

A satellite-style image of Europe and the Mediterranean region, showing the continent's green and brown terrain, the blue sea, and the curved horizon of the Earth in space.

Forest management in the EU - in perspective to the biomass market

Gert-Jan Nabuurs
Prof. European Forest Resources

BioWKK seminar,
Webinar, 8 July 2020

Ample resources, or not?

Rainforest Rescue

E.On threatens North American and French forests

Completed campaign
129,224 supporters

Start of campaign: Jul 6, 2014
End of campaign: Mar 24, 2015

To: E.On Board of Directors, French Minister for Ecology, Sustainable Development and Energy, Singapore Royal

Call on the French government to block E.On's plans for a mega-biomass plant in southern France.

POSTER **BACKGROUND**

E.On, one of Europe's largest power generating companies, wants to burn almost a million tons of wood annually in a converted coal power plant in Gardanne, near Marseille. Half the wood will be sourced from Sustainable Forestry Initiative (SFI) certified forests from Canada to the south.



TROUW DONDERDAG 2 JULI 2020 5

49% meer bos is er in een jaar tijd in Europa gekapt

Er wordt meer bos gekapt, maar Europa ontbost niet

HOUTWINNING De oppervlakte Europees bos waar hout wordt gekapt is in een jaar gegroeid met bijna 50 procent. Toch is van een kaalslag geen sprake.

Willem Schoonen
REDACTIE WETENSCHAP

Bijdrage per land aan de Europese houtkap
Zweden en Finland nemen de helft voor hun rekening

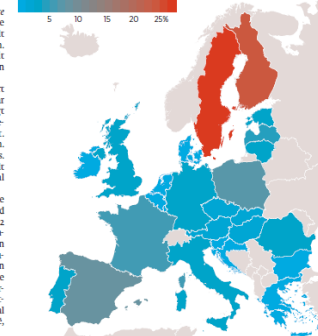
De kernerse cijfers in vakblad Nature ogen dramatisch: in een jaar tijd is de hoeveelheid bos die in Europa wordt gekapt met 49 procent toegenomen. In de hoeveelheid biomassa die uit Europese bossen wordt gewonnen zelfs met 60 procent.

Je krijg de indruk dat er binnenkort geen bos meer staat in Europa. Maar van een kaalslag is geen sprake, zegt Gerrit-Jan Nabuurs, hoogleraar bosbeheer aan Wageningen University. "Het is de macht van kleine getallen. We kappen in Europa heel weinig bos. Dat als er maar iets meer wordt gewonnen, oogt dat in procenten al als een enorme toename."

In landen waar de houtwinning de afgelopen jaren het hardst is gegroeid gaat het nog altijd om niet meer dan 2 procent van het totale areaal. Die landen zijn Zweden en Finland, samen goed voor de helft van de groei in Europese houtwinning. Andere landen waar de houtwinning groot is zijn de Baltische staten, Polen, Spanje en Portugal. In Nederland neemt de houtwinning niet toe, en is het bosareaal stabiel of groeiende, net als in België, Denemarken en Duitsland.

De publicatie in Nature is wat gedramatiseerd, maar daarmee nog geen onzin, zegt Nabuurs. De cijfers komen van een onderzoeksinstituut van de Europese Unie in Ispanje, Italië, en zijn gebaseerd op satellietmetingen. En die blijken een nuttige aanvulling op de cijfers die bosonderzoekers door-gangs gebruiken.

Op de grond houden de Europese bosbeheerders bij hoe hun bossen er bij staan, en wat er aan beheer wordt gedaan. Maar die cijfers komen met de nodige verrijging beschikbaar voor onderzoek. Met satellieten is aan het bladerdak te zien hoe het bosareaal zich ontwikkelt: dat is minder nauwkeurig dan op de grond, maar geeft



'Nog steeds geldt voor alle landen in de EU dat de houtwinning minder is dan wat er bijgroeit'

Nabuurs: "De groei van de houtwinning in de achterliggende periode is voor een deel te verklaren door economisch herstel. Daardoor groeit de vraag naar hout in sectoren als de papierindustrie en de bouw. De test

wordt verklaard door een overstep naar duurzamere materialen voor allerlei toepassingen. En een klein deel komt door omschakeling naar energie uit biomassa."

Een groeiend bos gebruikt CO₂ en kan daarmee de uitroos van dat broeikasgas door de mens compenseren. Bossen spelen daarom een belangrijk rol in alle klimaatplannen die er zijn. Maar dan moet je niet meer kappen dan er bijgroeit, zoals in Zuid-Amerika en Azië gebeurt. Daar wordt de opname van CO₂ veranderd in een uitroos.

Geavanceerd
Dat is in Europa niet het geval, zegt

Economie
DINSDAG 13 JANUARI 2015 21

Biobrandstof niet beter voor milieu
wetenschappers van naam maken brandhout van het ecologisch nut van biomassa in de productie; niet alleen levert het nauwelijks iets op, het heeft ook averechtse effecten.

10

Trouw, donderdag 2 juli 2020. nav Ceccherini et al.

1. European forests: short intro
2. Role of EU forests in mitigation aspects
3. Biomass market developments
4. Netherlands
5. Conclusions



1. Short introduction on issues

European forests, 1x1 km, tree species map

Brus et al. 2011

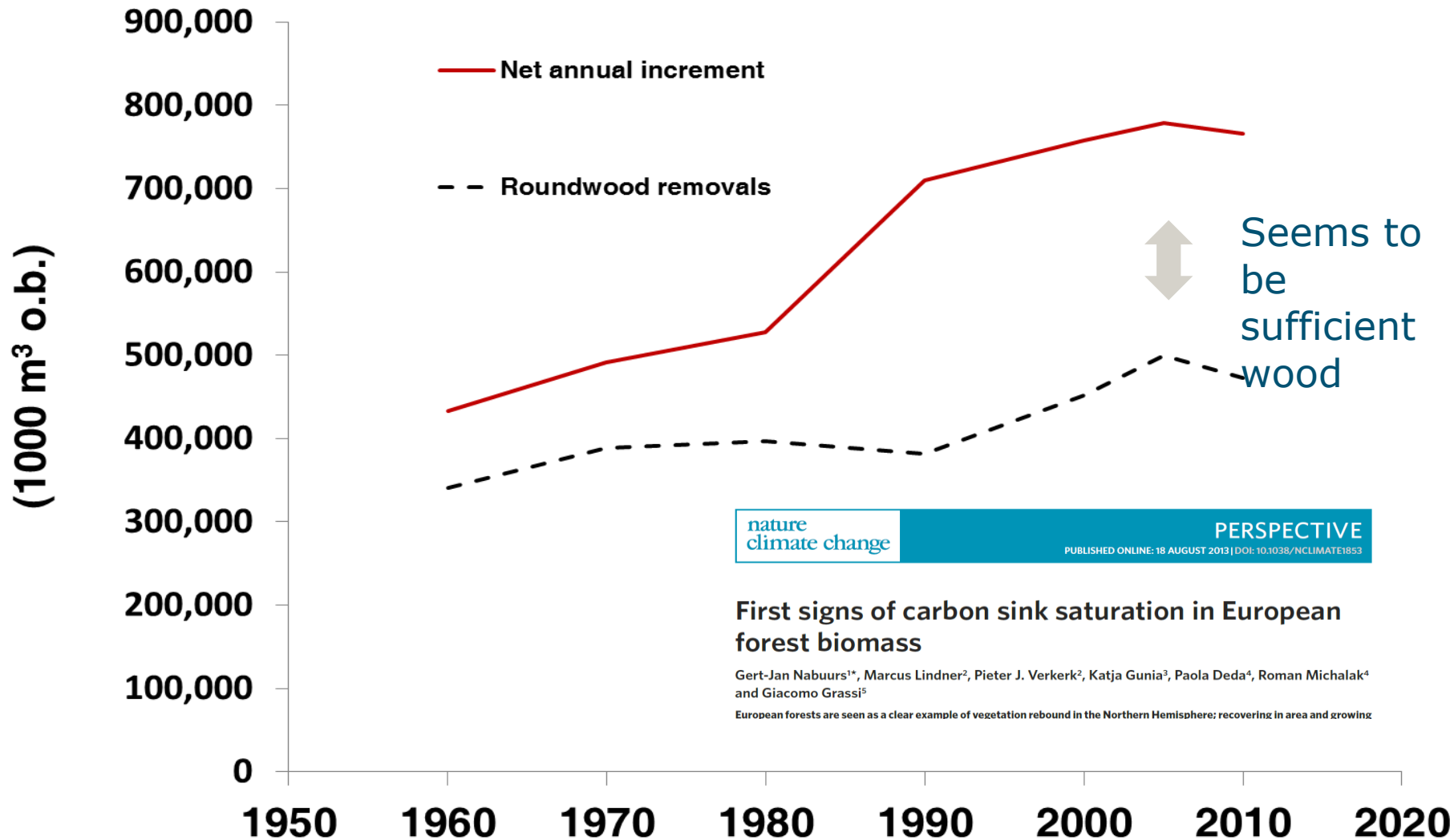
161 Million ha
26 billion m³
Growing stock



