

A principal choice – manage forests for wood production or leave it as a carbon sink?

KSLA 12-13 March 2018

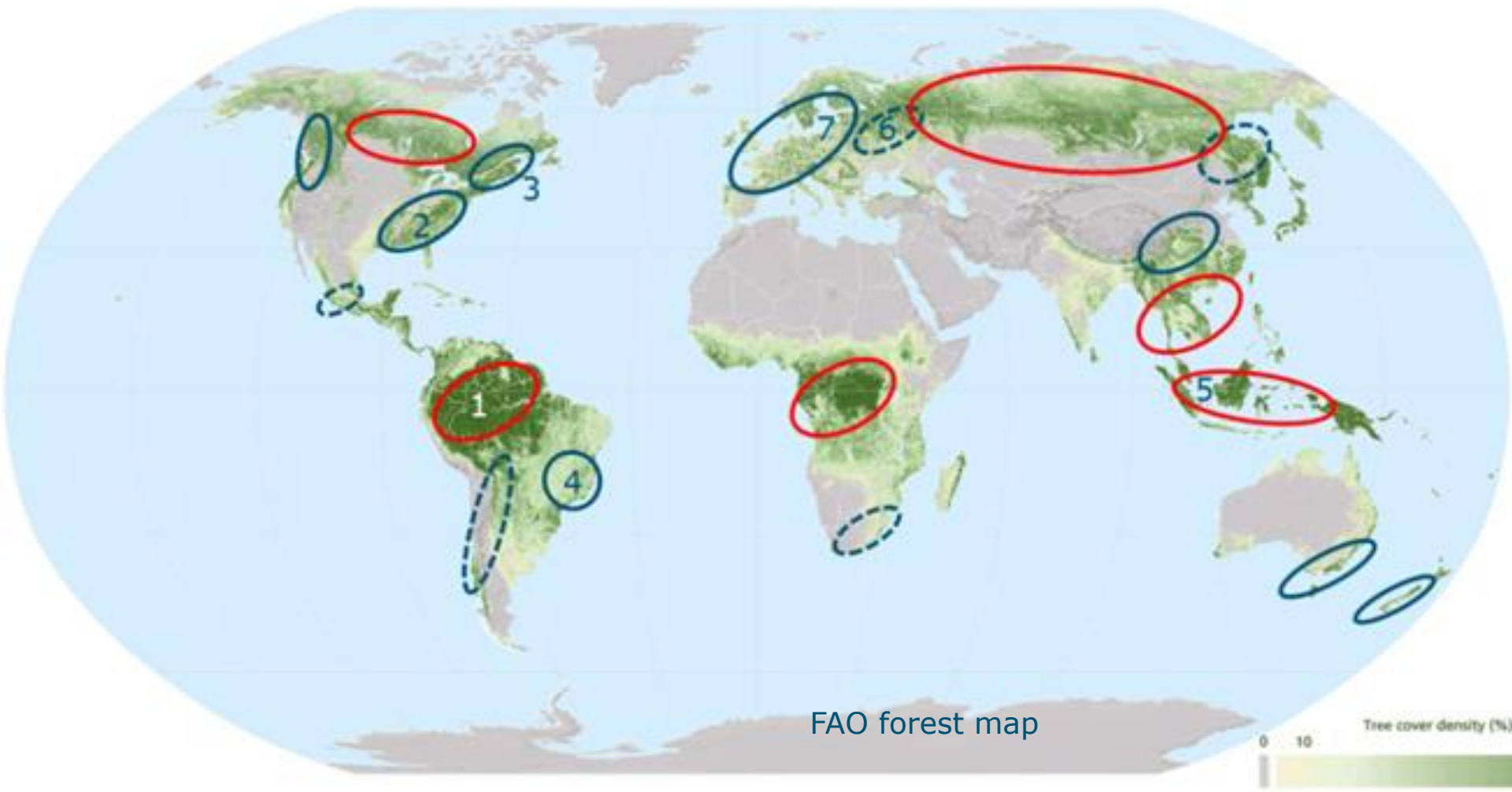
Gert-Jan Nabuurs

Prof. European Forest Resources



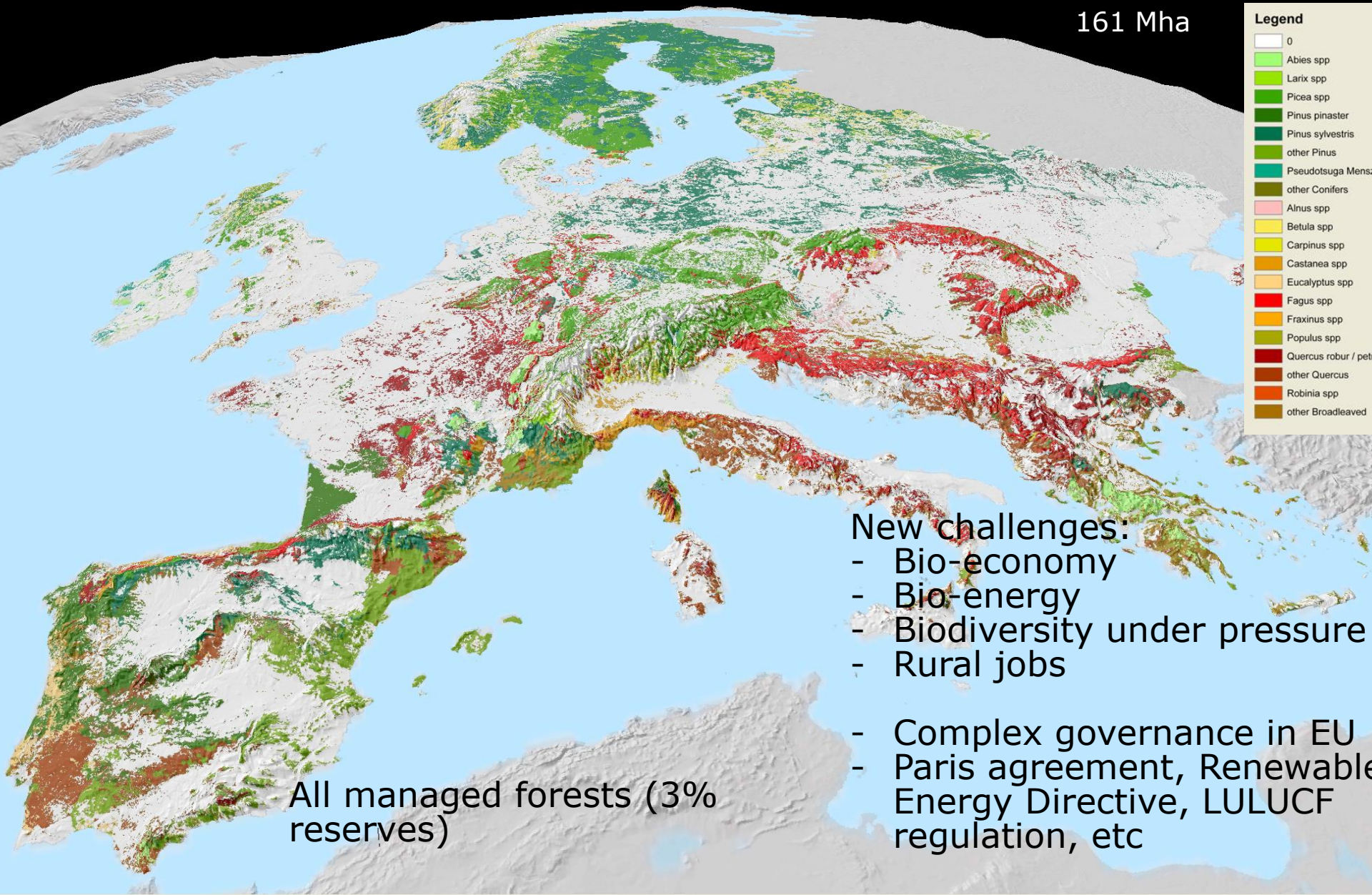
Tree planting in Netherlands,
1910. Photo: State Forest Service.

