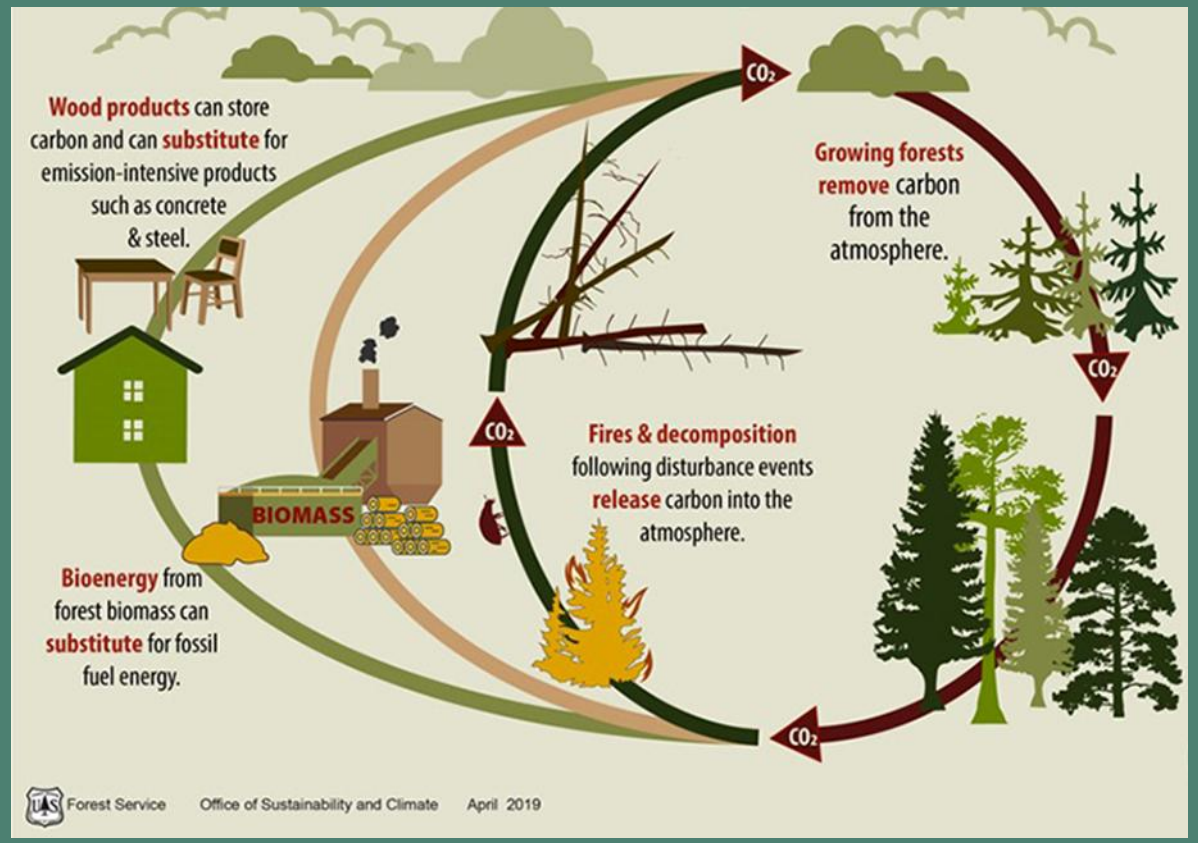
Exploring Wood Resources and Industry Capacity Alignment

Nicola Bozzolan
Bioeconomy and Climate-smart Forestry

Background 1

Forest and the role in CC



Korosuo *et al.*
Carbon Balance and Management (2023) 18:15
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Carbon Balance and Management

RESEARCH Open Access

The role of forests in the EU climate policy: are we on the right track?

Anu Korosuo[1*], Roberto Pilli[2], Raúl Abad Viñas[2,3], Viorel N. B. Blujdea[1], Rene R. Colditz[1], Giulia Fiorese[2], Simone Rossi[2], Matteo Vizzarri[1,4] and Giacomo Grassi[1]

Abstract

LETTERS
PUBLISHED ONLINE: 3 AUGUST 2014 | DOI: 10.1038/NCLIMATE2318

nature climate change

Increasing forest disturbances in Europe and their impact on carbon storage

Rupert Seidl[1*], Mart-Jan Schelhaas[2], Werner Rammer[1] and Pieter Johannes Verkerk[3]