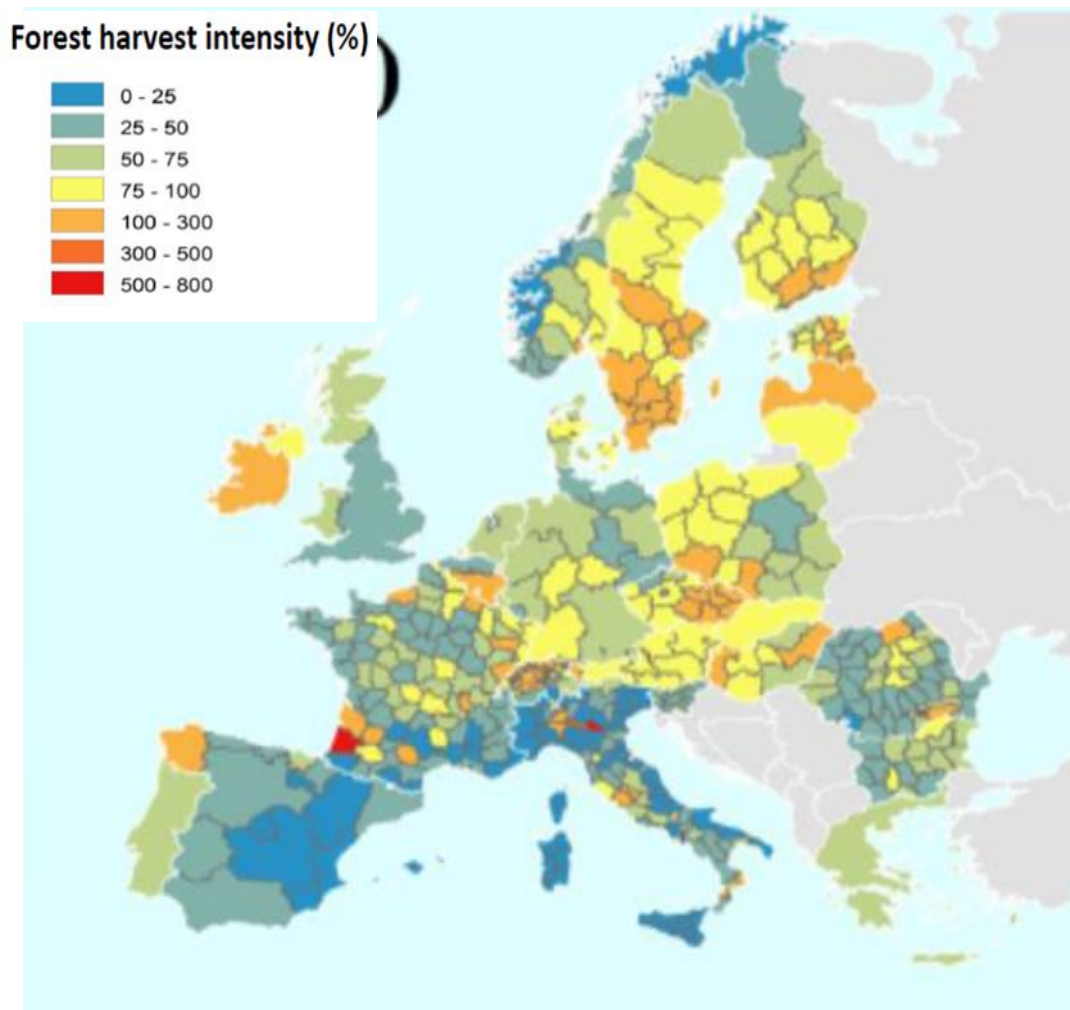
More forests than ever since Medieval times. All managed multi functional Biodiversity is under pressure

> 16 million private owners.

