

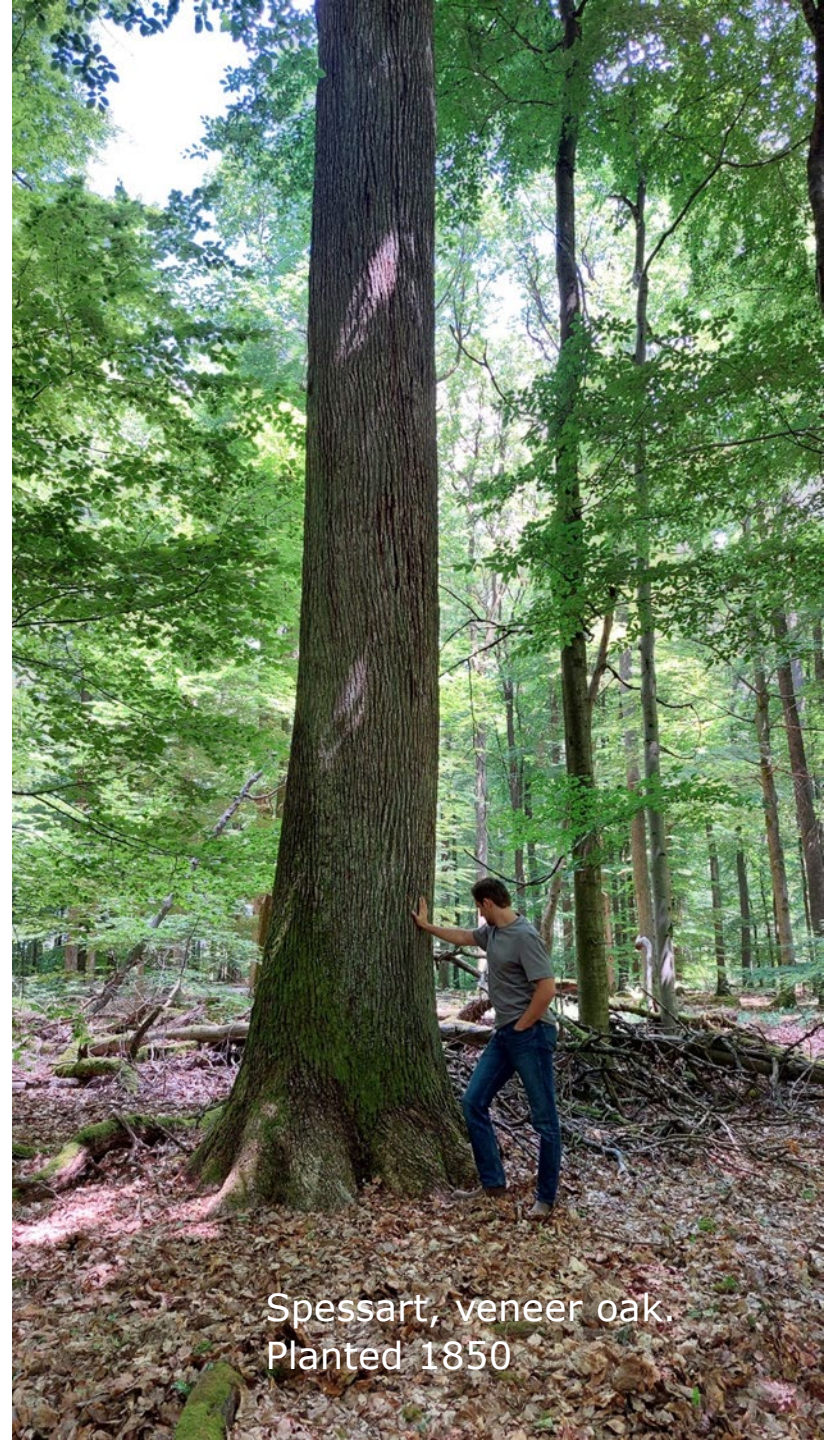
European forests under climate change: a forest adaptation vision

Wageningen, 16 Nov 2023

In honour of inauguration of Maria Tengö
& Georg Winkel

Gert-Jan Nabuurs

Prof. European Forest Resources,
Wageningen



Spessart, veneer oak.
Planted 1850

Do you want change ?

