

Wooden Biomass in the Energy Sector

- EU and international perspective -

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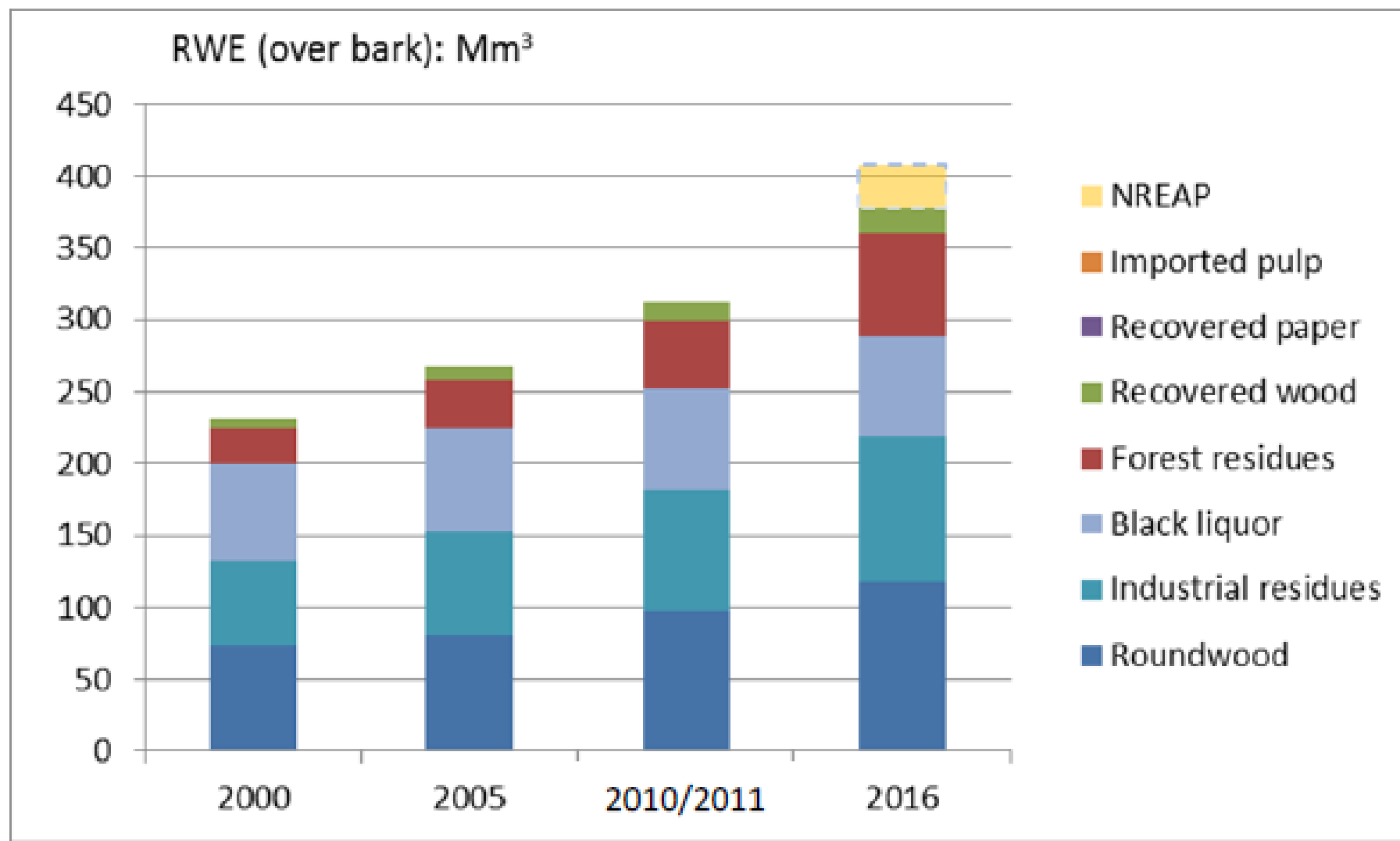
Expertenworkshop Energieholz aus dem Wald