Growth & harvest at European scale



EFISCEN modelling; slightly aggregated forest resource model. Based on NFIs

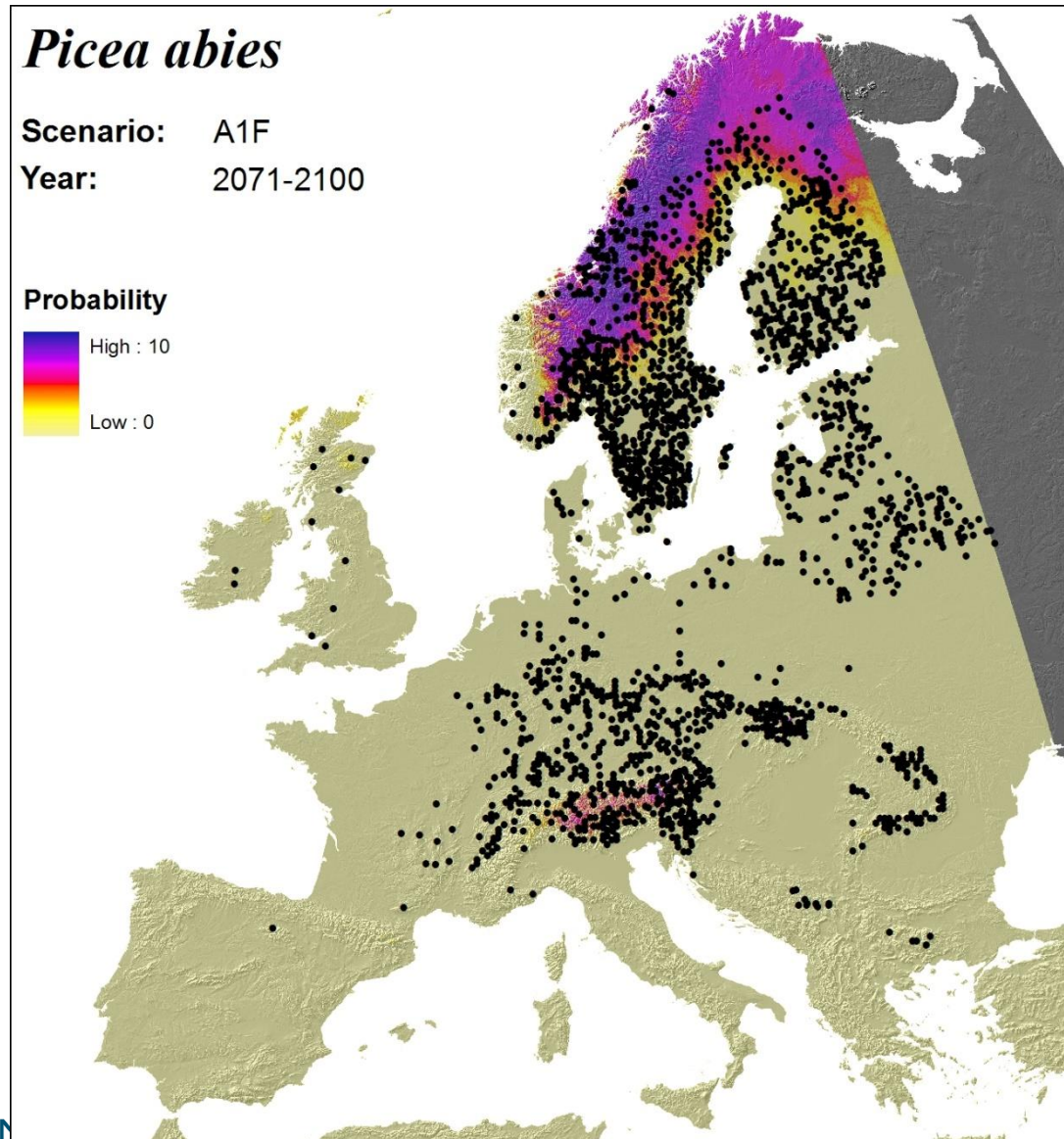


(Nabuurs, Karjalainen, Schelhaas, Verkerk, Levers)

In this case on mobilising additional wood:

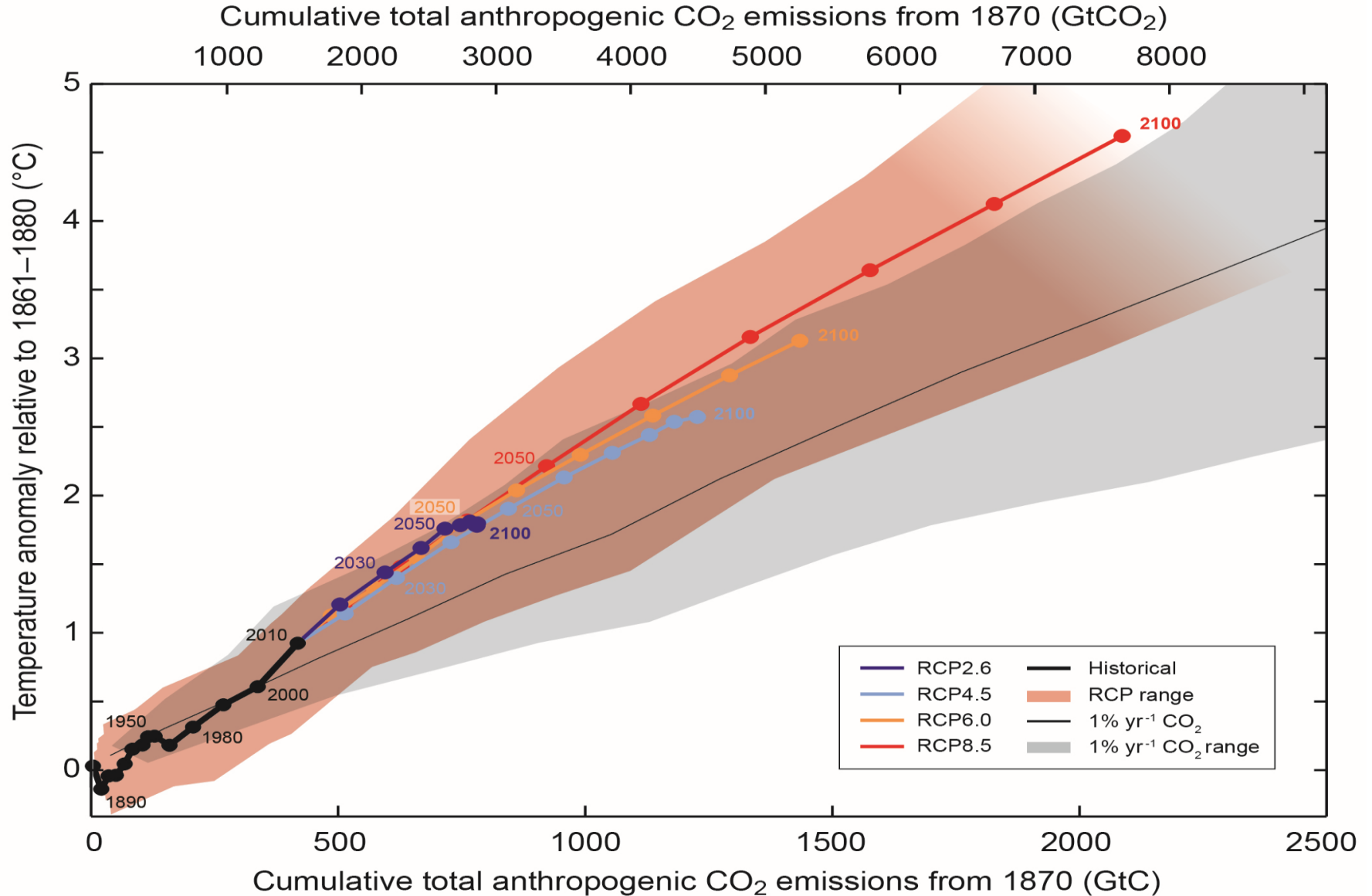
Harvesting pressure is high local, and it is difficult to increase harvest in other regions

Potential future ranges; future seemed far away



Hanewinkel et al.
2013

Problem: we are at high range of scenarios



Actuality : Spruce mortality. Estimated > 200 M m3.



Harz. 2019

Forest in central Europe is changing fast : more broadleaved



Photo: Miro
Svoboda

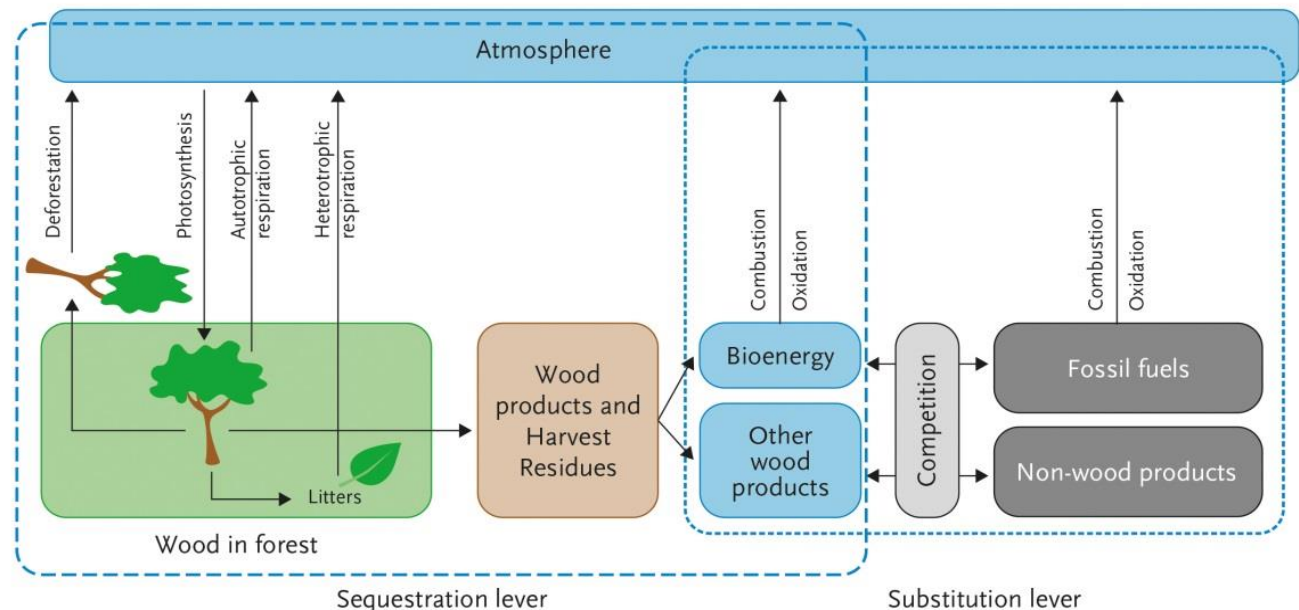
Role of European forests in climate mitigation: CO₂ sequestration, HWP and bioenergy