We live in bubbles; as did our ancestors



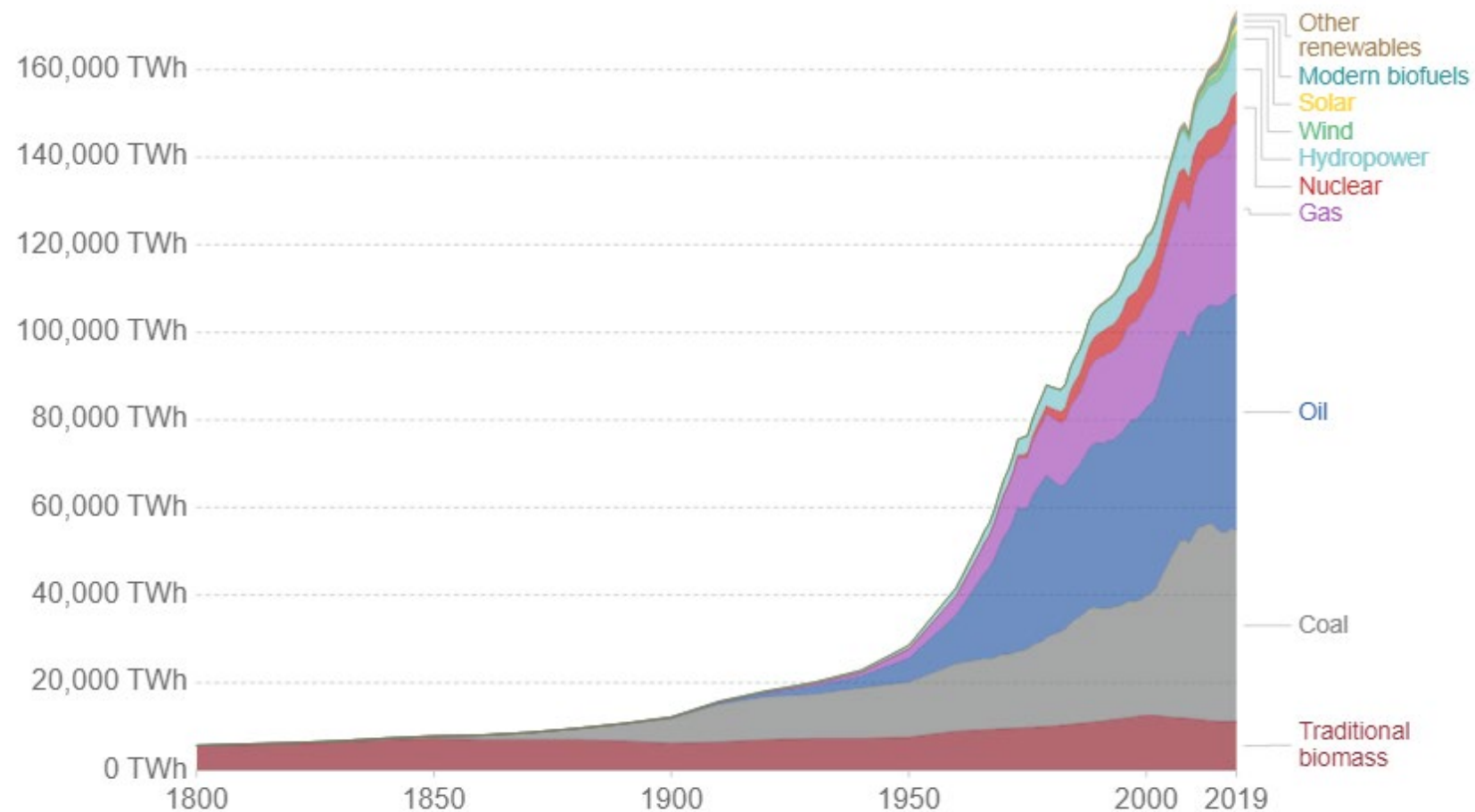
1830 land use map
around Overloon

We are conservative and all addicted to fossil C
addicted people do not transform easily...

Global primary energy consumption by source

Our World
in Data

Primary energy is calculated based on the 'substitution method' which takes account of the inefficiencies in fossil fuel production by converting non-fossil energy into the energy inputs required if they had the same conversion losses as fossil fuels.