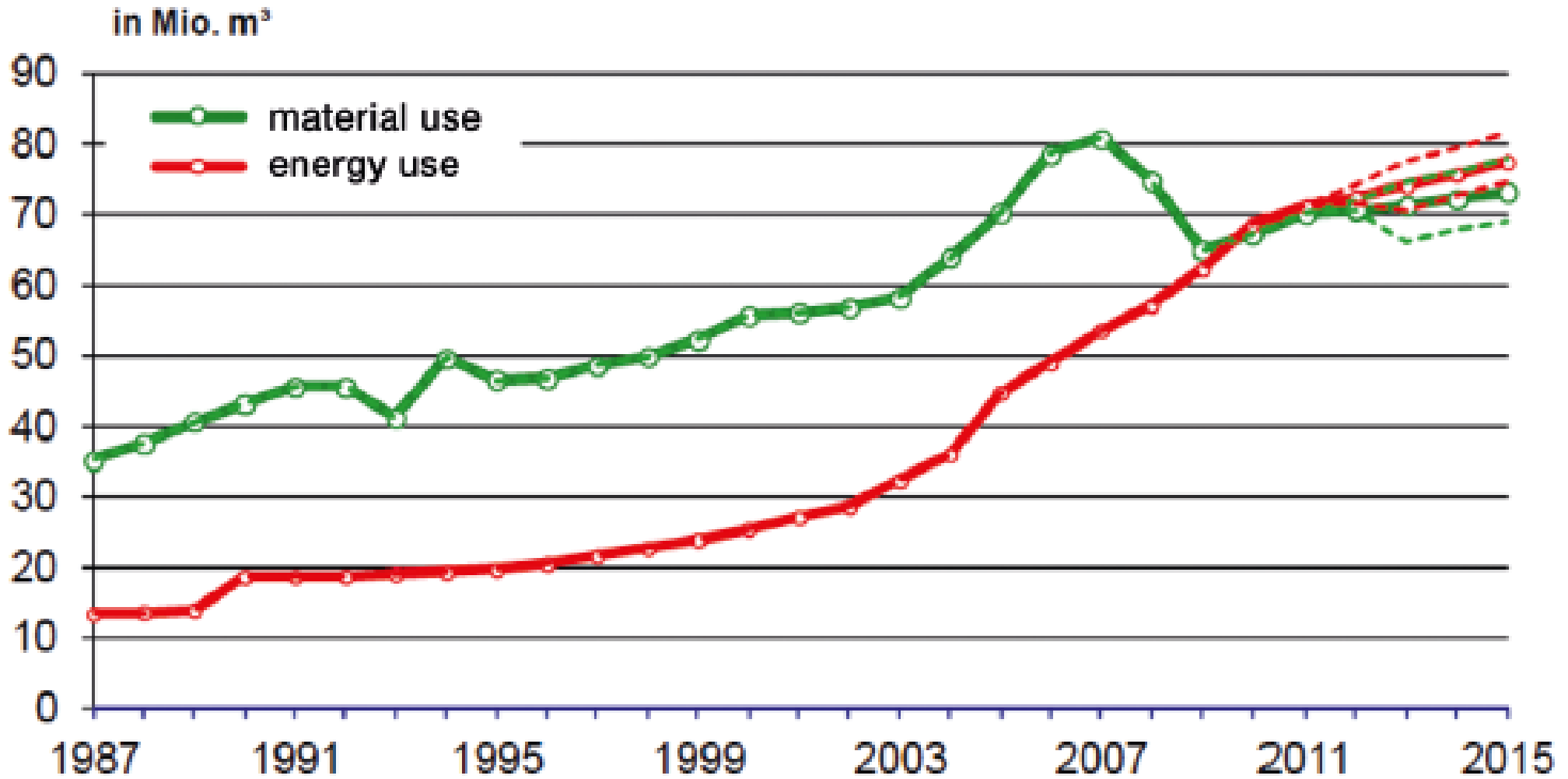
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Bioenergy – a new kind of
sustainability challenge for
forestry

Figure 7.7 Wood raw material used in the bio-energy sector in EU-27





Material and energy uses of wood 1987– 2015 and 2008 – 2015 in Germany
(Mantau 2012)

Vyborgskaya pellet mill on the Russian-Finnish border
Documented by ORF2, Weltjournal





Enviva Pellet Mill in North Carolina

Bioeconomy?