Disturbances from wind, bark beetles and wildfires have increased in Europe's forests throughout the twentieth European forest C sink recently[3]. A further increase in disturbance damage in the future might thus pose a major risk for Europe's

https://portal.ct.gov/DEEP/Forestry/Climate-Change/Carbon-and-Forests

Background 2

Forests are under pressure

Increased forest disturbances

EU climate neutrality

EU Bioeconomy

Research aim

Research question 1

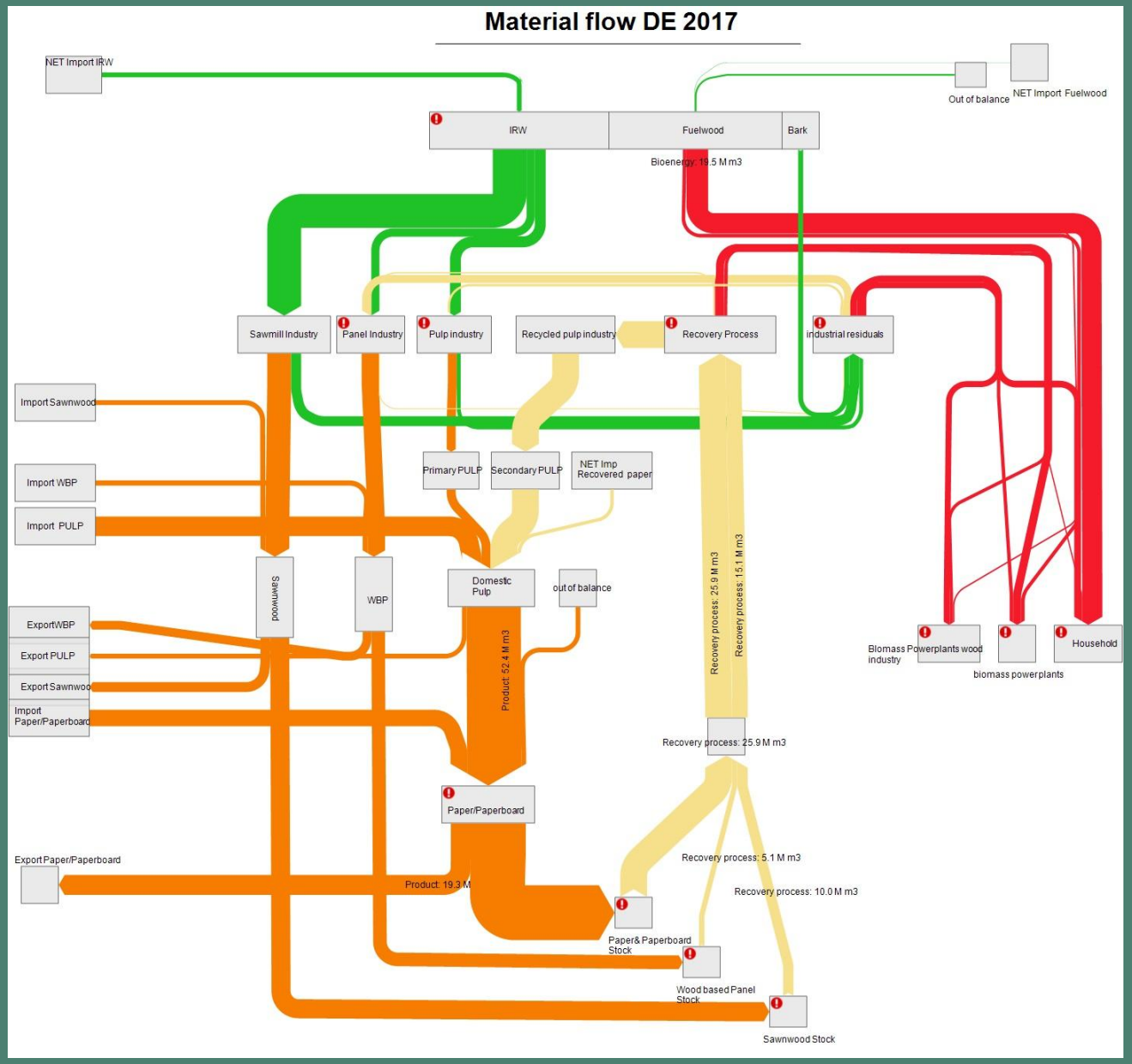
How are harvested wood resources currently being used?