Present role of the European forest

- Sink 450 Mt CO₂, or **10%** of emissions
- Wood products sink of 44 Mt CO₂ + substituting aluminum and plastics.
- Biomass for bioenergy provides 6-7% of total EU energy need

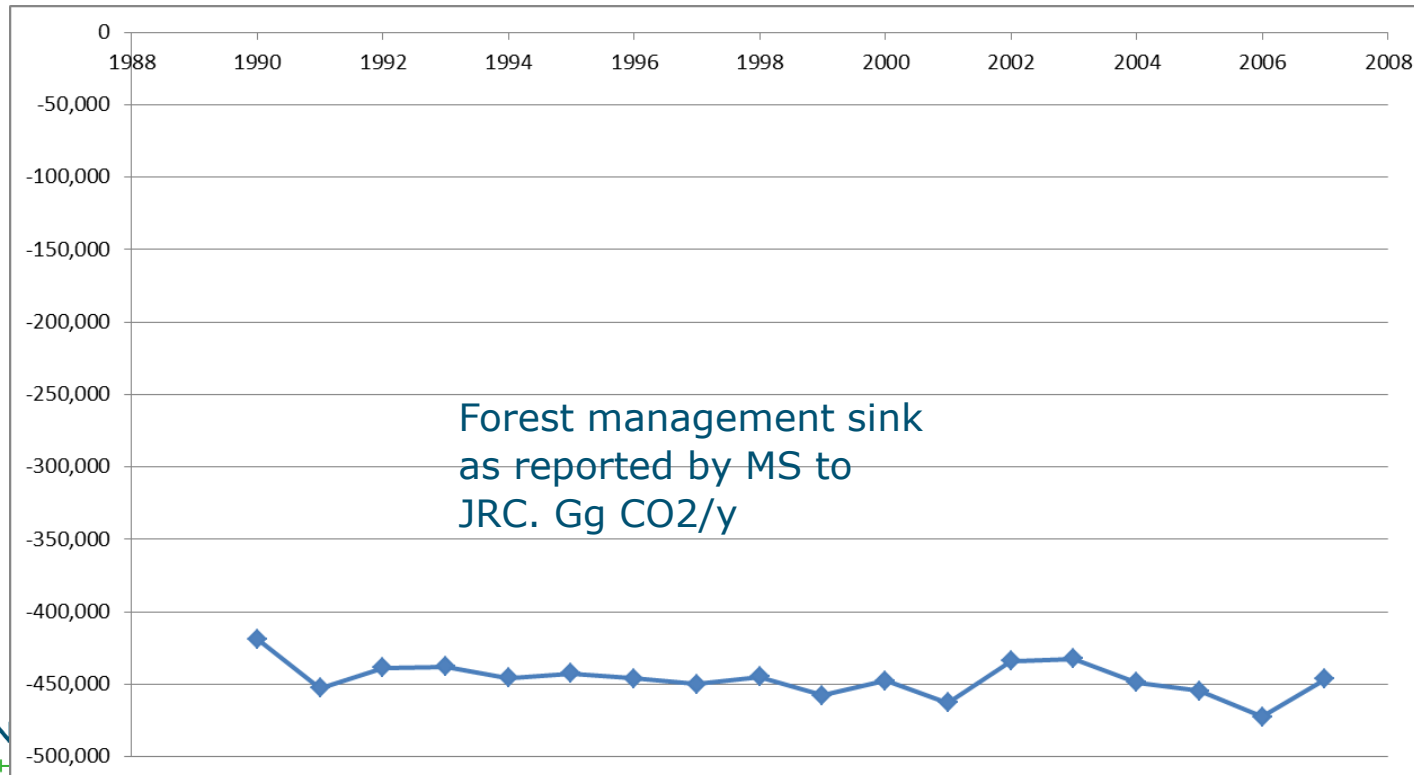
EFISCEN simulation frame

<https://www.wur.nl/nl/project/European-Forest-Resource-analysis-tools.htm>



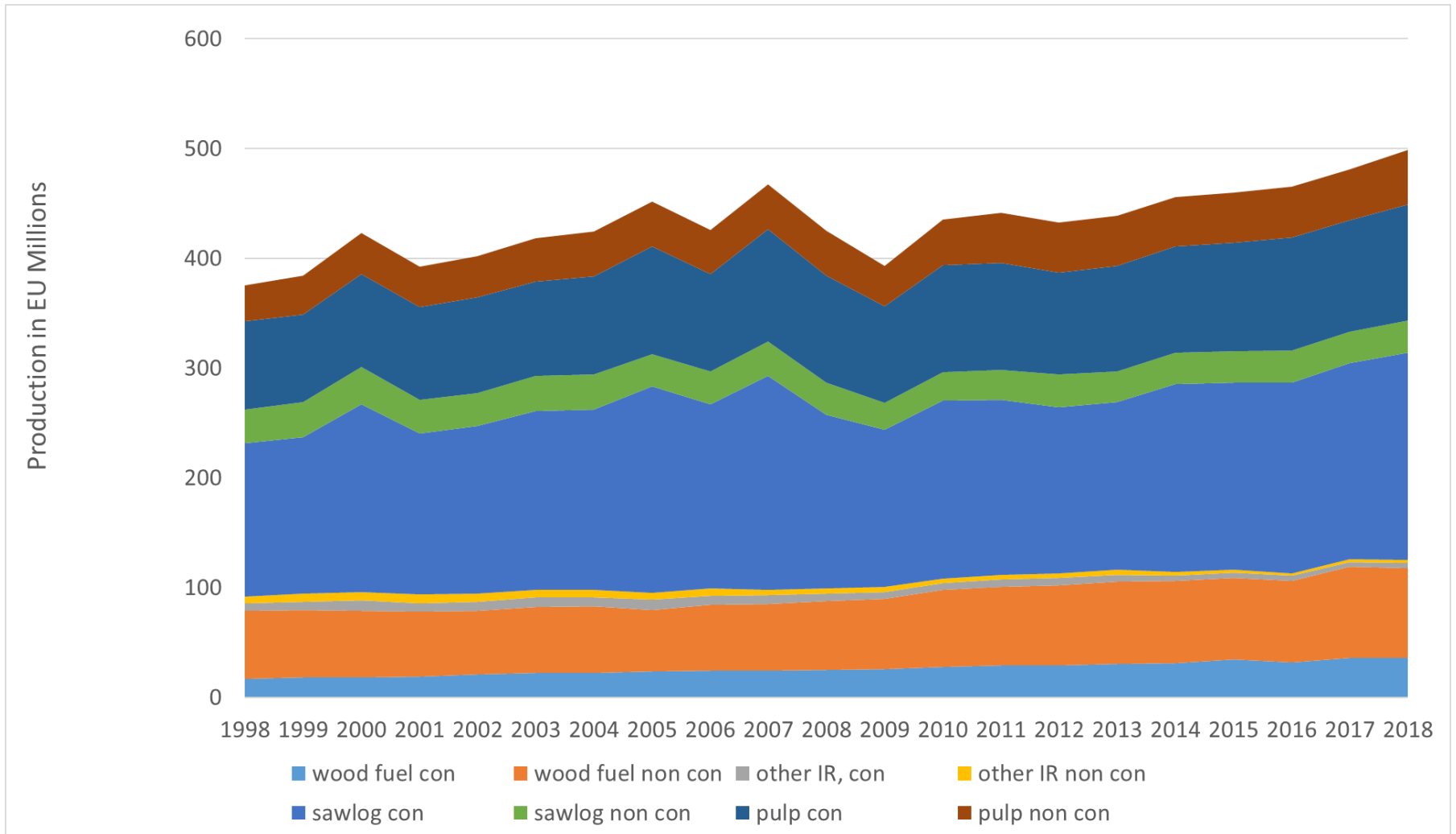
'we may loose the carbon', ..'trees burn', etc