The question is not if we should manage
..but where to do what !

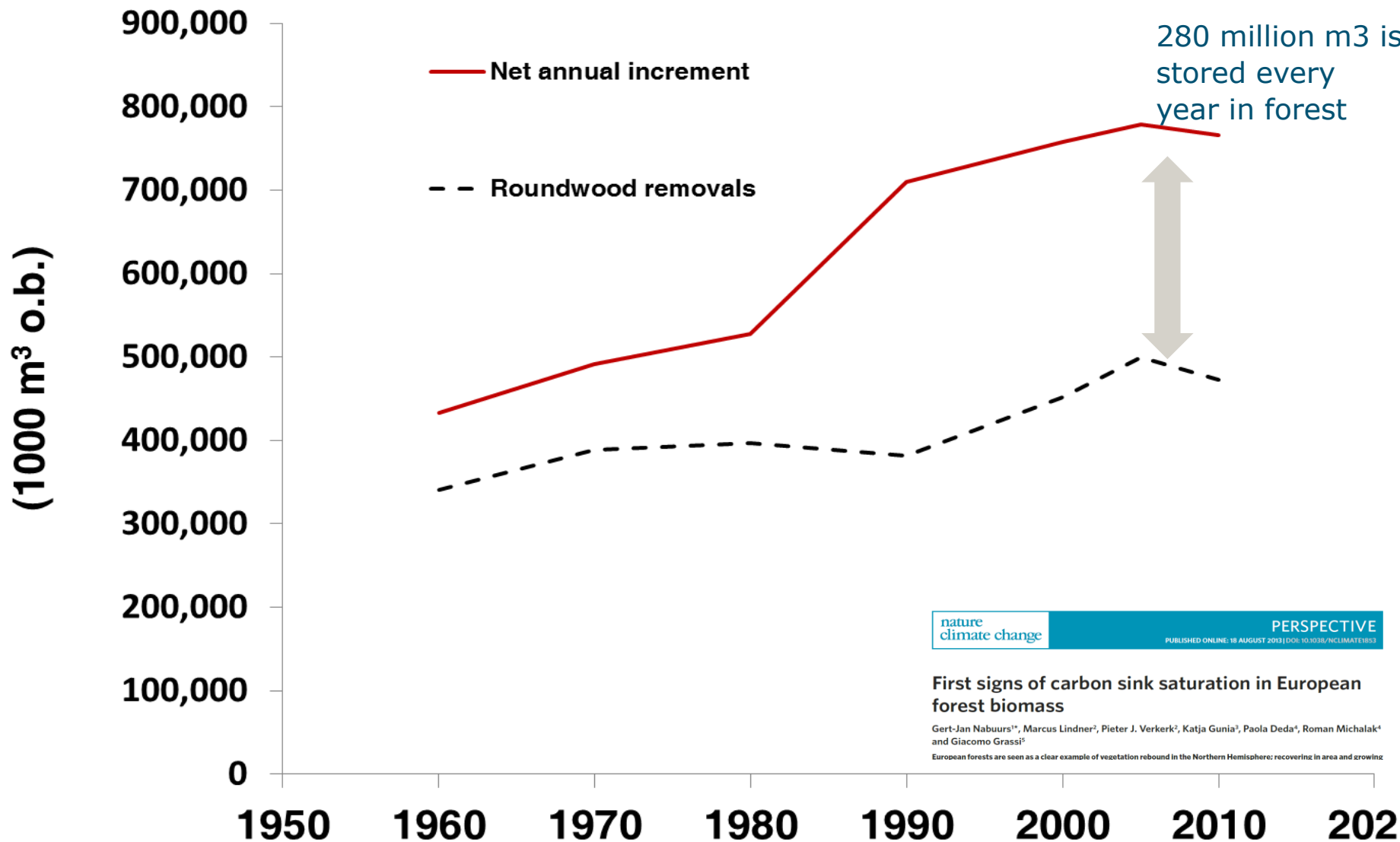


1. The role of bioenergy in European forests
2. Climate Smart Forestry
3. Governance & LULUCF regulation

European forest : more forest than ever since early Medieval times (Hengeveld et al.2012; Brus et al. 2012)