Research question 2

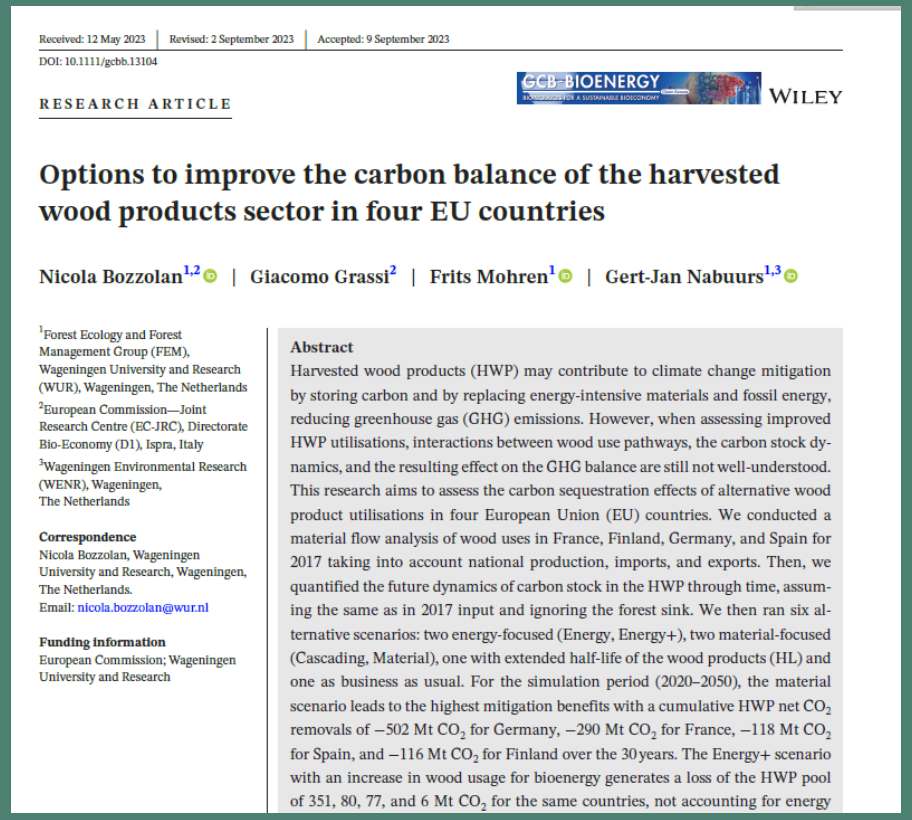
Is there a way to improve the use of harvested wood resources?

Methods RQ 1

- Selected 4 representative EU countries and conducted a detailed wood flow analysis
- Translated the analysis into a Python script for multiple iterations
- Included data on import/export, residues, waste wood, and recycling



Findings RQ1



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RESEARCH ARTICLE

GCB-BIOENERGY WILEY

Options to improve the carbon balance of the harvested wood products sector in four EU countries

Nicola Bozzolan[1,2] | Giacomo Grassi[2] | Frits Mohren[1] | Gert-Jan Nabuurs[1,3]

[1]Forest Ecology and Forest Management Group (FEM), Wageningen University and Research (WUR), Wageningen, The Netherlands

[2]European Commission—Joint Research Centre (EC-JRC), Directorate Bio-Economy (D1), Ispra, Italy

[3]Wageningen Environmental Research (WENR), Wageningen, The Netherlands

Correspondence
Nicola Bozzolan, Wageningen University and Research, Wageningen, The Netherlands.
Email: nicola.bozzolan@wur.nl

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Abstract

Harvested wood products (HWP) may contribute to climate change mitigation by storing carbon and by replacing energy-intensive materials and fossil energy, reducing greenhouse gas (GHG) emissions. However, when assessing improved HWP utilisations, interactions between wood use pathways, the carbon stock dynamics, and the resulting effect on the GHG balance are still not well-understood. This research aims to assess the carbon sequestration effects of alternative wood product utilisations in four European Union (EU) countries. We conducted a material flow analysis of wood uses in France, Finland, Germany, and Spain for 2017 taking into account national production, imports, and exports. Then, we quantified the future dynamics of carbon stock in the HWP through time, assuming the same as in 2017 input and ignoring the forest sink. We then ran six alternative scenarios: two energy-focused (Energy, Energy+), two material-focused (Cascading, Material), one with extended half-life of the wood products (HL) and one as business as usual. For the simulation period (2020–2050), the material scenario leads to the highest mitigation benefits with a cumulative HWP net CO_2 removals of −502 Mt CO_2 for Germany, −290 Mt CO_2 for France, −118 Mt CO_2 for Spain, and −116 Mt CO_2 for Finland over the 30 years. The Energy+ scenario with an increase in wood usage for bioenergy generates a loss of the HWP pool of 351, 80, 77, and 6 Mt CO_2 for the same countries, not accounting for energy