The only sector that has made a consistent and significant contribution, every year since 1990!



Biomass markets developments

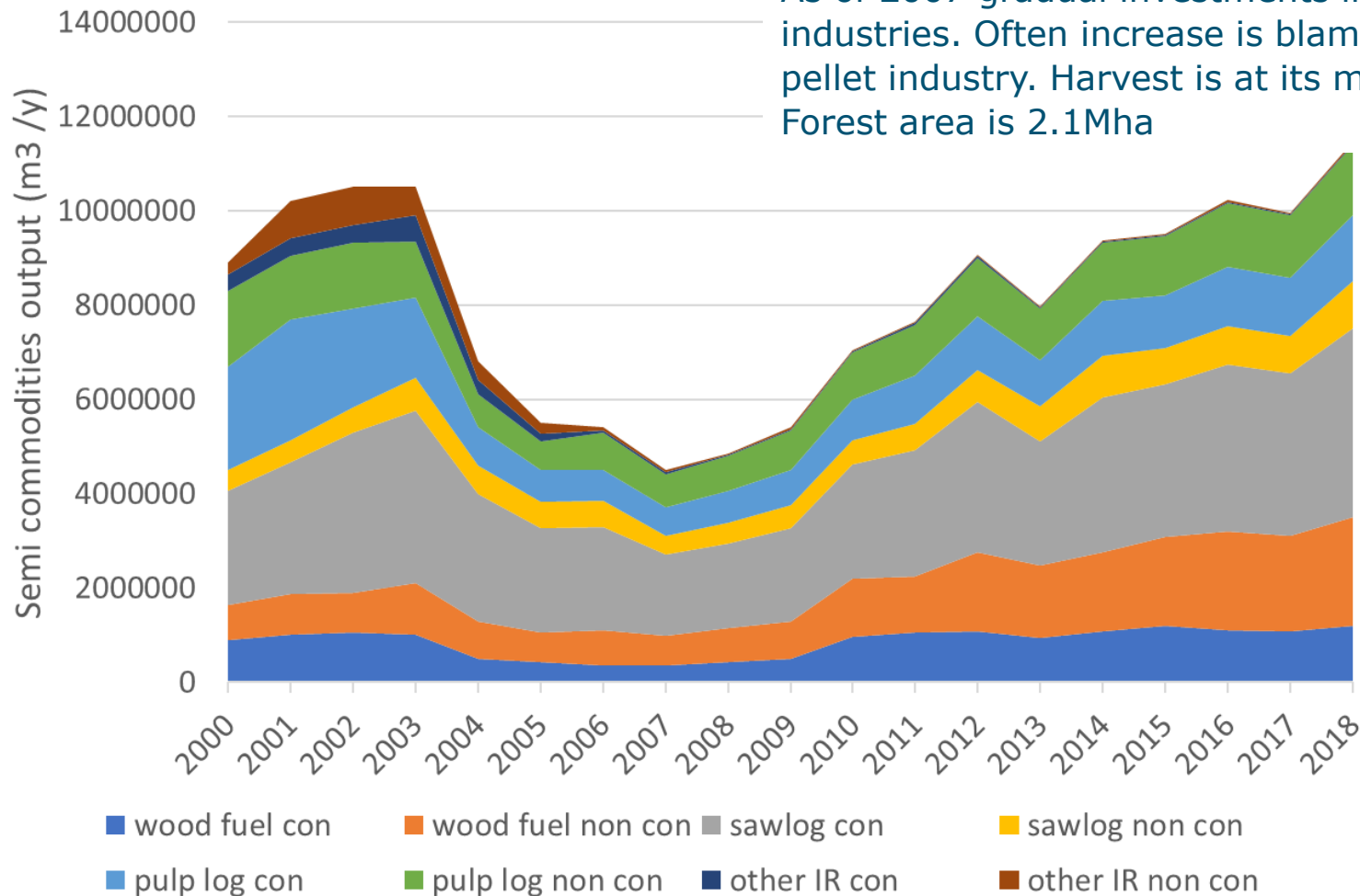
Production volumes from EU forests; has harvest really gone up a lot ? (faostat)



Every country different: Estonia (faostat)

Corruption in state forest service early 2000s, then restitution of forest to private owners, collapse of export.

As of 2007 gradual investments in variety of industries. Often increase is blamed on only pellet industry. Harvest is at its maximum now. Forest area is 2.1Mha



Whole trees are used, but the low qualities that are otherwise burned in the field