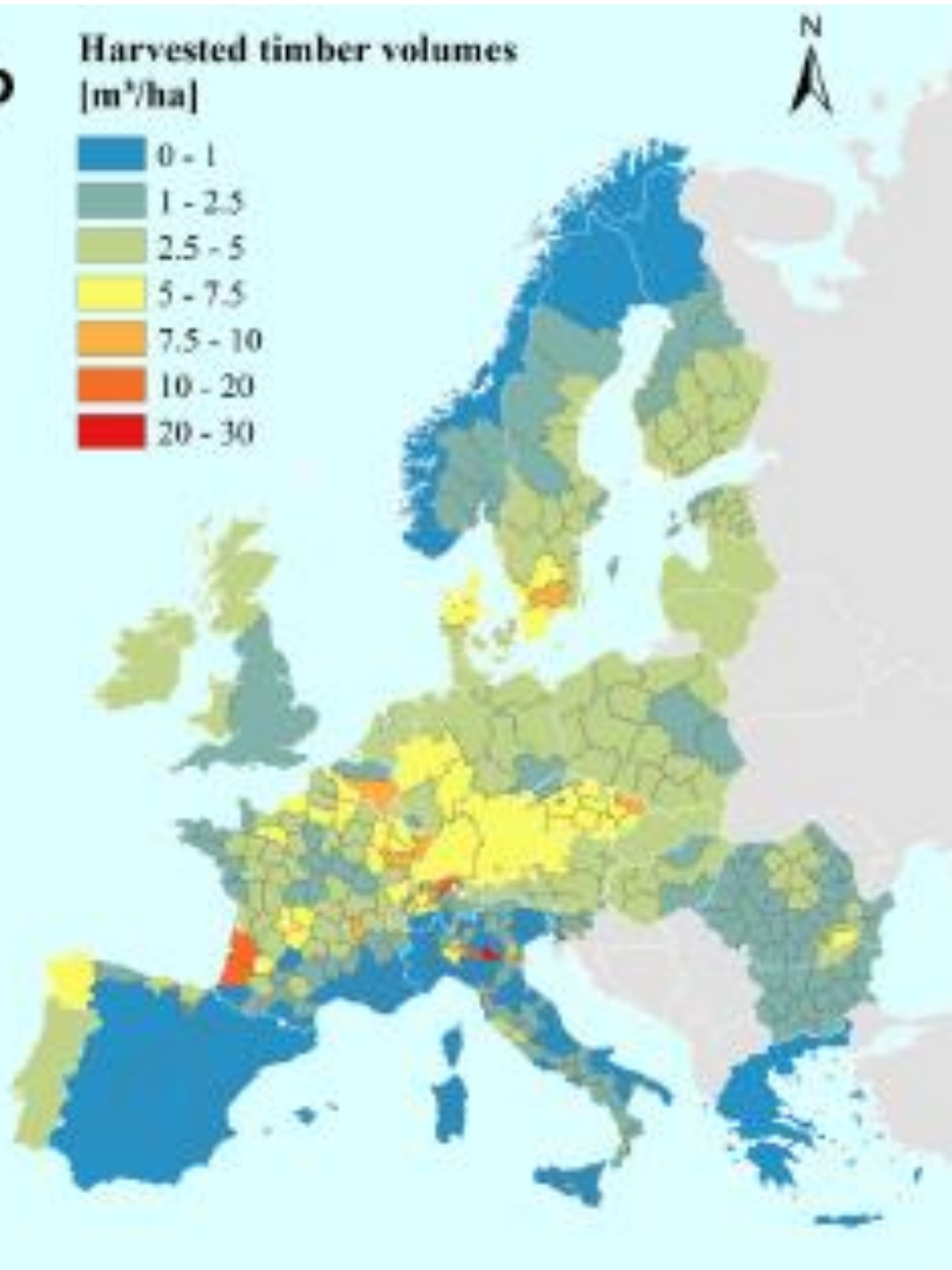
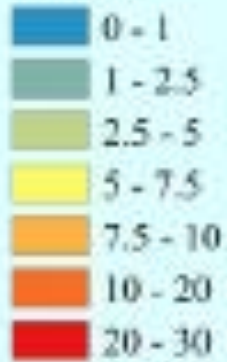


Growth & harvest total European forest



b

Harvested timber volumes
[m³/ha]



Harvesting levels vary

EFISCEN modelling

(Nabuurs & Schelhaas 2017,
Levers et al. 2014)

The bio-energy issue.

..up front ...

- The real problem is with the fossil fuels...who do not have to comply to any criteria.
- Wind, solar and biomass together have to provide part of the solution. (*apart from reducing energy consumption*)
- Wind and solar: only electricity
- Biomass: also heat (!) and can be supplied when the peak demands are there !

In practice: bioenergy from side streams.

Slovenia, May 2016

Saw logs go to
sawmill

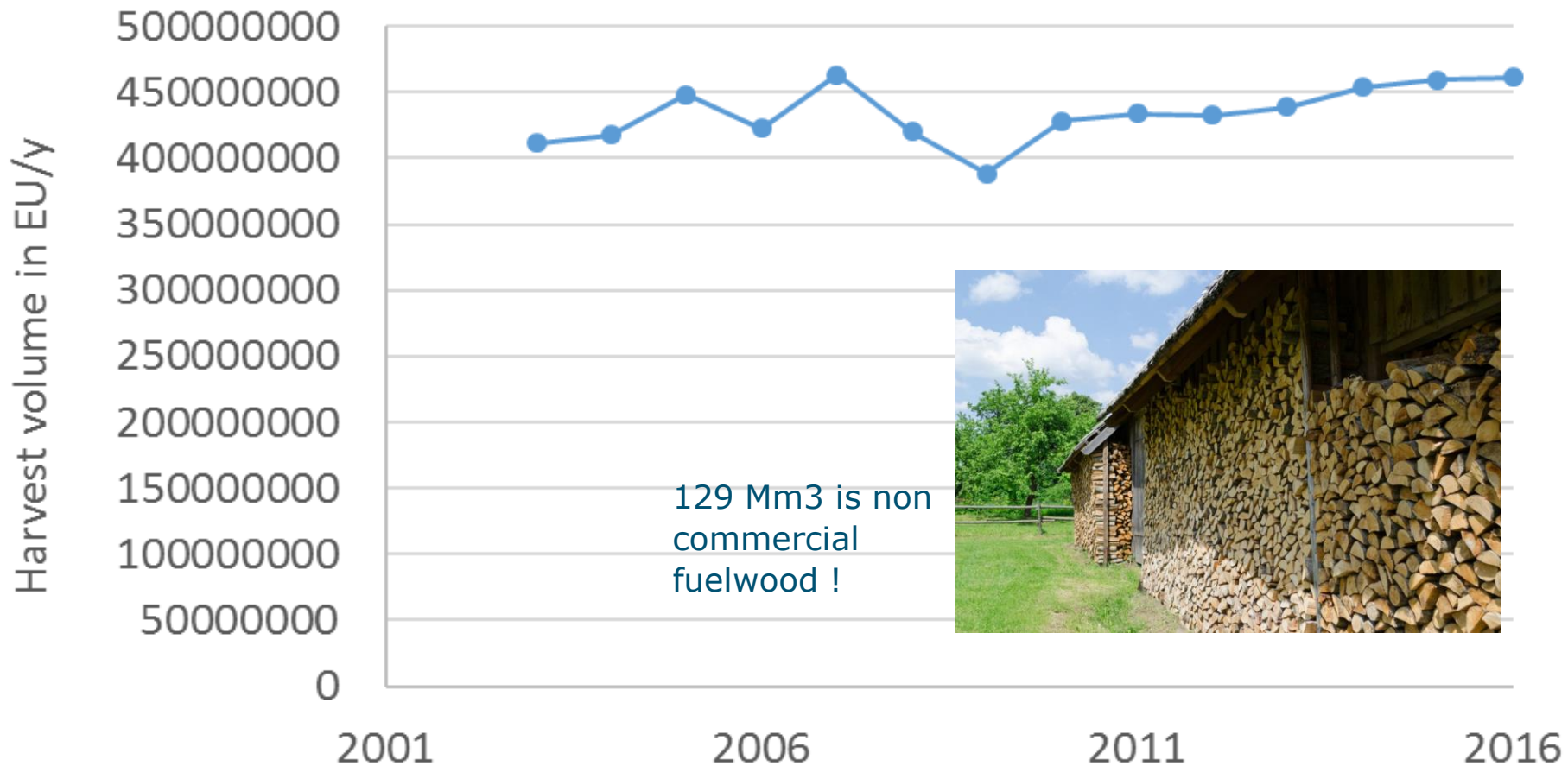
Residues are
chipped and
go to local
heat plant

