for the adaptation measures (*e.g., planting adaptable species, minimizing forest fires, etc.)*

- Adaptation on the other hand helps to safeguard biodiversity

- But, without biodiversity we would lose renewable natural capital that is the basis of bioeconomy

How to empower the European forest-based sector to serve the Paris Agreement and SDGs via circular bioeconomy?

Priorities for circular bioeconomy strategy*

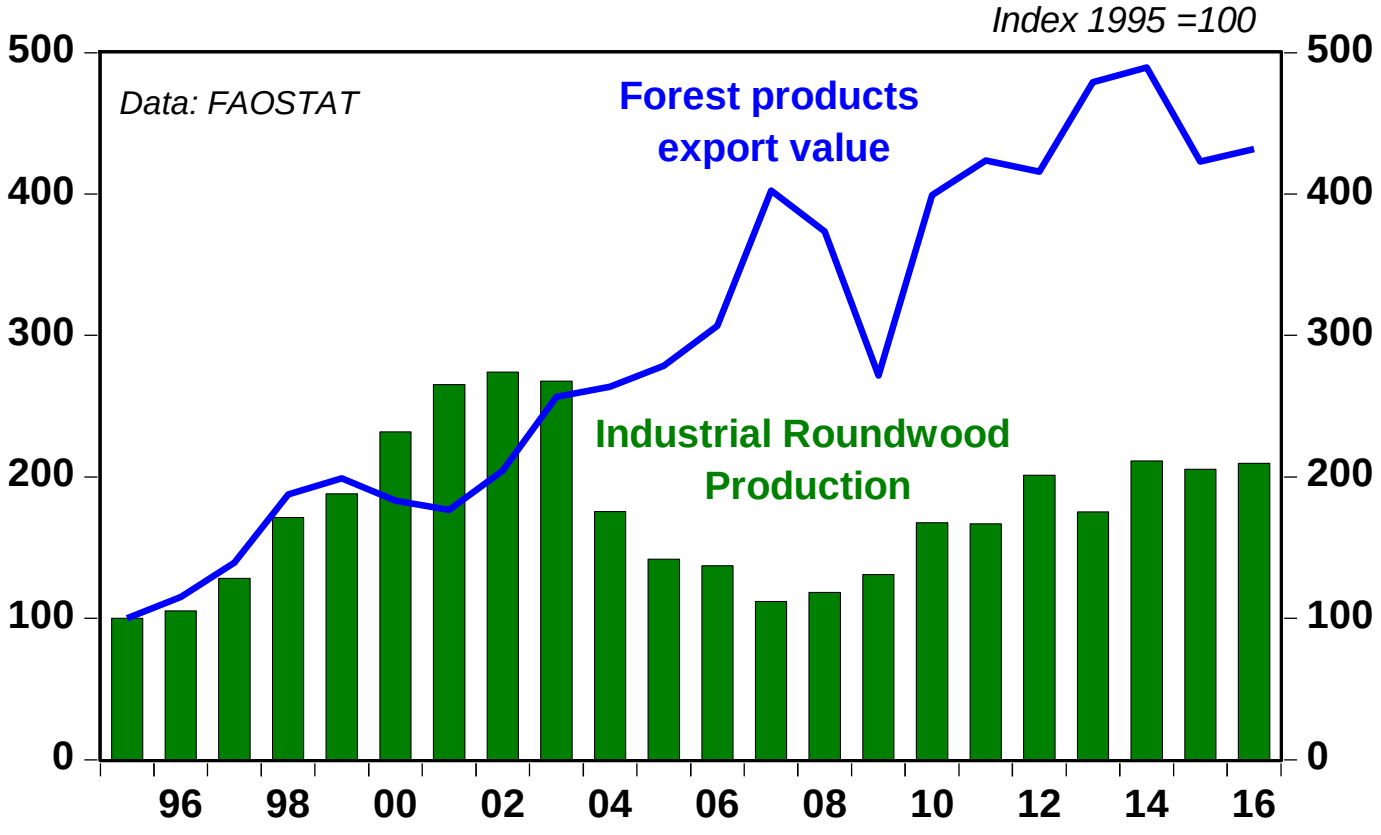
1. Create a science-based circular bioeconomy *narrative*
2. Do not assume a bioeconomy is *sustainable*
3. Abolish fossil subsidies and increase the role of CO_2 price
4. Invest in *R&D*, innovations and new skills
5. Provide the right *regulatory framework &* EU-level *common standards*
6. Enhance *risk-taking* capacity
7. Embrace biobased *services*
8. Make use of the opportunities that *forests* provide