European tree species: this is going to change ! (Brus et al. 2011)

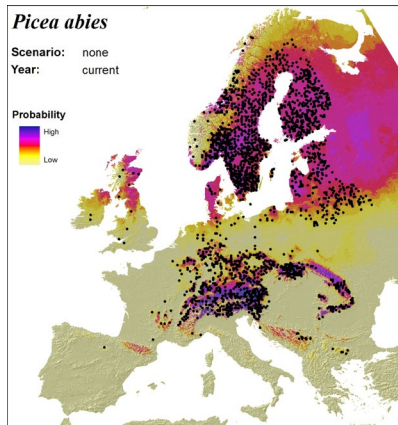


Romanian reserve Slatioara. Forest restoration SUPERB
(~0.5% of European forests primeval; these natural forests will
change as well.)



And is the resource under pressure?

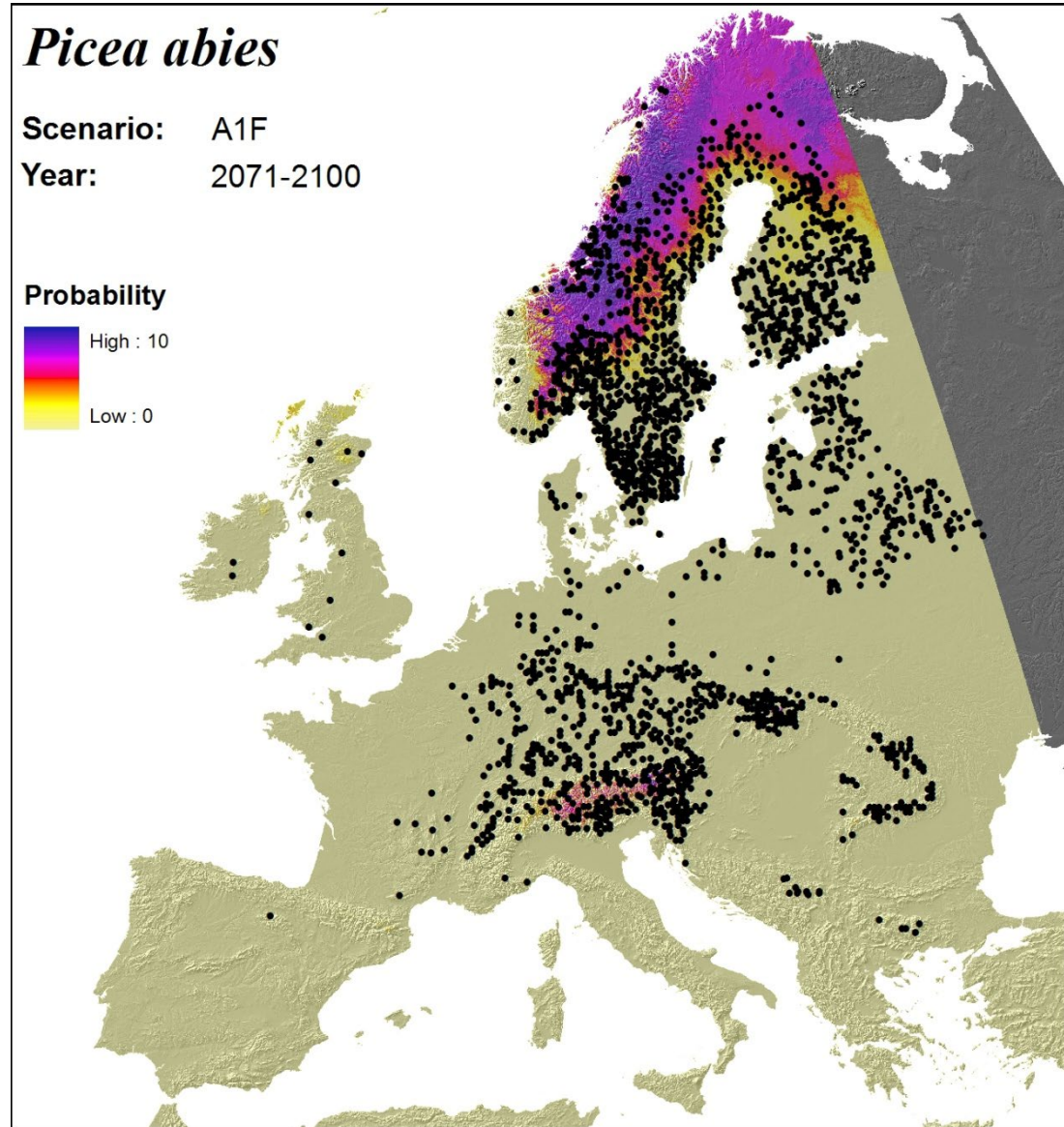
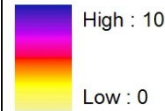
Potential future ranges;
future seemed far away