Photo: GJ Nabuurs

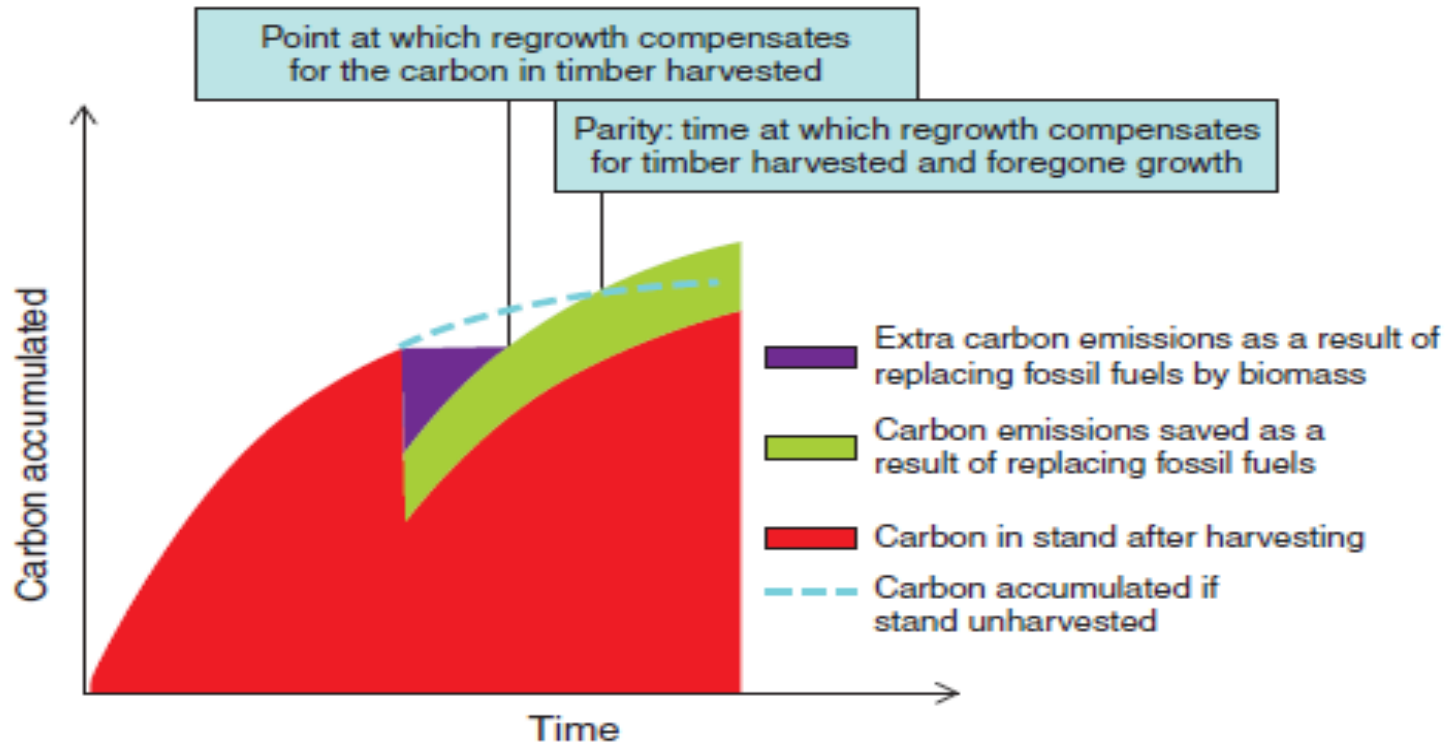


Has harvest increased in total EU ?

Total roundwood harvest (m³/y) for all wood products.
FAOSTAT, Download 18 Feb 2018



Will we risk a carbon debt in Europe?



Wood does not burn as efficiently as coal or gas.
You do avoid fossil fuels !

Parity time is long .

EASAC report

It is a 40-50 year cycle versus a 300 million yr cycle.