**Hetemäki, L., Hanewinkel, M., Muys, B., Ollikainen, M., Palahí, M. and Trasobares, A. 2017. Leading the way to a European circular bioeconomy strategy. From Science to Policy 5. European Forest Institute.*

What could it mean for Estonia?

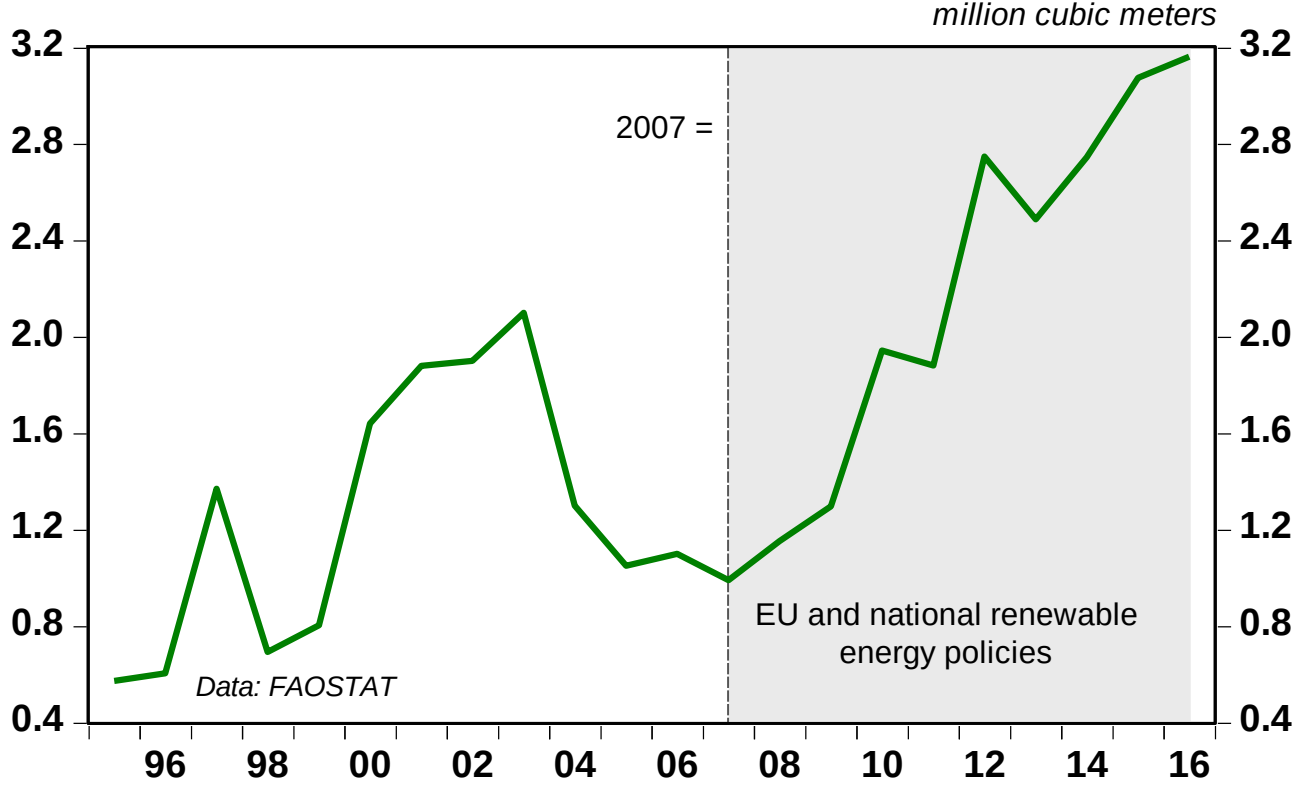
Paris Agreement & SDGs provide encouraging outlook for forest-based bioeconomy in Estonia