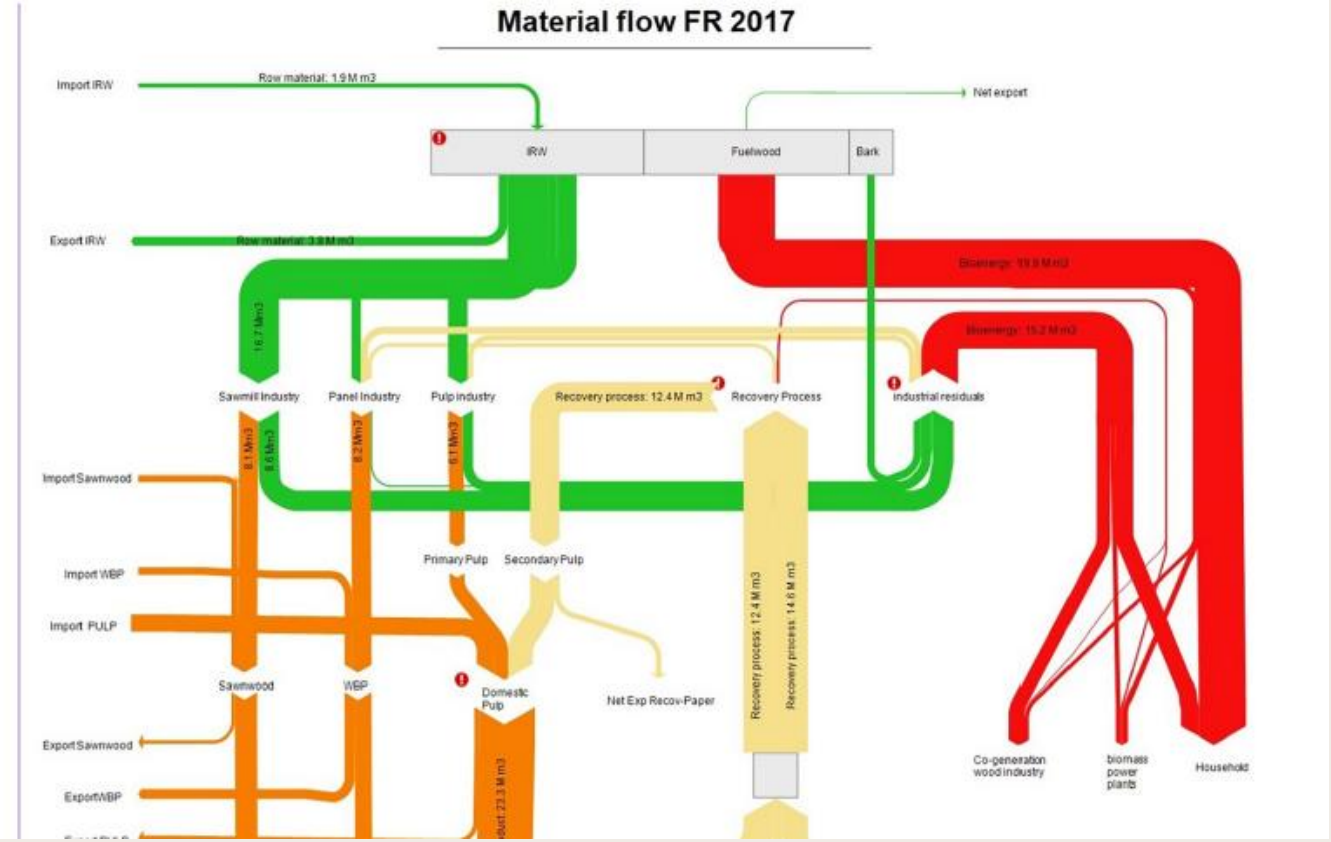
- Wood chain are extremely complexed
- Almost 50% of the wood is used directly for energy, although there are differences between countries.
- Some countries have a sawmill industry with higher processing efficiency than others (e.g., Germany)
- Countries with limited wood resources have a higher use of by-products and recovered wood

Bozzolan, et al (2023)

Research aim

Research question 2

Is there a way to improve the use of harvested wood resources?