Picea abies

Scenario: A1F
Year: 2071-2100

Probability



nature
climate change

LETTERS

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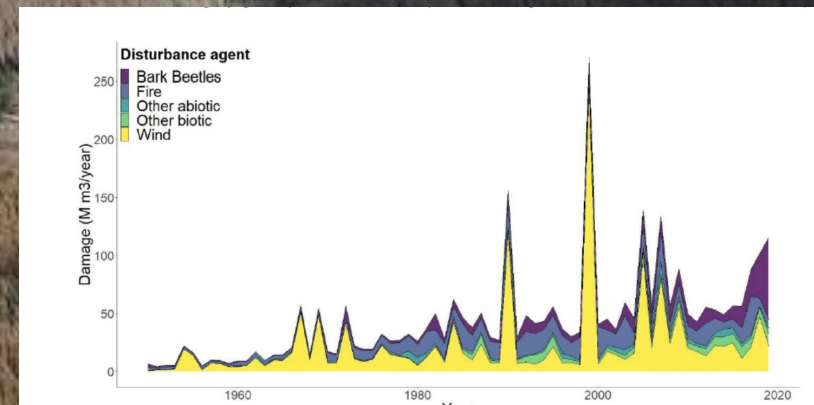
Climate change may cause severe loss in the economic value of European forest land

Marc Hanewinkel^{1,2*}, Dominik A. Cullmann³, Mart-Jan Schelhaas⁴, Gert-Jan Nabuurs⁵ and Niklaus E. Zimmermann⁶