Forest products market developments in Estonia 1995-2016

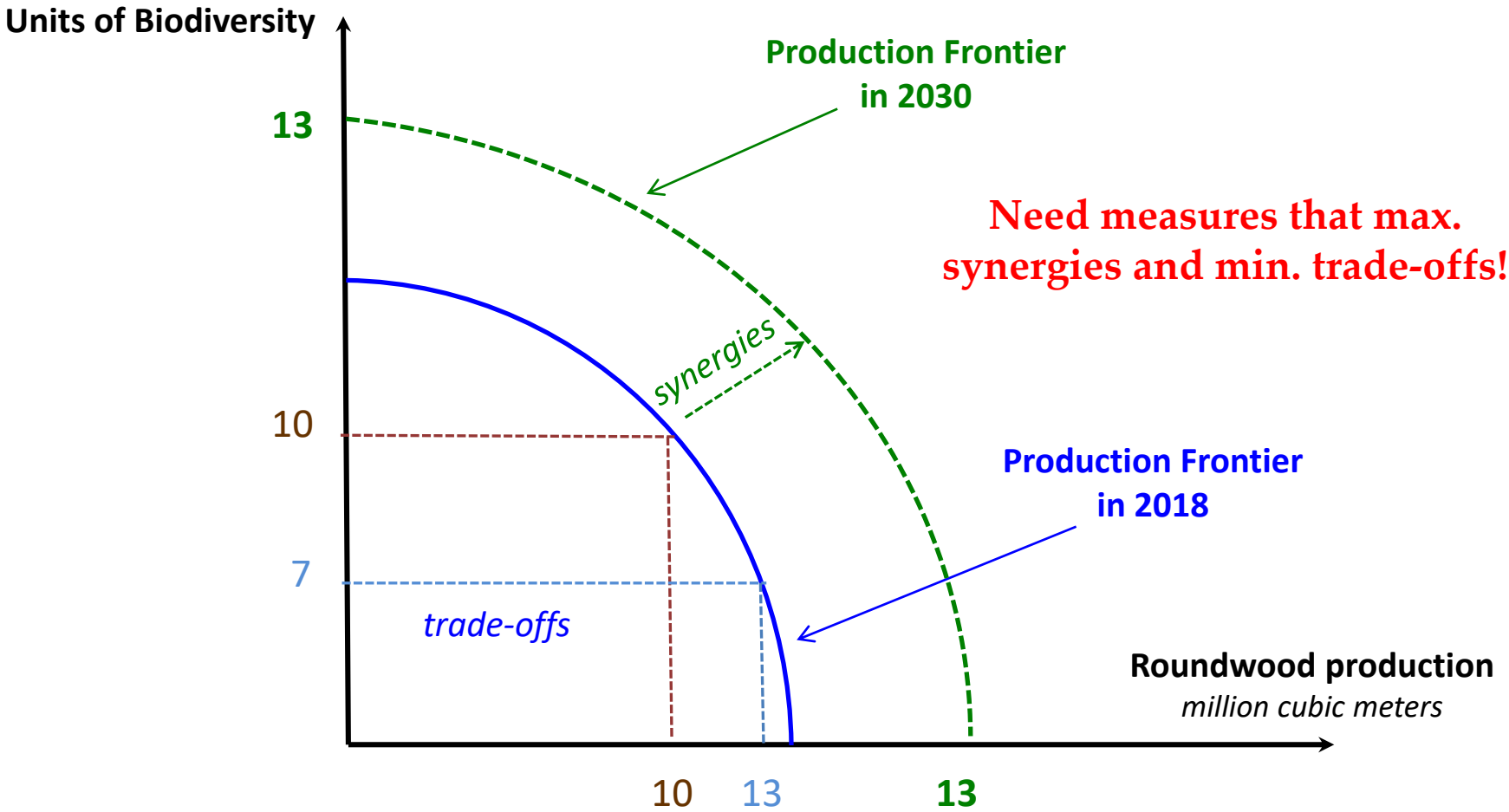


Strategies and policies will play important role also in future

Wood Fuel (”energy wood”) production in Estonia 1995-2016



Key question: How to enhance roundwood production and biodiversity in Estonia?



Aitäh!

Photo: Erkki Oksanen

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