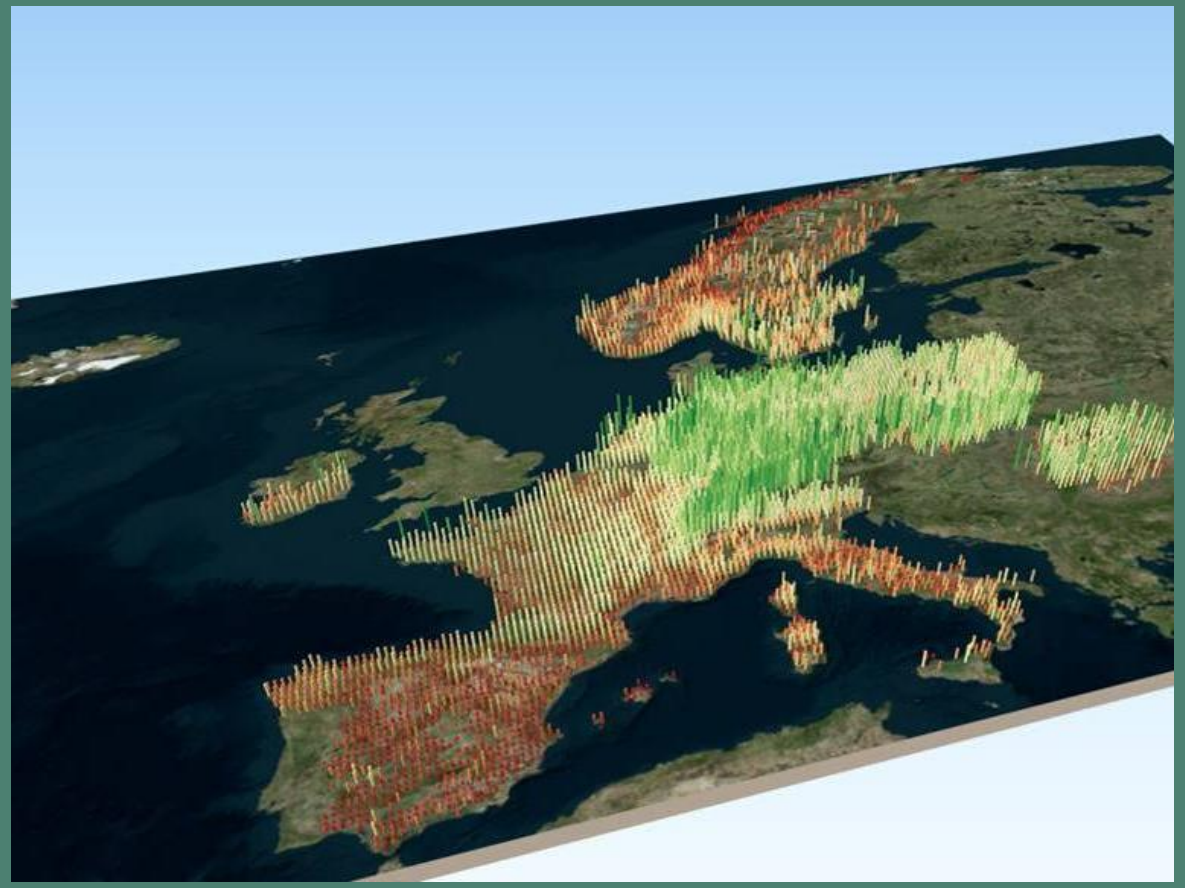


Bozzolan, et al (2023)