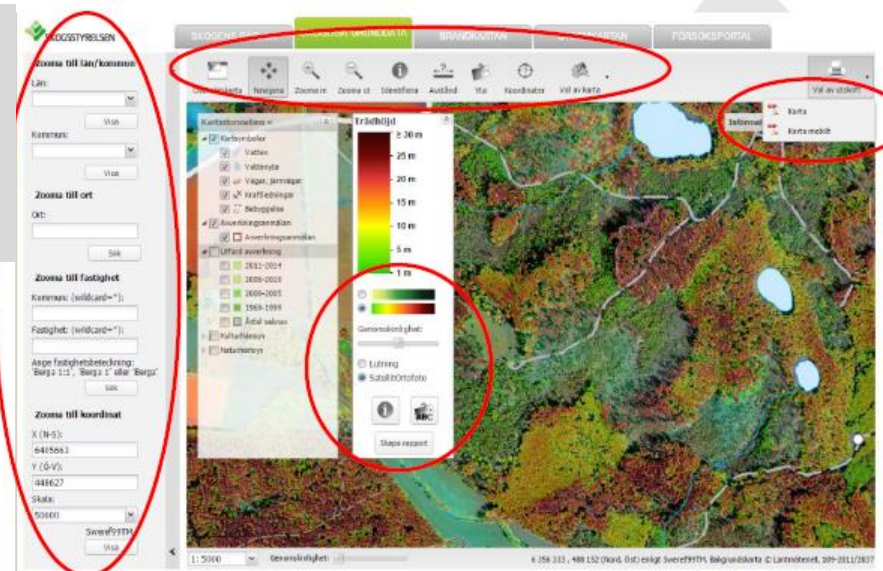


Logyard enviva pellet mill
Photo gj nabuurs

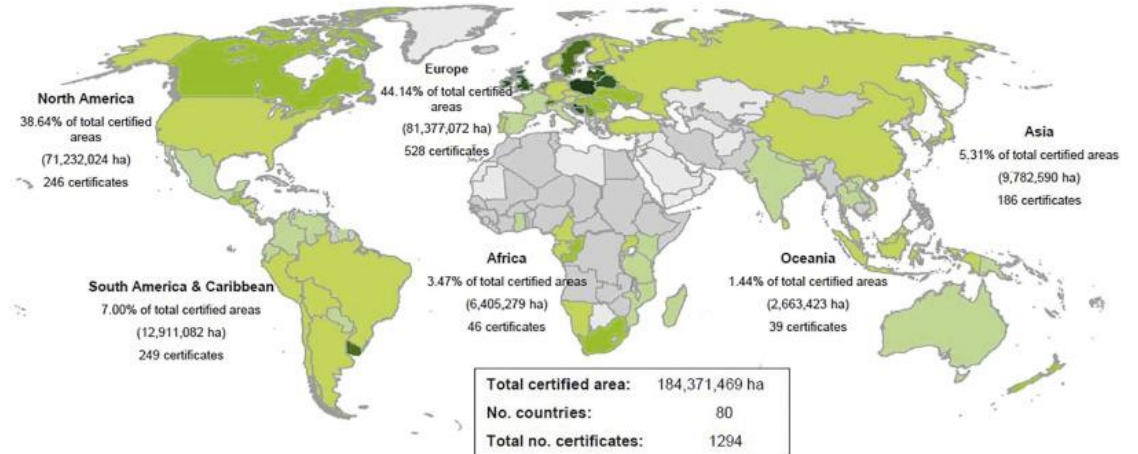
Which assurances are there?

- In EU: each Member State has a national forest law; has an inventory (too slow?), has a large extent of its forests certified.
- Each MS has usually an executive agency, that supports & does capacity building, etc.
- There are certainly differences between countries. And sometimes things do go wrong !

e.g. Swedish skogsstyrelsen supports each private owner with data and advice.



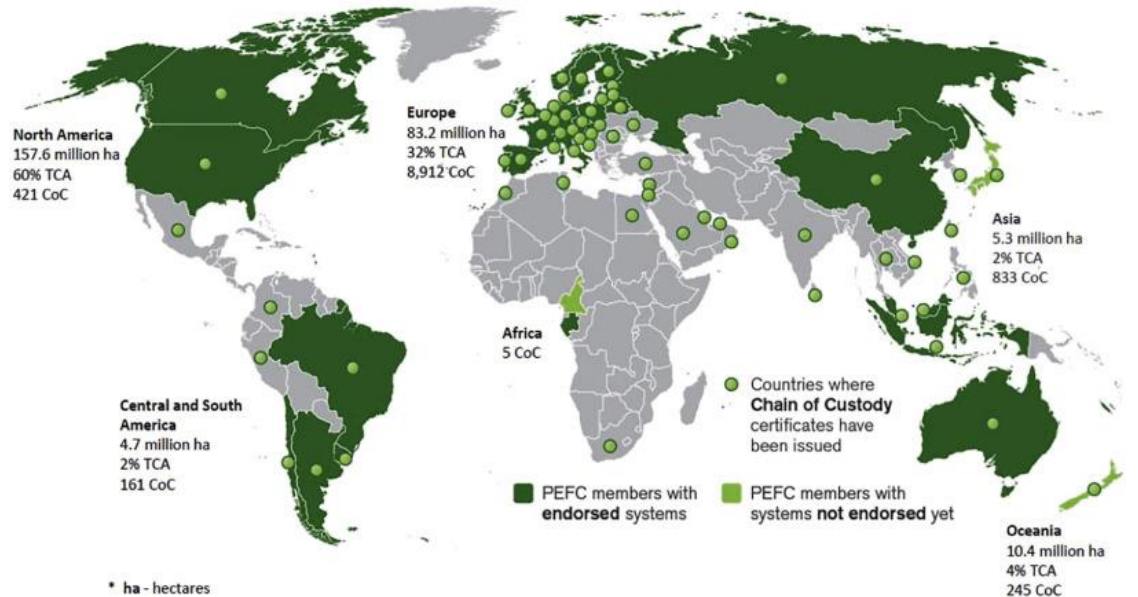
Certification of forest area



- a. FSC certified
- b. PEFC certified

a)

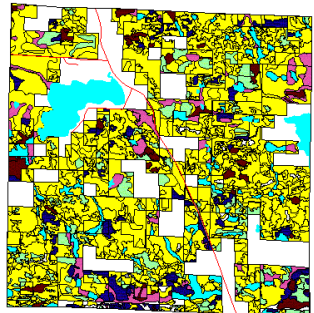
Mostly in N hemisphere



b)

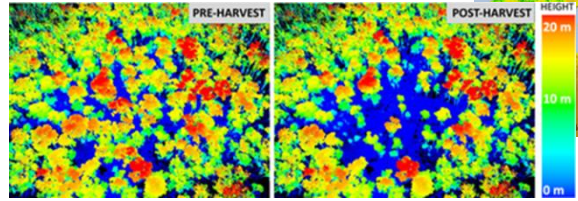
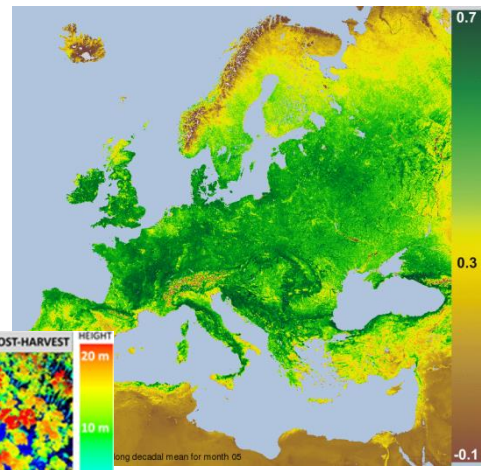
Can we monitor the state of EU forests ?

Common Forest Inventory



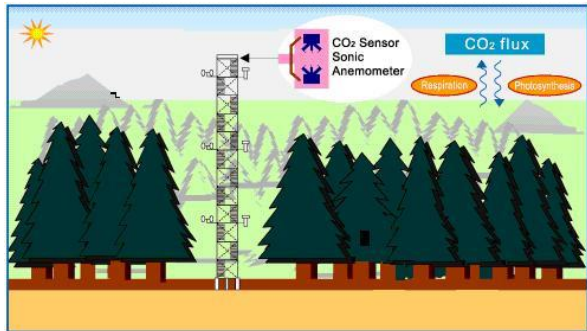
Township Range 25 West (St. Louis County, MN)

Forest inventories: Stem volumes are converted. Bookkeeping models e.g. EFISCEN, CBM, CO2FIX