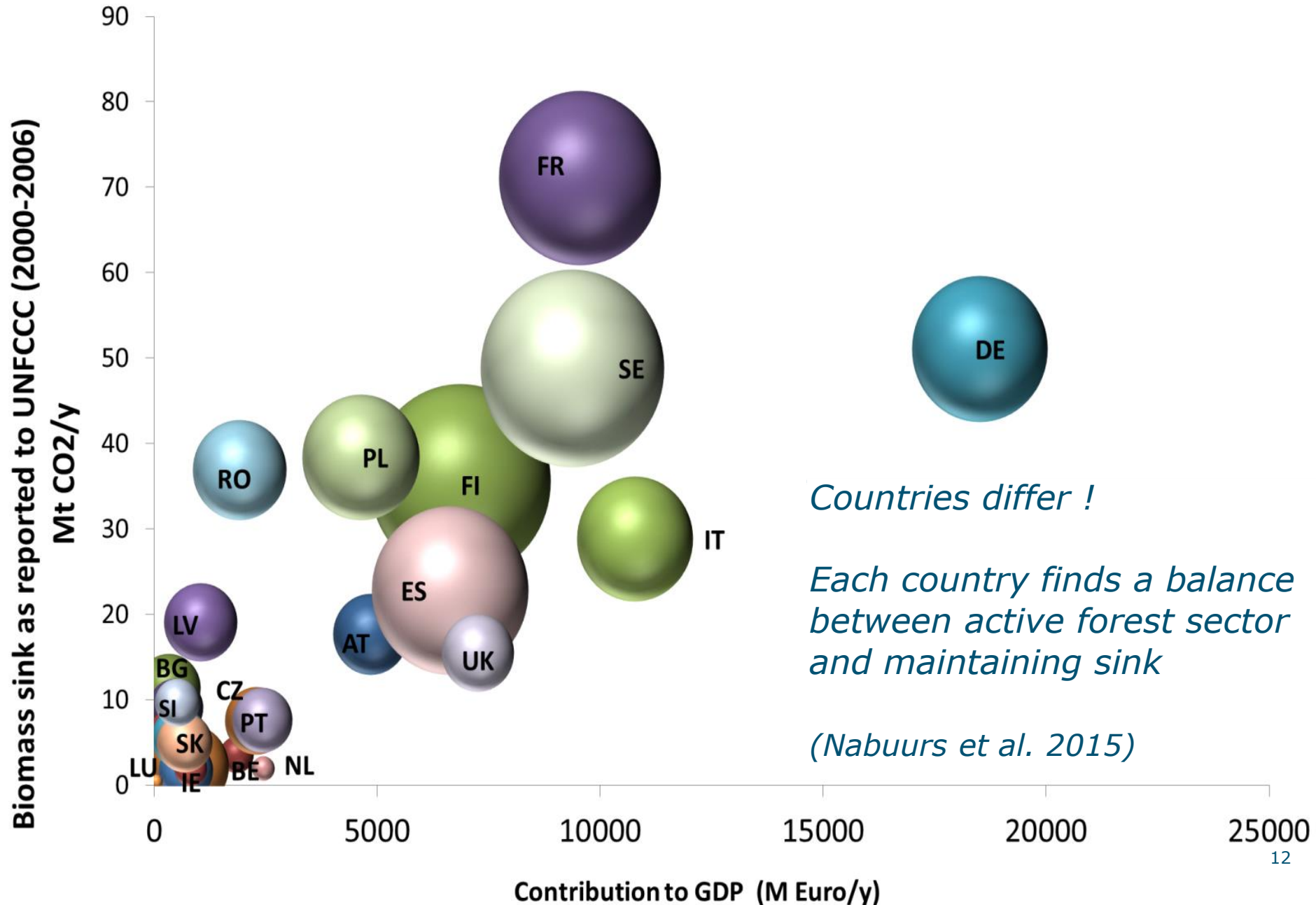


Parity: 35 yr after set aside.

Larch forest, Galgenberg, NL
Planted 1960. Changed to strict
reserve in 1983: 35 years of natural
dynamics

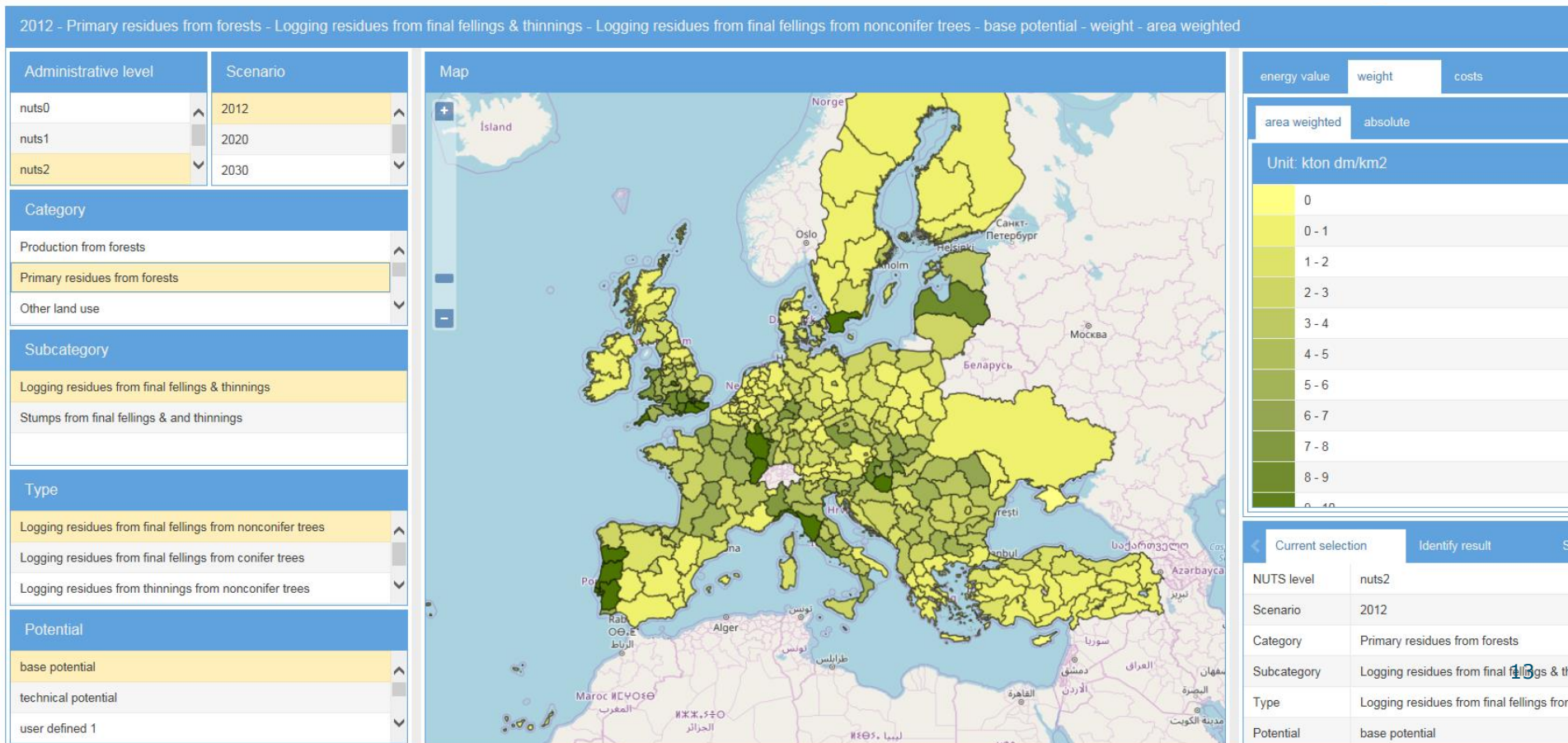
Photo: Sandra Clerkx.
Feb 2018

At large scale: can MS keep a balance?



What is a sustainable additional potential?

EFISCEN projection: primary residues + additional thinning: an additional 120Mm³ (Elbersen et al. 2012)



Remarks on EU

- EU forests supply 7% of EU primary energy need (NREAPs; large share black liquor).
- can sustainably up to 10-11% (S2biom project, biomass policies, Simwood)
 - Simwood: sustainably, harvest could be increased with 60 million m³/y when taking into account socio-economic circumstances.
- (almost) no risk of a carbon debt in European forests
- All EU countries have national forest laws & inventories.
 - Impacts on biodiversity are bigger unknown