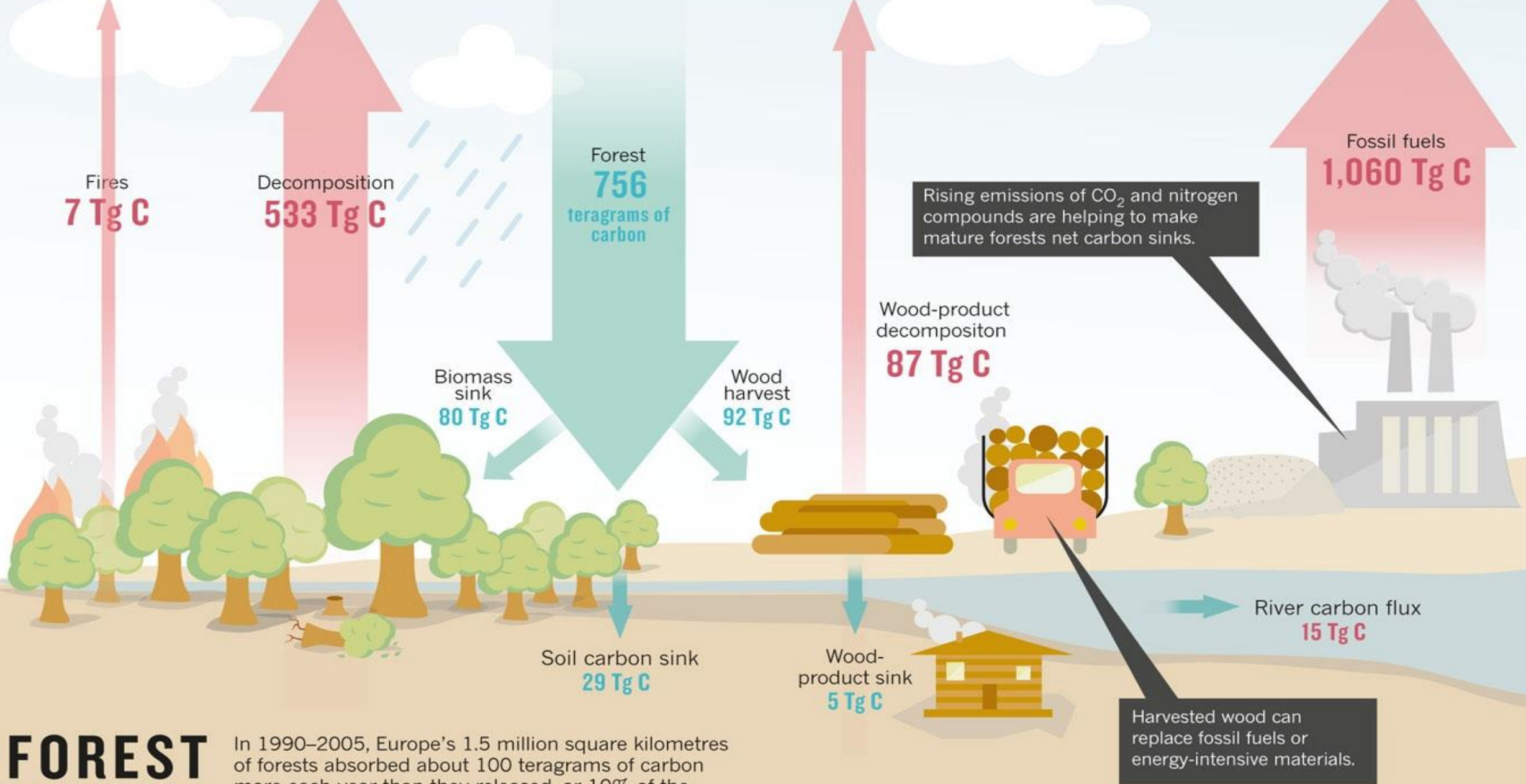
“The IPCC Guidelines **do not** automatically consider biomass used for energy as “**carbon neutral**,” even if the biomass is thought to be produced **sustainably**.”

“The IPCC approach of not including these [bioenergy] emissions in the Energy Sector total should not be interpreted as a conclusion about the **sustainability or carbon neutrality** of bioenergy.”

IPCC Task Force on National Greenhouse Gas Inventories

FOREST CARBON CYCLE

In 1990–2005, Europe's 1.5 million square kilometres of forests absorbed about 100 teragrams of carbon more each year than they released, or 10% of the region's fossil-fuel emissions. Carbon is absorbed by growing trees and is released during decomposition and burning. Wood products act as a temporary carbon sink, and can substitute for fossil fuels.