Methods RQ 2

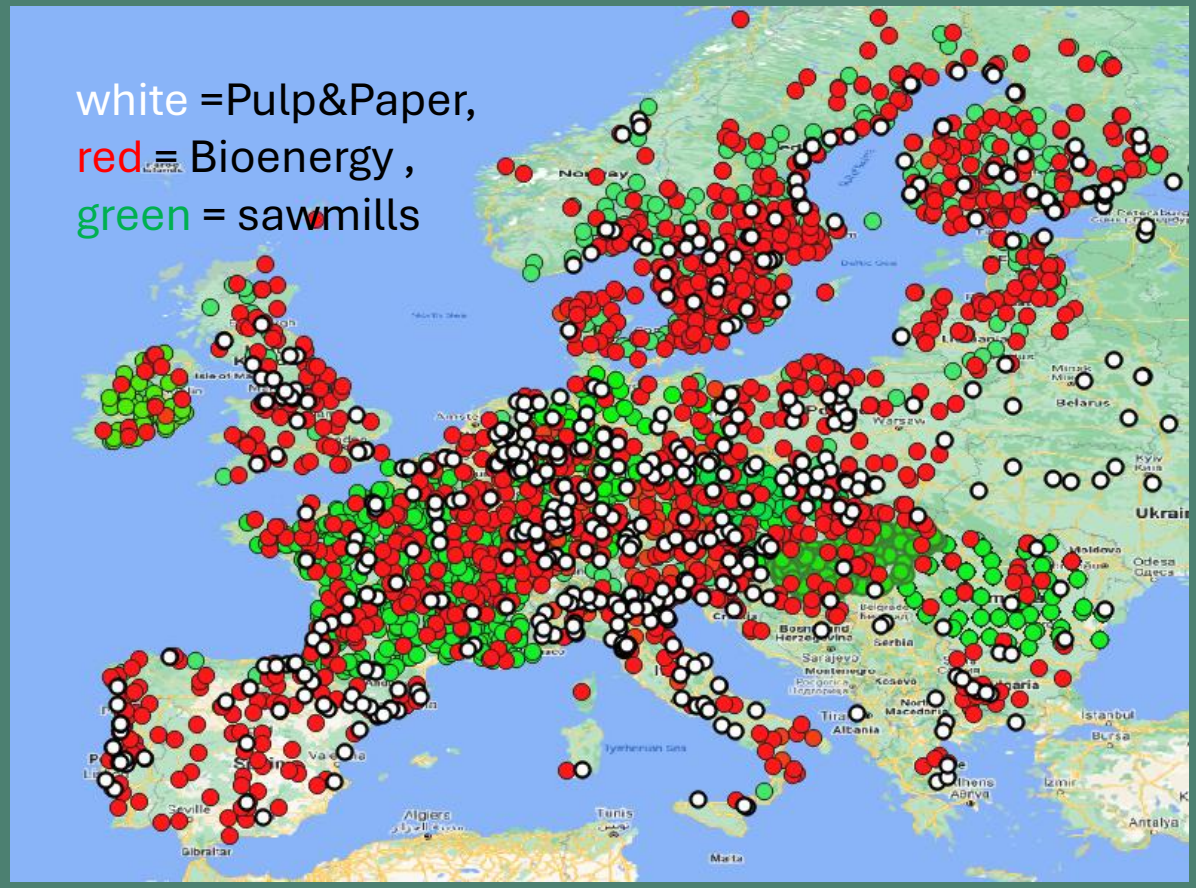
Regional wood **SUPPLY**

EFISCEN - *Space*

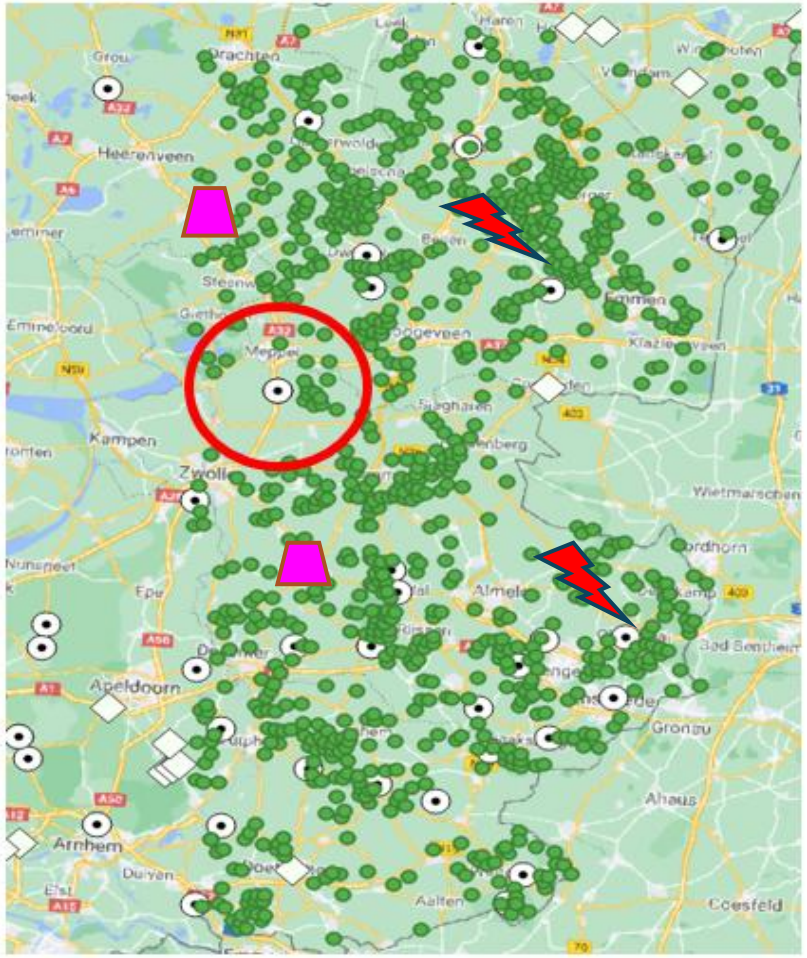


Regional wood **DEMAND**

European Forest industry Database EUFID



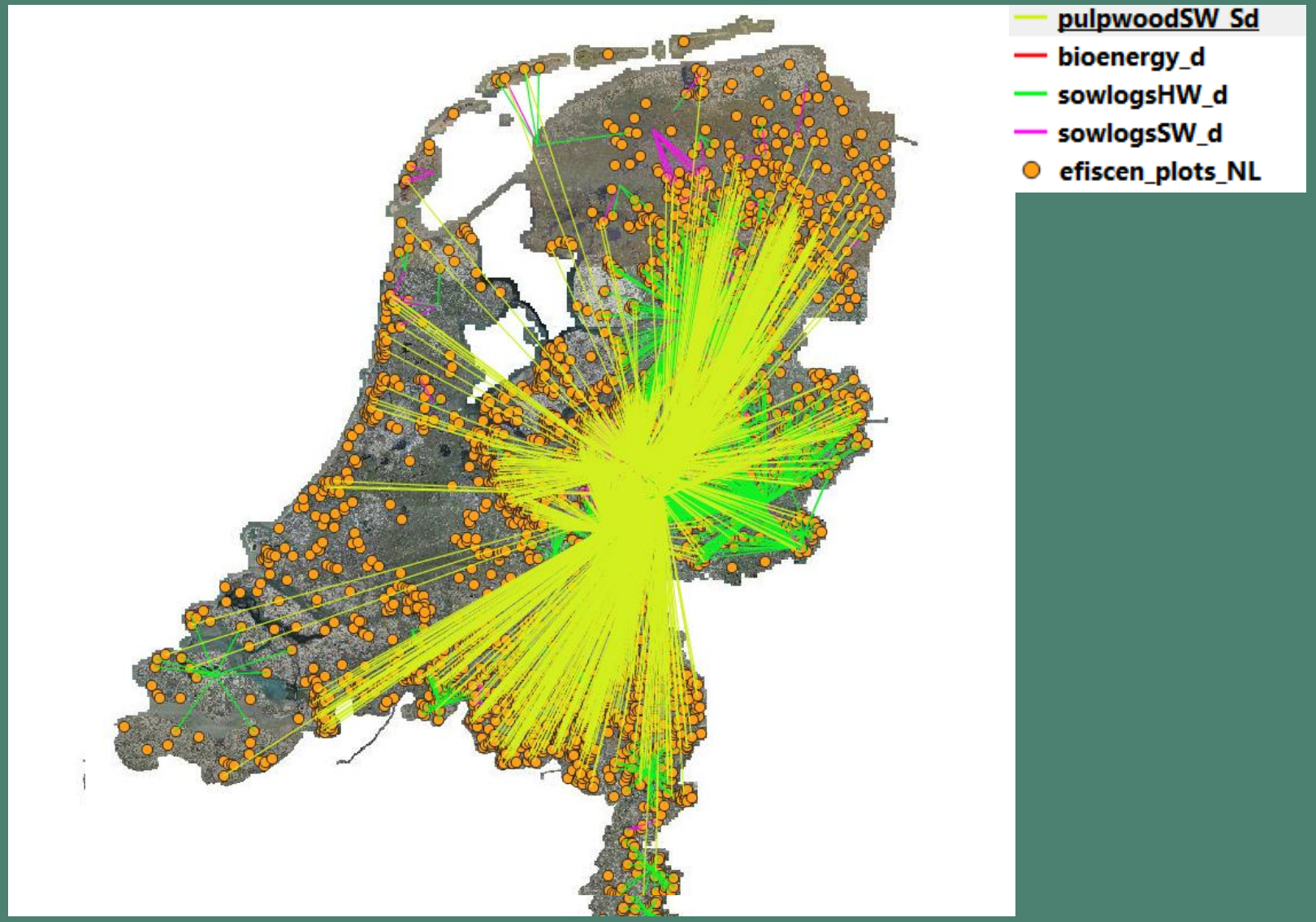
Methods RQ 2



Plot	Time	Species	Cl-1	Cl-2	Cl-3
NL_59	2013	Picea A.	0	0	15
Nl_60	2013	Fagus	0	0	50

Group	Species	DBH	Grade
CON	Norway spruce	< 10 cm	Energy
CON	Norway spruce	10-15 Cm	Pulp