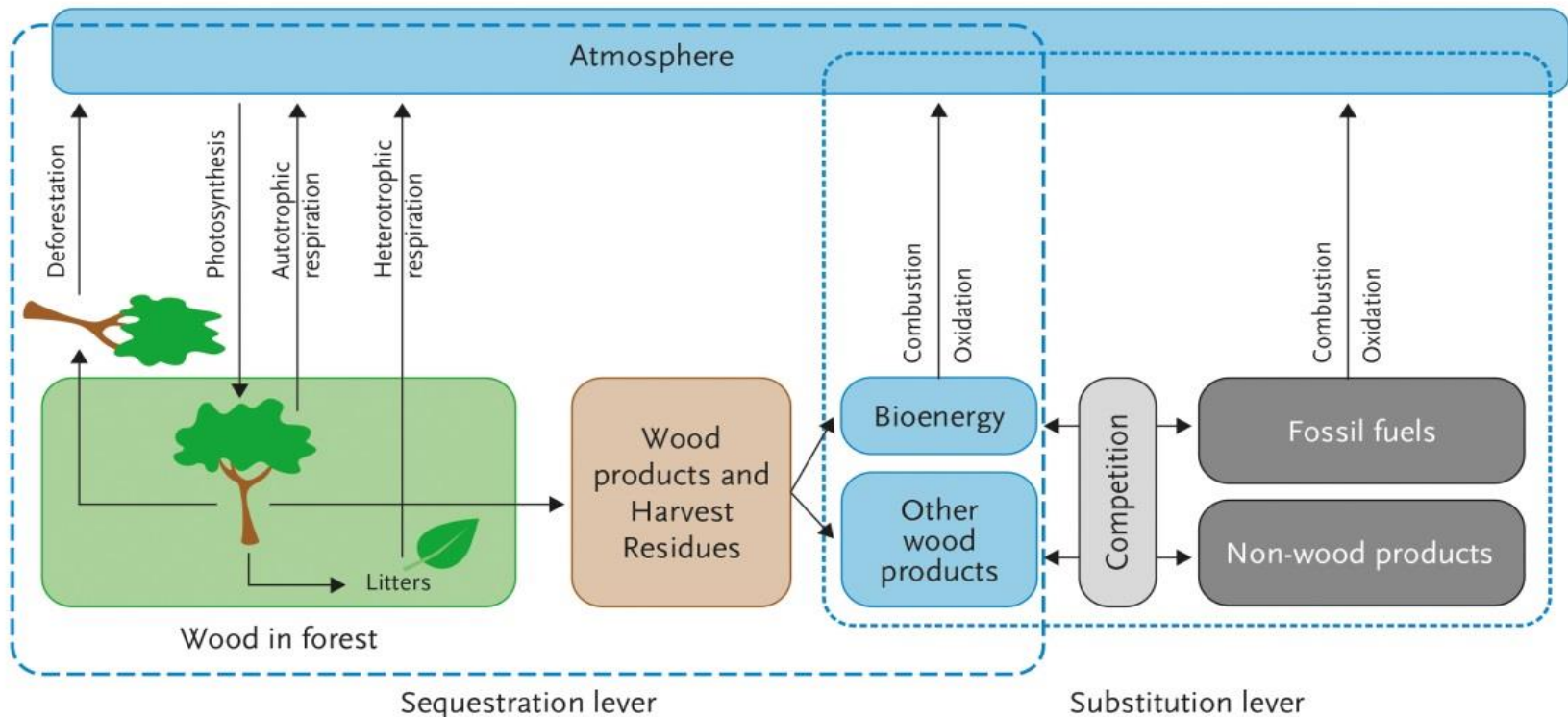


Can we achieve
more than bio-
energy only ?

Climate smart
forestry

Present role of European forest in mitigation

- Sink 450 Mt CO₂, or **10%** of the emissions
- Wood products sink 44 Mt CO₂ plus substitution of aluminium, plastics etc.
- Bioenergy 7% of total EU energy need



EU forests and wood chain can compensate up to 20% of total EU emissions

Climate Smart Forestry

- Regards the whole forest and wood chain
- Takes into account local circumstances
- Is a stimulus programme

1. Maintain productivity
2. Adapt to climate change
3. Enhance the mitigation along the chain



A new role for forests and the forest sector in the EU post-2020 climate targets



Gert-Jan Nabuurs, Philippe Delacote, David Ellison, Marc Hanewinkel, Marcus Lindner, Martin Nesbit, Markku Ollikainen and Annalisa Savarese



Nabuurs et al. 2015, 2017
EFI study

CSF: a variety of measures !

Main Category of Forest Management Measure	Sub Measure	Mitigation Effect (Mt CO ₂ a ⁻¹)
1. Improved forest management		172
	1a. fullgrown coppice	56
	1b. enhanced productivity & improved management	38
	1c. reduced disturbances, deforestation, drainage	35
	1d. material substitution wood products	43
2. Forest area expansion		64
3. Energy substitution		141
4. Establish forest reserves		64
Total		441

- Mitigation effect takes time !

Czech Republic; conversion forestry to beech

2.67 Mha included. 59% in public hands. 51% spruce with high stocking. Health problems: in 2015, 50% of fellings was a sanitary felling /*EFISCEN simulation model used*

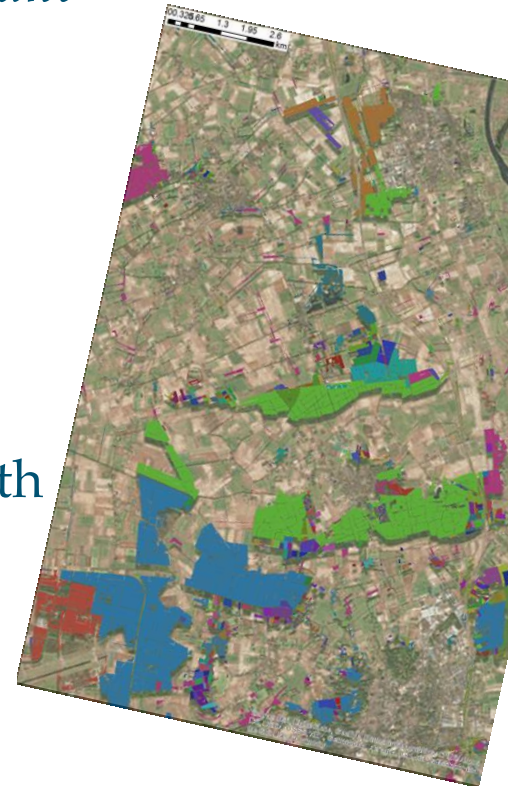
Photo: Cienciala

No single sector can solve the whole problem, and no single sector can provide quick fixes

Climate smart forestry and forest sector takes into account local circumstances and creates win-win

Example of possible measures:

- ✓ Storm prone areas: bring down stock
- ✓ Drained peat areas: reduce drainage
- ✓ High stocked area: bring down stock and combine with innovation in products
- ✓ Build with wood
- ✓ Remote areas: strict reserves
- ✓ Outgrown coppice: regenerate adapted species