GHG emissions	Biomass source	Details
Low	Residues	Forest residues that are used for bioenergy that would otherwise be burned as waste e.g. on the roadside
Low	Residues	Sawmill residues that are used for bioenergy that would otherwise be burned as waste
Low	Residues	Trees killed from natural disturbances (e.g, beetles) that would otherwise be burned as waste
Low	Yield increase	Increasing the yield of a plantation without increasing the rate of harvest
Low	Land conversion	Wood from a forest that would otherwise be converted to agricultural land (if no indirect impacts).
Low	Land conversion	converting land that would otherwise revert to grassland to biomass plantations (pine or energy crops)
Medium	Residues	Fine residues that would otherwise be left to decay in a forest (all regions)
Medium	Residues	Coarse residues that would otherwise be left decay in a Southern US forest
High	Residues	Coarse residues hat would other wise be left to decay in a boreal forest
High	Residues	Trees killed by natural disturbances (e.g. beetles) that would other wise be left in a boreal forest (e.g. Canada)
High	Roundwoods	Where biomass is sourced from hardwoods that would otherwise have gone to paper and pulp demand is displaced to Brazil
High	Roundwoods	Additional wood output from increasing the harvest rate of forests (reducing the rotation length)
High	Roundwoods	Wood from a forest that would otherwise be harvested less frequently
High	Forest conversion	Converting existing forests to energy crop plantations.
High	Land conversion	Converting land that would otherwise revert to forests to biomass plantations (pine or energy crops)
Mixed ¹	Forest conversion	Converting naturally-regenerated forests into pine plantations (increasing the growth rate)
Mixed	Yield increase	Additional wood output from an intensively-managed plantation that would otherwise be converted to a naturally-regenerated forest



Stump extraction for bioenergy in Central Finland



Pellet loggings in Southampton, Virginia for Enviva

Bioenergy – a new kind of sustainability challenge for forestry

- Resource efficient *use* of wood
- Climate impacts of the production and use of wood
- New kind of extraction and harvesting of wood

The European Policy Debate?

EU climate and energy 2030 framework

Min. 40% GHG
reduction target

Min. 27% EU wide
efficiency target

Min. 27% EU wide
renewable energy target

Land and forest sector

Transport?

“New governance framework”

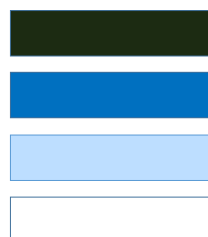
ETS

Effort Sharing Decision

Renewable Energy Directive

New bioenergy sustainability policy for biofuels, biomass and biogas

Raw material types		Sawn-wood	Plywood	Pulp, Paper & Board	Oriented Strand Board (OSB)	Particle Board	Medium Density Fibreboard (MDF)	Pellets	CHP Combined Heat and Power
wood	Pulpwood			Strong usage	Strong usage	Medium usage	Medium usage	Strong usage	Medium usage
	Sawlogs	Strong usage	Strong usage	Medium usage	Medium usage	Medium usage	Medium usage	Medium usage	Medium usage
	Forest residues					Low usage			Strong usage
industrial Residues	Bark								Strong usage
	Chips			Strong usage		Strong usage	Strong usage	Strong usage	Medium usage
	Sawdust			Low usage		Strong usage	Strong usage	Strong usage	Low usage
recycled Material	Recovered paper			Strong usage					Medium usage
	Recovered wood			Low usage		Strong usage	Strong usage	Low usage	Strong usage