CON	Norway spruce	>20 Cm	Sawn wood

Methods RQ 2


pulpwoodSW_Sd
bioenergy_d
sowlogsHW_d
sowlogsSW_d
efiscen_plots_NL

Findings RQ 2

Contents lists available at ScienceDirect

Forest Policy and Economics

journal homepage: www.elsevier.com/locate/forpol

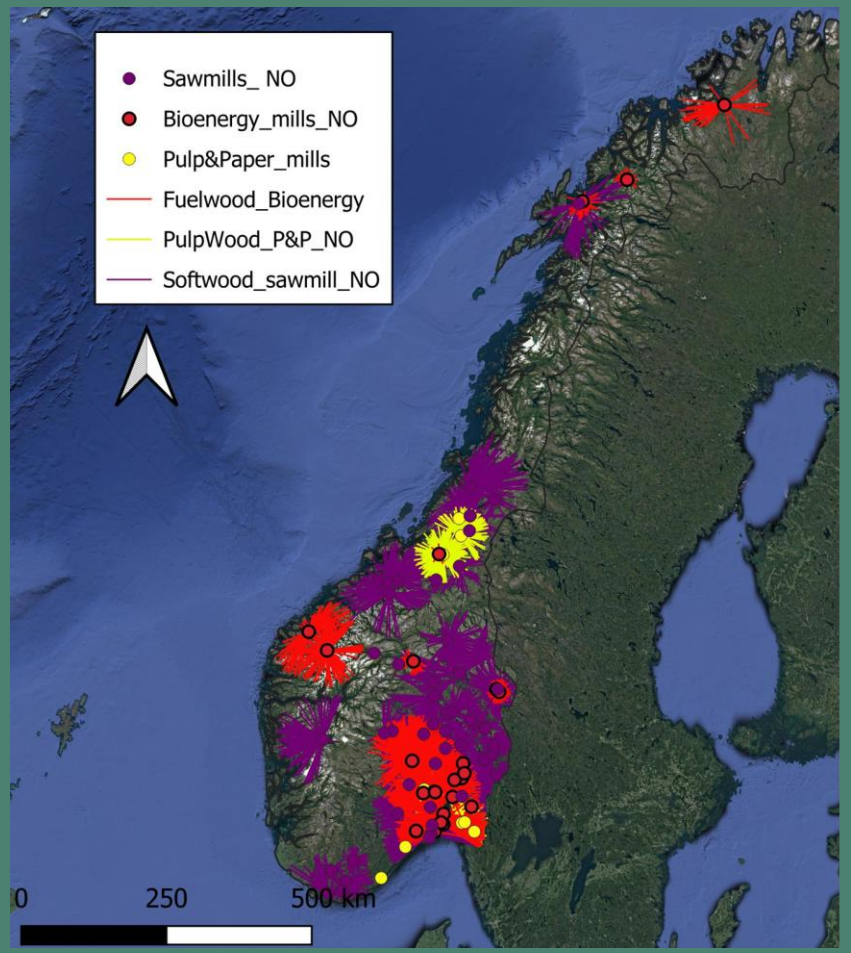
Preliminary evidence of softwood shortage and hardwood availability in EU regions: A spatial analysis using the European Forest Industry Database