Remote sensing products & Lidar , e.g. AVHRR, MODIS, Landsat, Sentinel

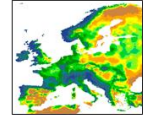
Eddy flux towers



Soil properties



Climate data



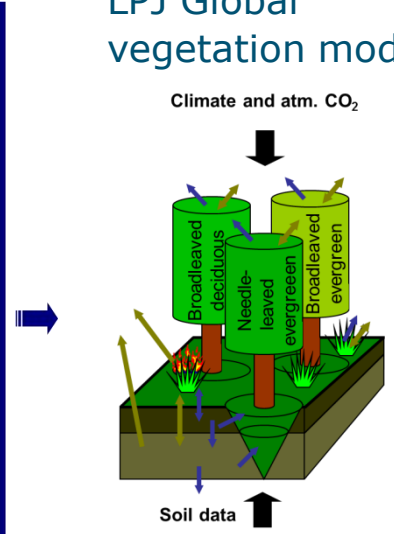
Landuse data



Forest statistics

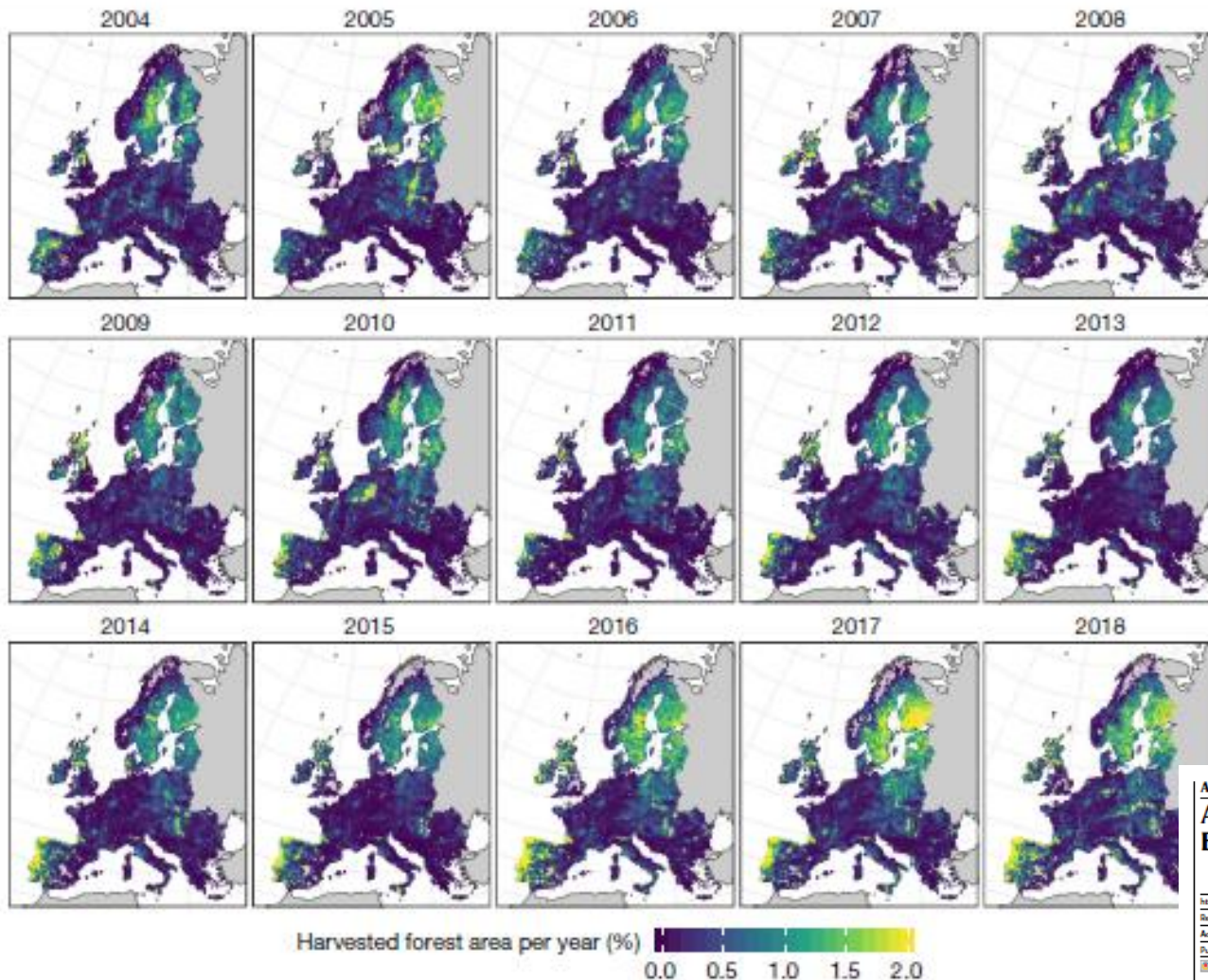


LPJ Global vegetation models



And e.g. Orchidee

Do we really know what is going on?



Serious flaws in their methods and use of satellite data

Article

Abrupt increase in harvested forest area over Europe after 2015

<https://doi.org/10.1038/s41586-020-2438-y>
Received: 17 May 2019

Accepted: 23 April 2020
Published online: 1 July 2020

[Check for updates](#)

Cuido Coccherini¹, Gregory Devallier¹, Giacomo Grassi¹, Cuido Lemoine¹, Valerio Anttila¹, Roberto Pell¹ & Alessandro Ceccati¹

Forests provide a series of ecosystem services that are crucial to our society. In the European Union (EU), forests account for approximately 38% of the total land surface¹. These forests are important carbon sinks, and their conservation efforts are vital for the EU's vision of a achieving climate neutrality by 2050². However, the increasing demand for forest services and products, driven by the bioeconomy, poses challenges for sustainable forest management. Here we use fine-scale satellite data to observe an increase in the harvested forest area (49 per cent) and an increase in biomass loss (69 per cent) over Europe for the period of 2016–2018 relative to 2011–2015, with large losses occurring on the Iberian Peninsula and in the Nordic and Baltic countries. Satellite imagery further reveals that the average patch size of harvested area

Socio-economically the EU forest sector (in broad sense) is not ready

- Large part of the sector functions the same as in Medieval times !

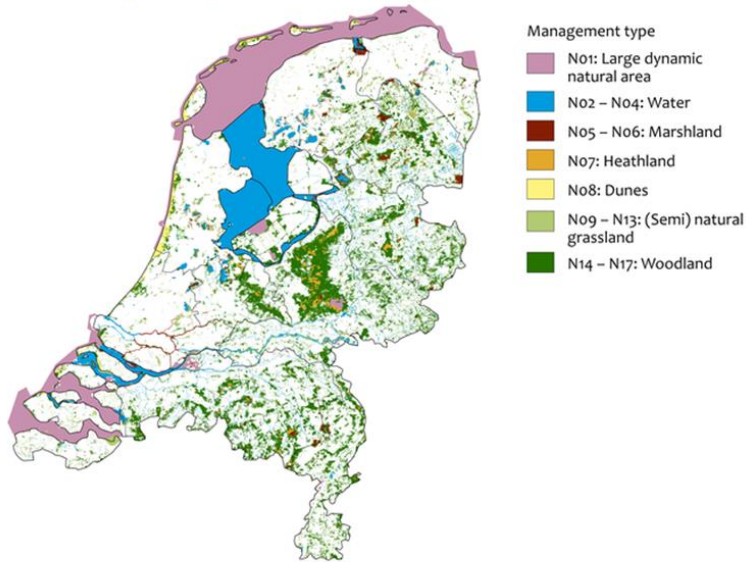
> 110 million m³ goes straight into household stoves burning at low efficiency



Picture: napoleon fireplaces

Netherlands

Nature management types in Nature and Landscape Index



- Management type
- No1: Large dynamic natural area
 - No2 – No4: Water
 - No5 – No6: Marshland
 - No7: Heathland
 - No8: Dunes
 - No9 – N13: (Semi) natural grassland
 - N14 – N17: Woodland

Source: Provincial authorities, IPO.