Strong usage

Medium usage

Low usage

No usage

RAW MATERIAL SOURCES FOR VARIOUS END USES

NB: WOOD PRODUCTS' RAW MATERIALS ARE FURTHER LIMITED BY SPECIES, QUALITY

AND DIMENSIONS BUT BIO-ENERGY CAN USE ALL WOOD SOURCES

FIGURE 54: EU28 LULUCF EMISSIONS UNTIL 2050 IN MT CO₂

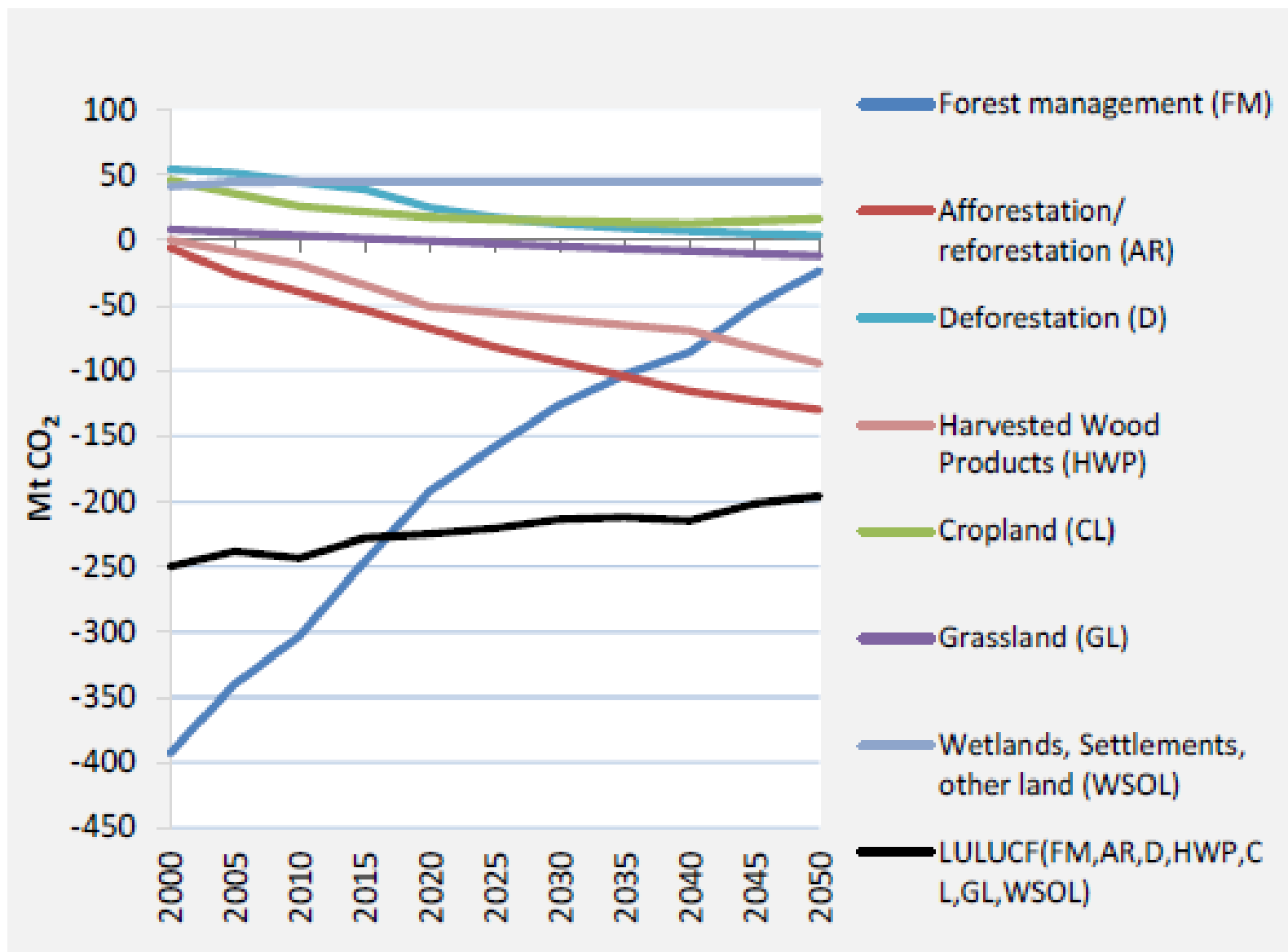


FIG 1.2

Sustainable availability of wastes and residues in the EU in 2030

44 million tonnes of Municipal Solid Waste



139 million tonnes of Crop Residues



1 million tonnes of Used Cooking Oil (+ imports)



40 million tonnes of Forest Slash



If all the wastes and residues that are sustainably available in the European Union were converted only to biofuels, this could supply 16 per cent of road transport fuel in 2030. (Technical potential).

EU NGO Perspective

The starting point of NGO asks...

- A meaningful policy needs to address the concerns raised (and not to repeat ILUC)
- Both quantitative and qualitative sustainability 'criteria' are needed
- Not just about how we produce biomass but how we use it
- Policies should target the energy sector which is the driver of bioenergy use
- Residues and waste are a diminishing resource if we take circular economy seriously
- Sustainability issues related to biofuels (land) and biomass (forests) coming together

A large, lush green tree stands in a field of tree stumps under a cloudy sky. The tree is the central focus, with its dense foliage contrasting sharply with the barren landscape of cut stumps. The sky is overcast, adding a somber tone to the scene.

**PITFALLS AND POTENTIALS
THE ROLE OF BIOENERGY
IN THE EU CLIMATE
AND ENERGY POLICY
POST 2020**

NGO RECOMMENDATIONS

Joint NGO policy recommendation for 2030

- Introduce a cap to limit the use of biomass for energy production to levels that can be sustainably supplied
- Ensure efficient and optimal use of biomass resources, in line with the cascading use principle
- Include correct carbon accounting for biomass
- Introduce comprehensive binding sustainability criteria

PITFALLS AND POTENTIALS
THE ROLE OF BIOMASS
IN THE EU CLIMATE
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NGO RECOMMENDATIONS

DANKE!

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