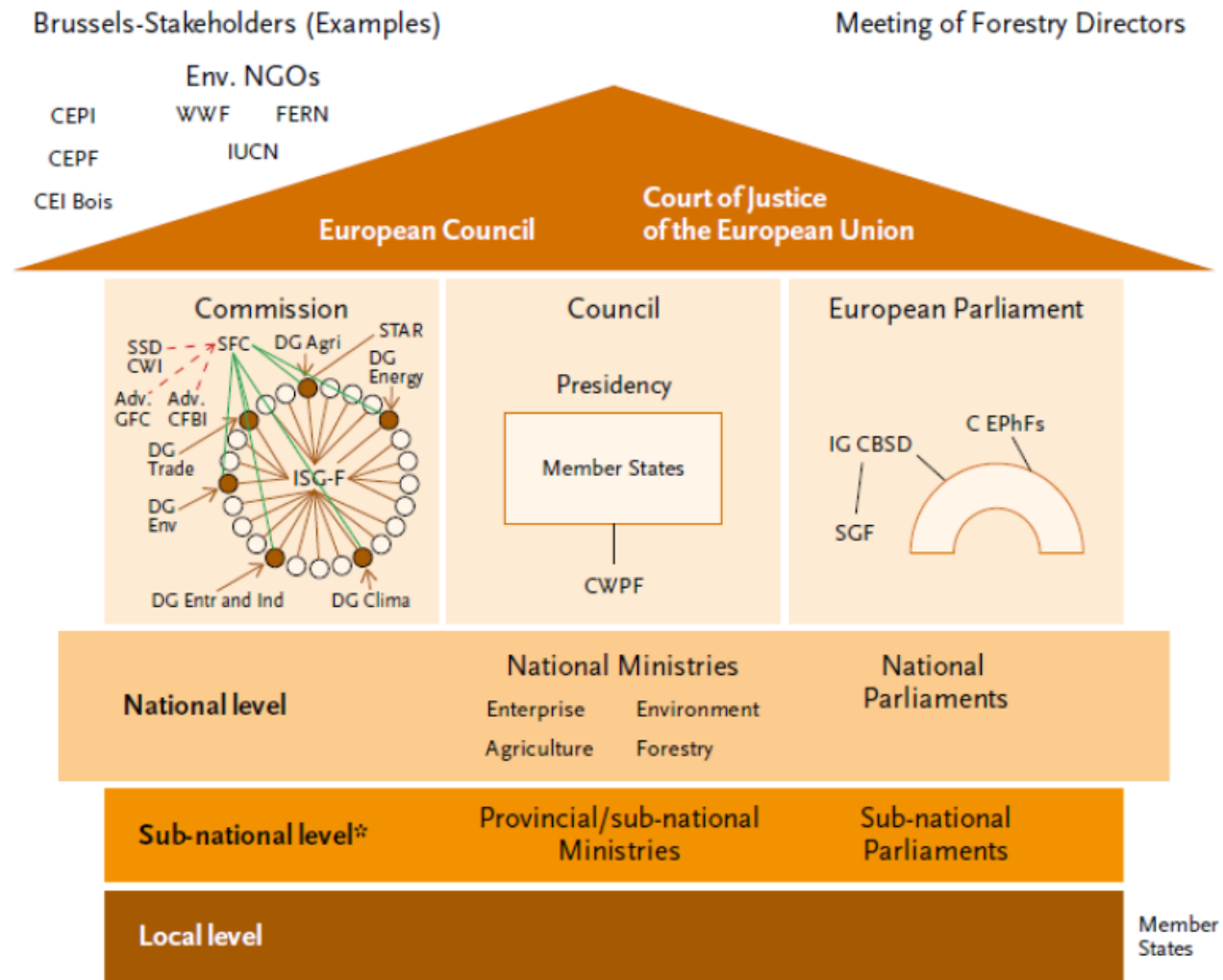


How is this regulated ??



Governance: weak and fragmented

Pulzl et al. 2013
Efi 'what science
can tell us'



EU LULUCF regulation and impacts on bio-energy

- No debit target for the whole LULUCF
- Forests accounted against a reference level sink

a national forestry accounting plan should contain ‘...documentary information on sustainable forest management practices and intensity and adopted national policies;

- FRL shall be determined in accordance with the following criteria: *‘...a constant ratio between solid and energy use of forest biomass as documented in the period from 2000 to 2009 shall be assumed*

Governance & EU LULUCF regulation

- No debit target for the whole country
- Forests accounted against

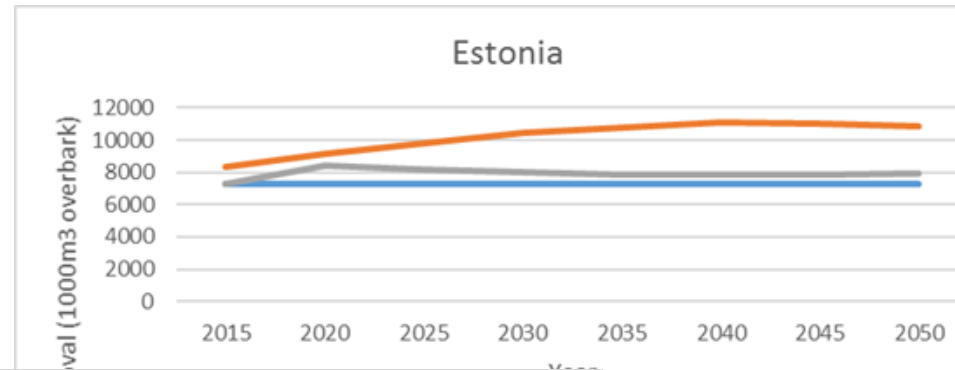
First time the EU
directly mingles
in Ms' forest
management

elements for a national plan should a.o. contain ‘...documentation on sustainable forest management practices and intensity and adopted national policies;