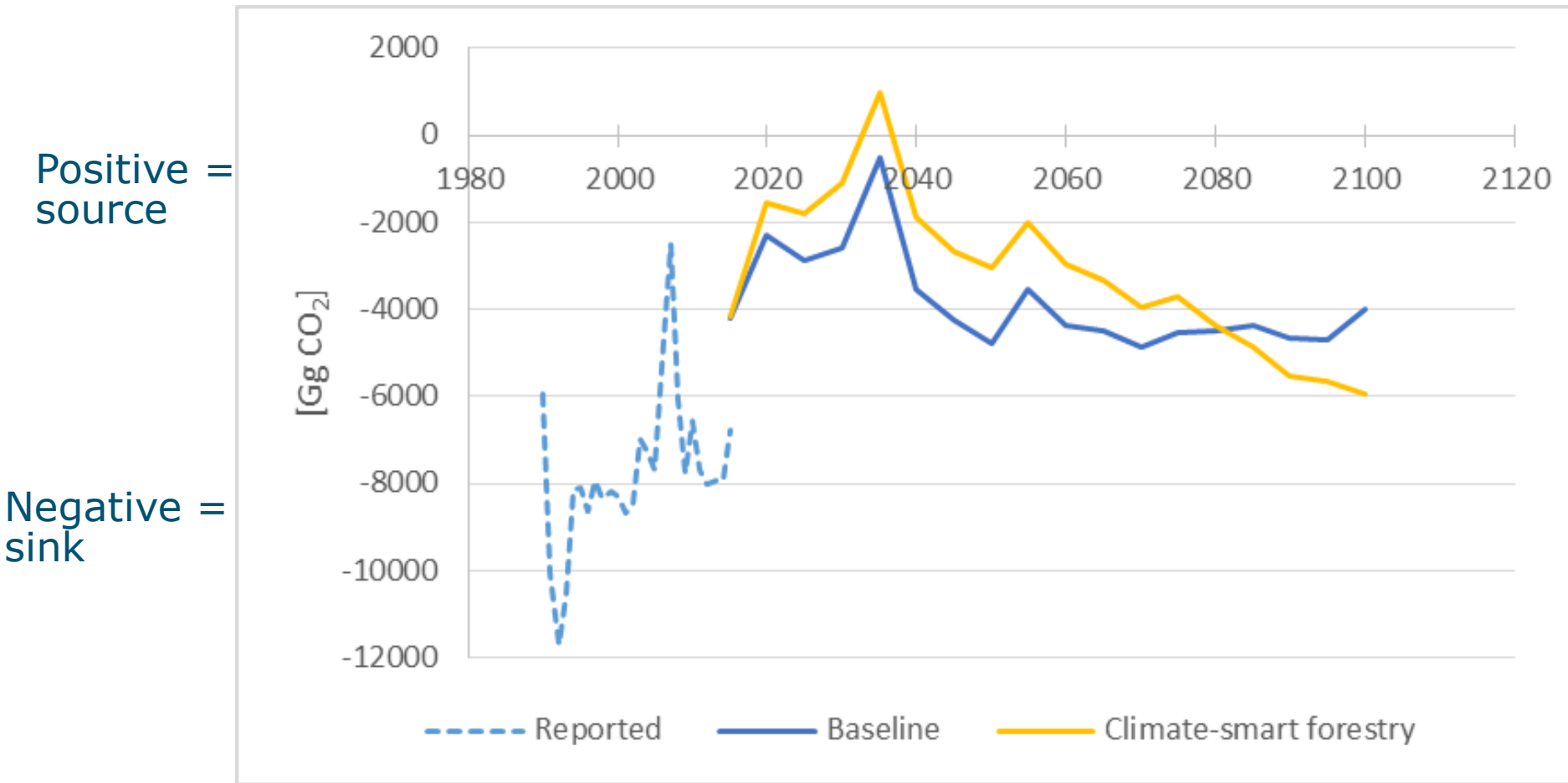
WAGENINGEN UR
For quality of life

Actuality: Spruce mortality
estimated > 200 million m^3 in
total



Patacca et al.2023. avg damage ~ 48 million
 $\text{m}^3/\text{y} = 0.2\%$ of stock

What the bark beetle means for the sink in Czech:

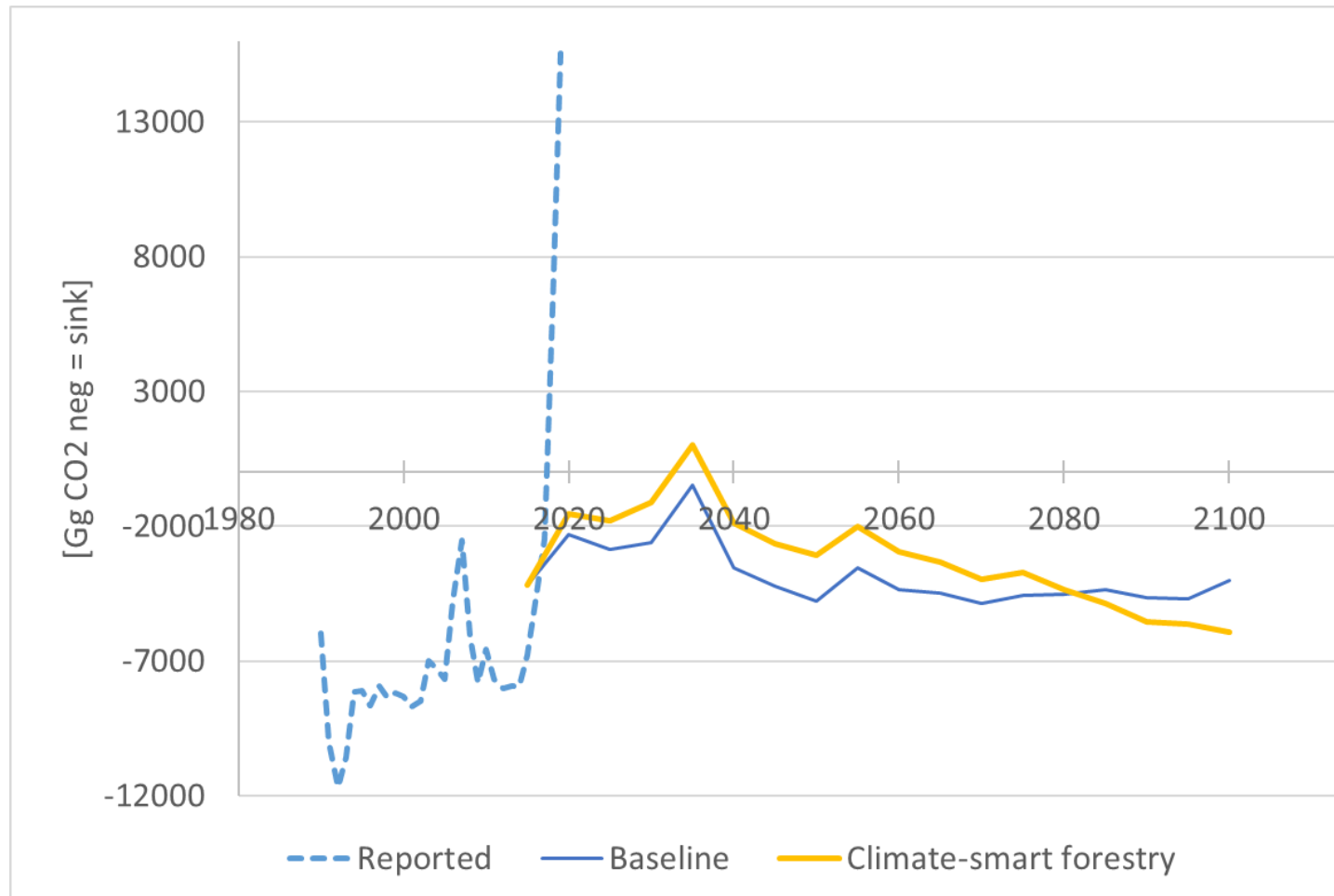


CO2 sink of Czech forests with reported data (dashed, UNFCCC till 2015). Projected under climate smart forestry with EFISCEN model (Nabuurs et al. 2018)

And how it is developing in reality...now a strong source. Man-made resource will be converted to much more deciduous