WUR/jul15
www.clo.nl/en154403

Very small forest area;
Still a production of 1.5
Mm³/y.
Important for the regional
biomass market

Strongest set of sustainability
criteria in the world. For
imported biomass



STAATSCOURANT

Nr. 70368

21 december

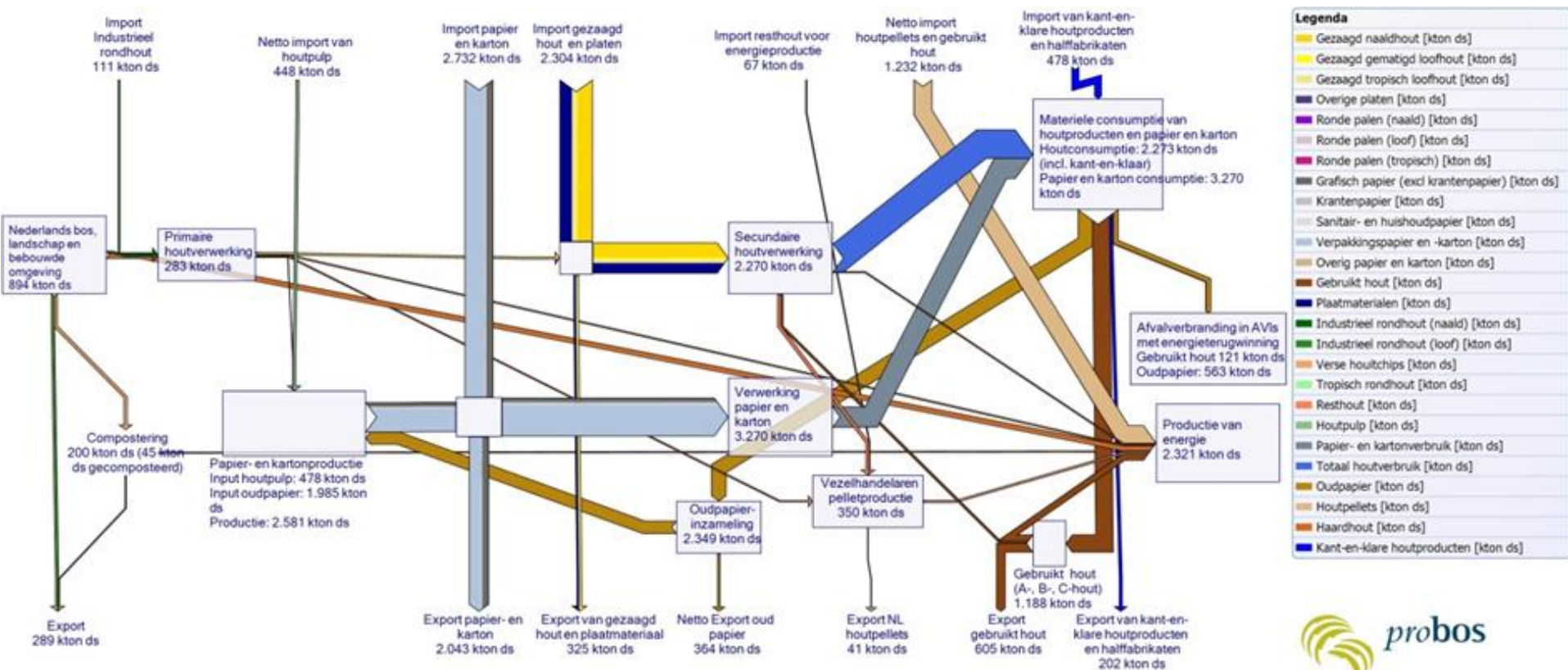
2017

Officiële uitgave van het Koninkrijk der Nederlanden sinds 1814.

Regeling van de Staatssecretaris van Infrastructuur en Waterstaat en de Minister van Economische Zaken en Klimaat van 20 december 2017, nr. IENM/BSK-2017/180307, houdende regels voor de conformiteitsbeoordeling van vaste biomassa voor energietoepassingen (Regeling conformiteitsbeoordeling vaste biomassa voor energietoepassingen)

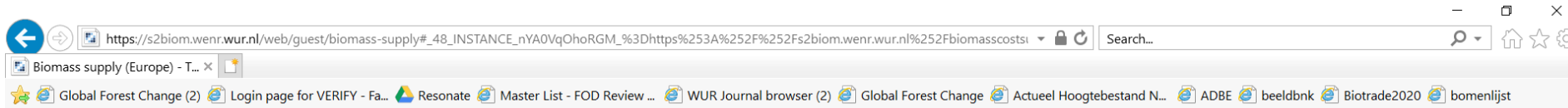
De Staatssecretaris van Infrastructuur en Waterstaat en de Minister van Economische Zaken en Klimaat,

Dutch wood flows



Copyright Stichting Probos

Regionally available biomass is well quantified by type, etc (Elbersen et al.)



S2Biom Tools for biomass chains

- Home
- General data
- Biomass chain data**
- Tools
- S2BIOM Report downloads
- Data downloads
- Login

Biomass chain data / Biomass supply (Europe)

Welcome to the biomass supply viewer! This tool enables the user to make selections of biomass types for which data can be displayed in a map in relation to amount of biomass available per year and potential type combination. The user can select the regional level, the year and the different types of potentials. In addition the user can also choose the level entities in absolute levels (Kton dm or T.J), area weighted (Kton dm/km2 or GJ/km2) and weighted average road side cost (€/ton dm).

For further user instructions open [user instructions document](#). The background report providing an extensive description and meta-information of how the cost supply data was assessed per biomass type is [D1.6](#). An overview of all cost-supply data is also presented in the S2BIOM Atlas ([D1.8](#)).

For further information on biomass supply data assessments, potential types covered see text underneath the supply viewing tool. See also deliverables [D1.1](#) and [D1.7](#).

Additional data for biomass assessment in [Switzerland](#) are available from another project carried out by the [Federal Research Institute for Forest, Snow and Landscape WSL](#) within the [SCCER-BIOSWEET](#). This includes 10 biomasses quantified in tonnes and primary energy.

2012 - Primary residues from forests - Logging residues from final fellings & thinnings - Logging residues from final fellings from conifer trees - base potential - weight - area weighted

Administrative level	Scenario
nuts1	2012
nuts2	2020
nuts3	2030

Category

- Production from forests
- Primary residues from forests
- Other land use

Subcategory

- Logging residues from final fellings & thinnings
- Stumps from final fellings & thinnings

Type

- Logging residues from final fellings from nonconifer trees
- Logging residues from final fellings from conifer trees
- Logging residues from thinnings from nonconifer trees

Potential

- base potential
- technical potential

energy value | weight | costs

area weighted | absolute

Unit: ton dm / km2

0
0 - 1
1 - 2
2 - 3
3 - 4
4 - 5
5 - 6
6 - 7
7 - 8
8 - 9
9 - 10

Current selection	Identify result	Selected regions
NUTS level	nuts3	
Scenario	2012	
Category	Primary residues from forests	
Subcategory	Logging residues from final fellings & thinnings	
Type	Logging residues from final fellings from conifer trees	
Potential	base potential	

https://s2biom.wenr.wur.nl/web/guest/home



Investing in Dutch forests Climate smart forestry

- Dutch Government has a Climate Accord. climate pilot measures in all sectors. Out of this, 2 M/y is allocated to forestry pilots in climate smart forestry. We lead this for 38 Dutch partners.
- A variety of measures is implemented. to fill a climate measures toolbox. <https://www.vbne.nl/klimaatslimbosennatuurbeheer/>





Walnut hybrid plantation

One of the pilots under Climate accord.

<https://nos.nl/artikel/2339646-nederland-heeft-er-1-6-miljoen-bomen-bij-en-dat-is-nog-maar-het-begin.html>

Concluding

- Biomass for bioenergy always (a small) part of the full forest sector
- EU forests can sustainably supply ~10% of total EU energy need
- EU forest are characterised as multi functional
- working with a natural system will always be under high scrutiny
- Especially in a urbanised society

Part of the EFISCEN group