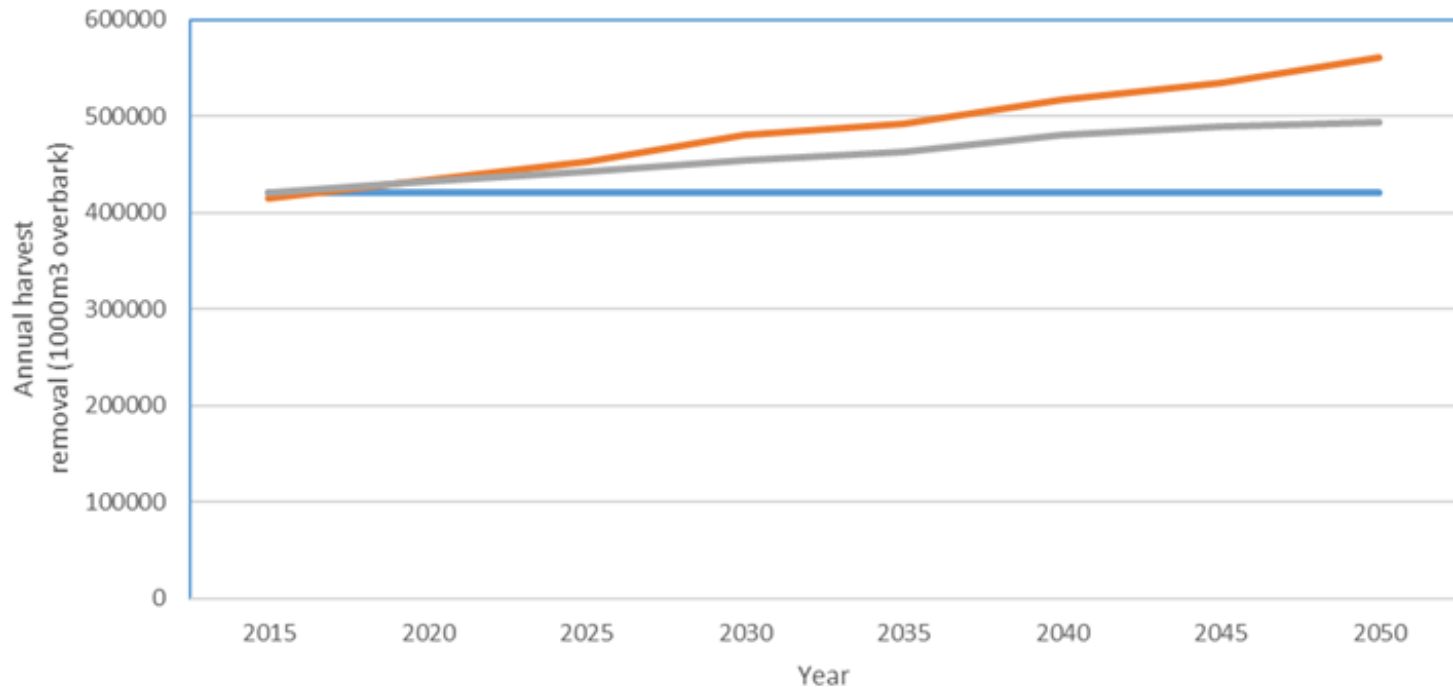
- forest reference levels shall be determined in accordance with the following criteria: ‘...*a constant ratio between solid and energy use of forest biomass as documented in the period from 2000 to 2009 shall be assumed*

EFISCEN: projection of 'constant intensity'

Calculated for all 28 MS:
the 'allowed' harvest
under a no debit scenario

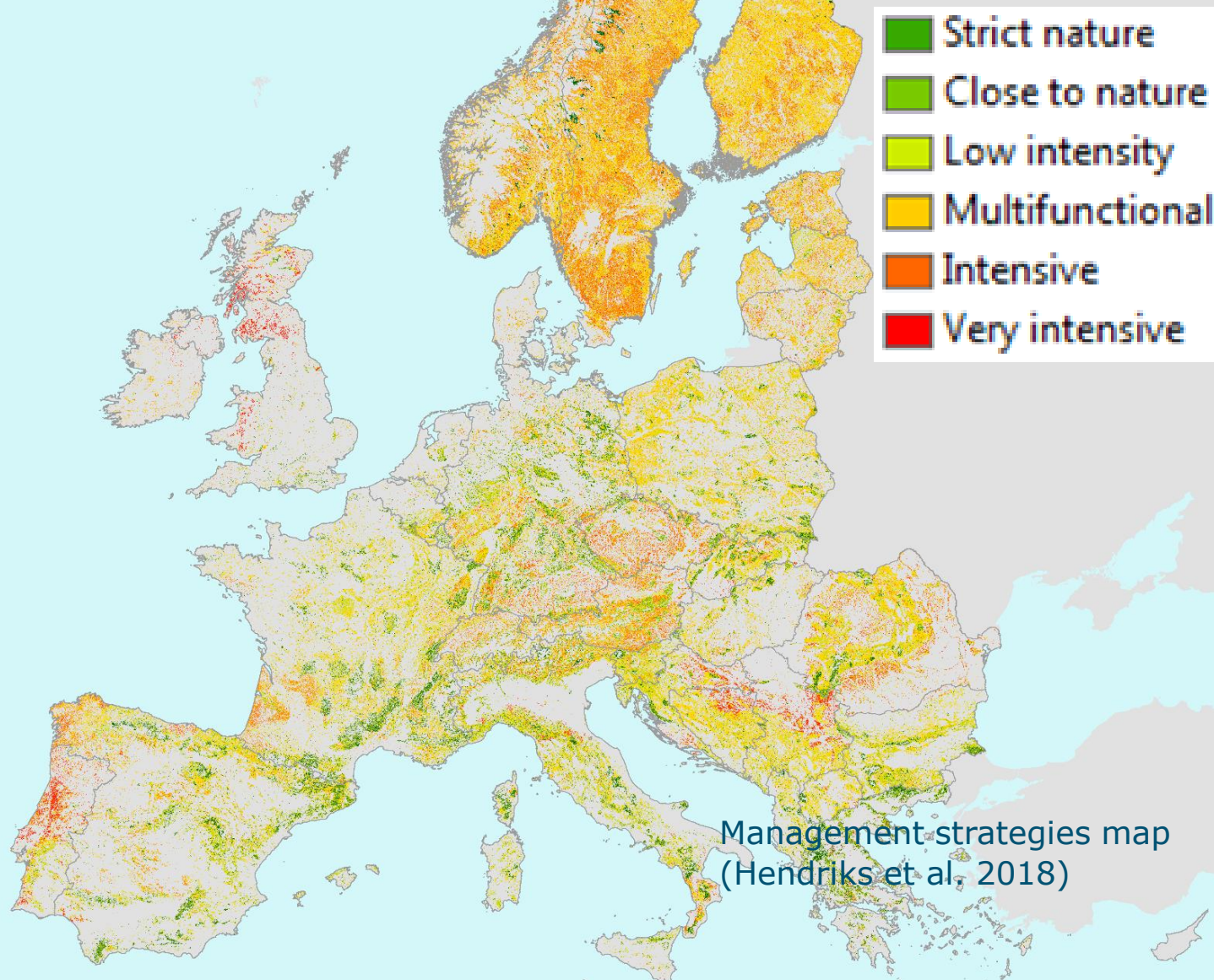


EU28



— constant absolute amount harvest — constant intensity — constant intensity plus cut off at sustainable level

Rather take a more holistic view: Where to do what ?



It is possible to generate a more top down view on Europe's forests.

And decide where it is 'best' to do what

Management strategies map
(Hendriks et al, 2018)

Concluding

- Question is not 'if we should manage', but 'where to do what'
- Bioenergy is always part of a managed forest wood products system. Sustainably EU forests can supply 10-11% of total EU primary energy
- But we should concentrate on a more holistic view: climate smart forestry
- And we need stronger decision making and decide where in Europe's forests we do what

Thanks to all NFIs, Biotrade2020+, Simwood
& KSLA

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