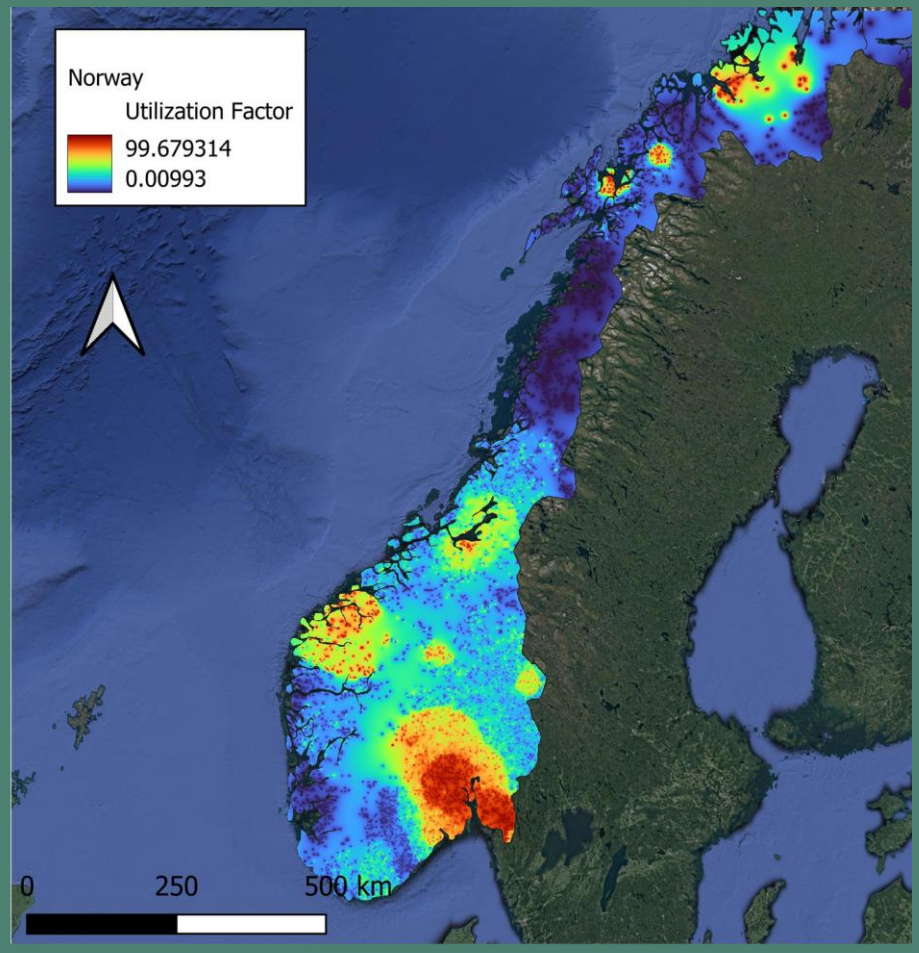
Nicola Bozzolan [a,b,*], Frits Mohren [a], Giacomo Grassi [b], Mart-Jan Schelhaas [c], Igor Staritsky [c], Tobias Stern [d], Mikko Peltoniemi [e], Vladimír Šebeň [f], Mariana Hassegawa [g], Pieter Johannes Verkerk [g], Marco Patacca [a,c], Aris Jansons [h], Martin Jankovský [i], Petra Palátová [i], Hanna Blauth [j], Daniel McInerney [k], Jan Oldenburger [l], Eirik Ogner Jåstad [m], Jaroslav Kubista [o], Clara Antón-Fernández [n], Gert-jan Nabuurs [a,c]

Bozzolan et al (2024)

- Industries are using the wood resources efficiently
- We found a shortage of softwood and a surplus of hardwood
- A substantial amount of biomass graded as bioenergy was found, potentially serving as fuelwood in household

Findings RQ 2





Bozzolan et al (2024)

Conclusions

- Wood resources are **precious** and **limited**. An optimized use of wood, prioritizing its application **first for materials** and only **later for bioenergy**, is highly needed.

- Increasing the use of **waste wood** and **industrial residues** can **expand wood resources availability** .

- The wood industry should increase the utilisation of:
  - different wood types, particularly broadleaf species
  - different wood qualities (e.g., not perfectly straight logs) for the production of alternative wood products (e.g. engineered wood products)

Thank you !

Dr. Nicola Bozzolan
Researcher in Bioeconomy and Climate-Smart Forestry

nicola.bozzolan.science@outlook.com