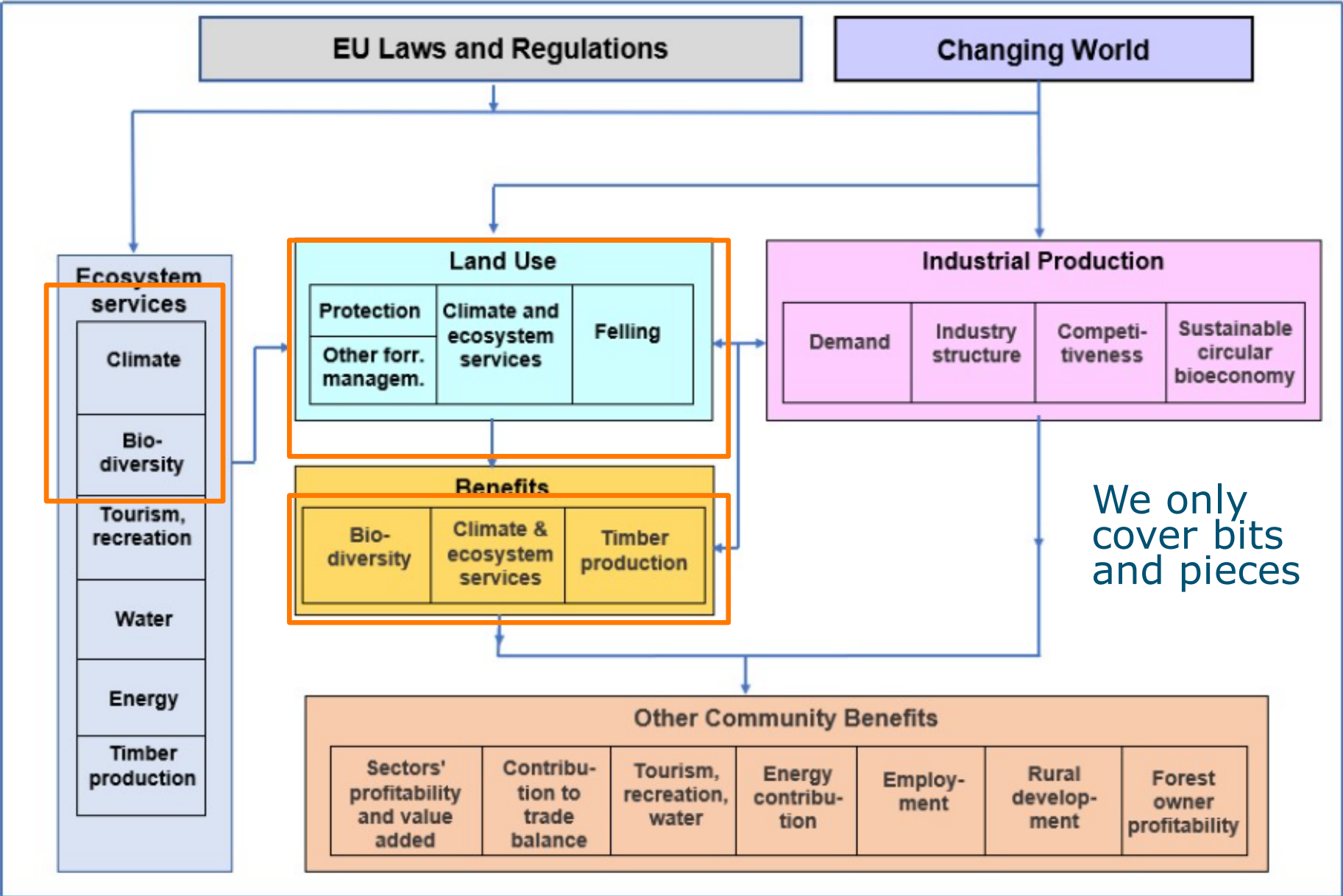
Positive = source

Negative = sink



However, the world is more complex

HOLISTIC VIEW OF FORESTS & FORESTS SECTOR



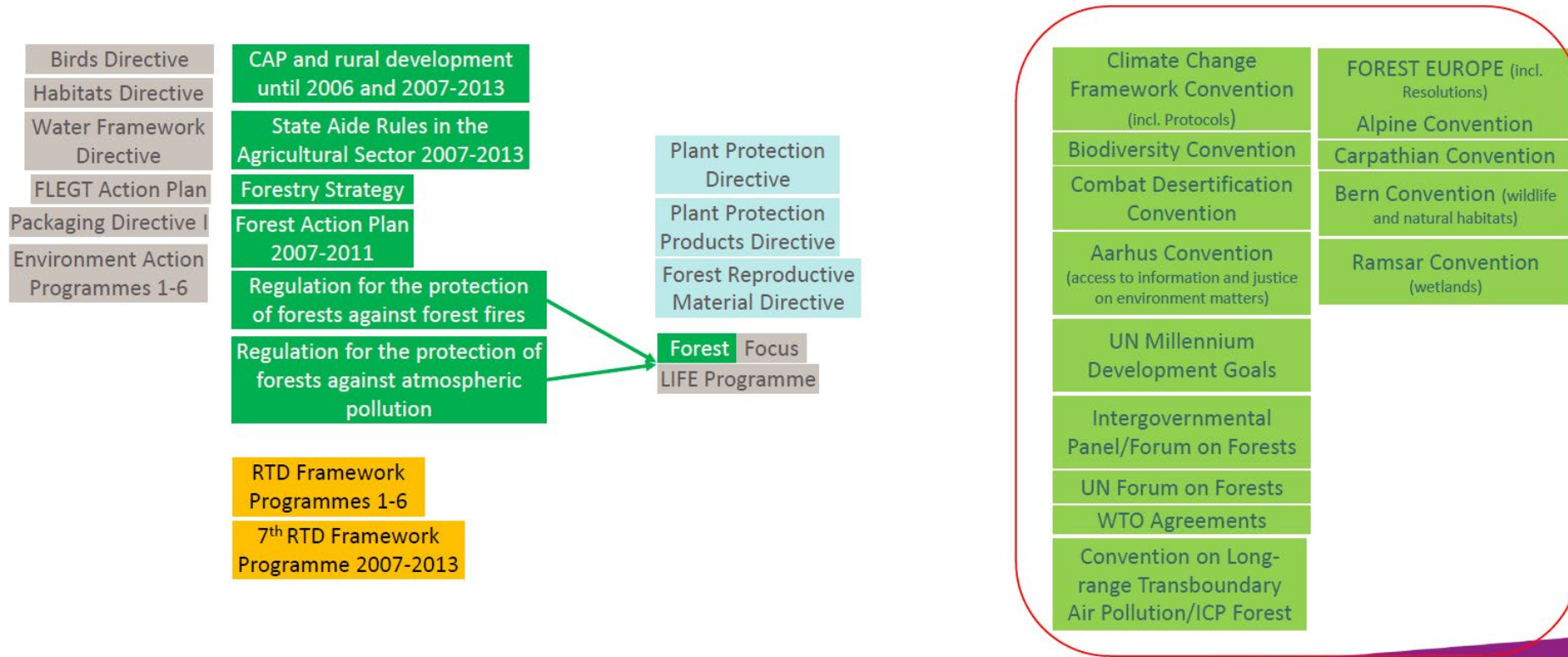
We only cover bits and pieces



Policies

Walnut hybrid
provenance trial field,
Netherlands

EC/EU policy environment 1997-2007: simple



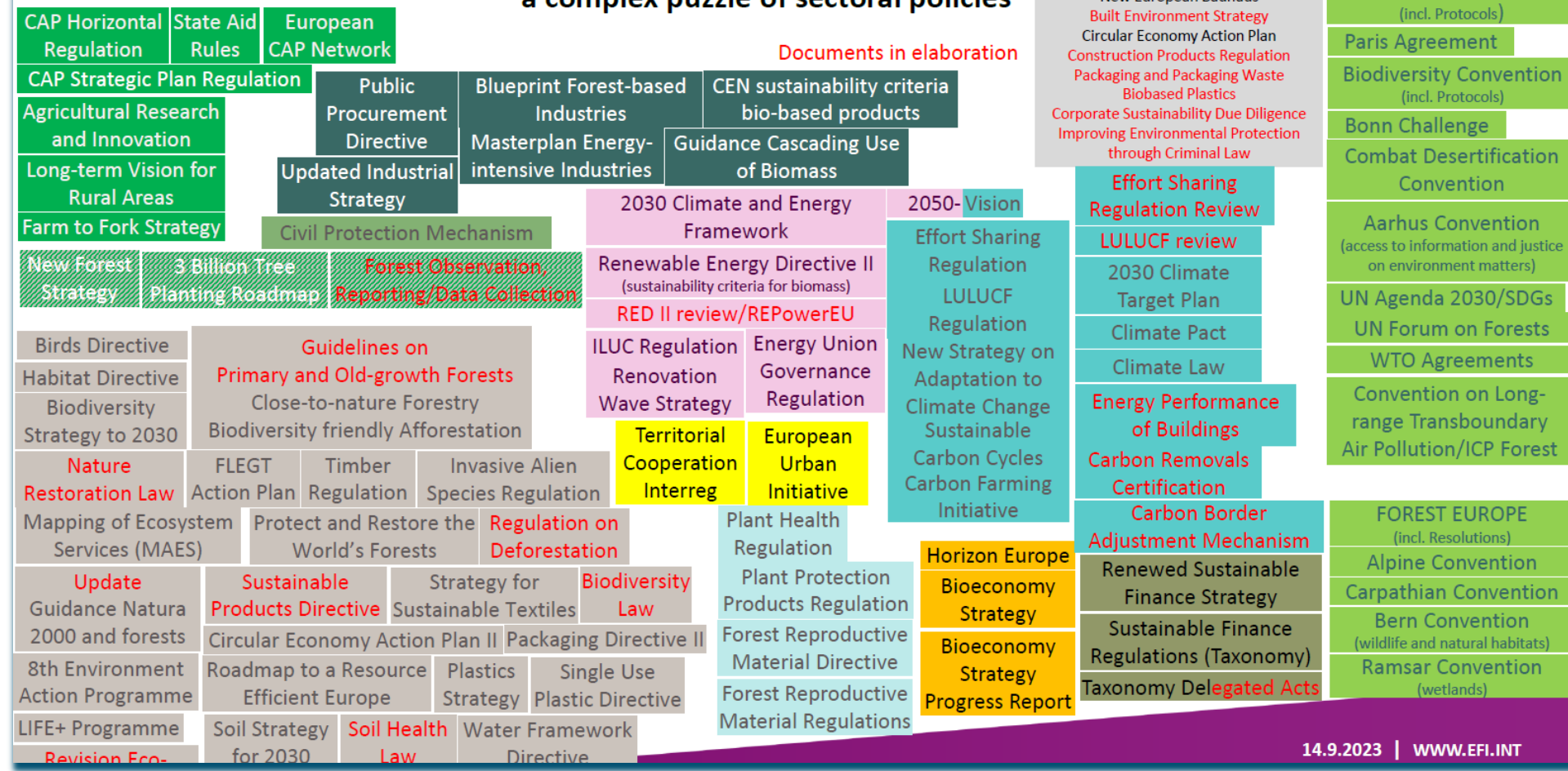
Sector and countries complained 'Brussels was not interested in forests'

..we have nothing to complain about anymore

Source: Helga Pulzl, EFI

EU Forest Policy Environment 2023 a complex puzzle of sectoral policies

Documents in elaboration



do we really foresee the effects of e.g. set-asides??

Or the wishes to rely more on bio-products?



The private sector has a enormously large role to play, but needs to be pushed by strict policies



Finally

- We should realise we live in bubbles and are conservative
- Changes are coming, but also good to realise that changes have always been there
- We reasonably understand the biophysical environment of forests and forest dynamics
- Fast adapters, slow adapters: What is best? 'There is time'
- We don't understand the full interlinkages to soc-econ
- Too many policies maybe ?
- Role of private sector very large (we need strong regulations)
- Not fight Brussels, but we make Brussels.

Thanks to the team

