

Bio-energy and the European pulp and paper industry – an impact assessment

*Summary of a study conducted by McKinsey & Company
and Pöyry Forest Industry Consulting*

Our key message



The Forest based industries are **the key enabler** for policy makers to meet the ambitious renewable energy targets

IF

the right policies are put in place.

The challenge: 20/20/20 by 2020



Political context

Climate change considerations

Higher relevance of security of energy supply

Policy implications

CO₂ abatement: 20% reduction of CO₂ emissions by 2020

Energy efficiency: 20% less energy consumed in 2020 than “business-as-usual”

Renewable energy: 20% of consumed energy in 2020 from renewable sources

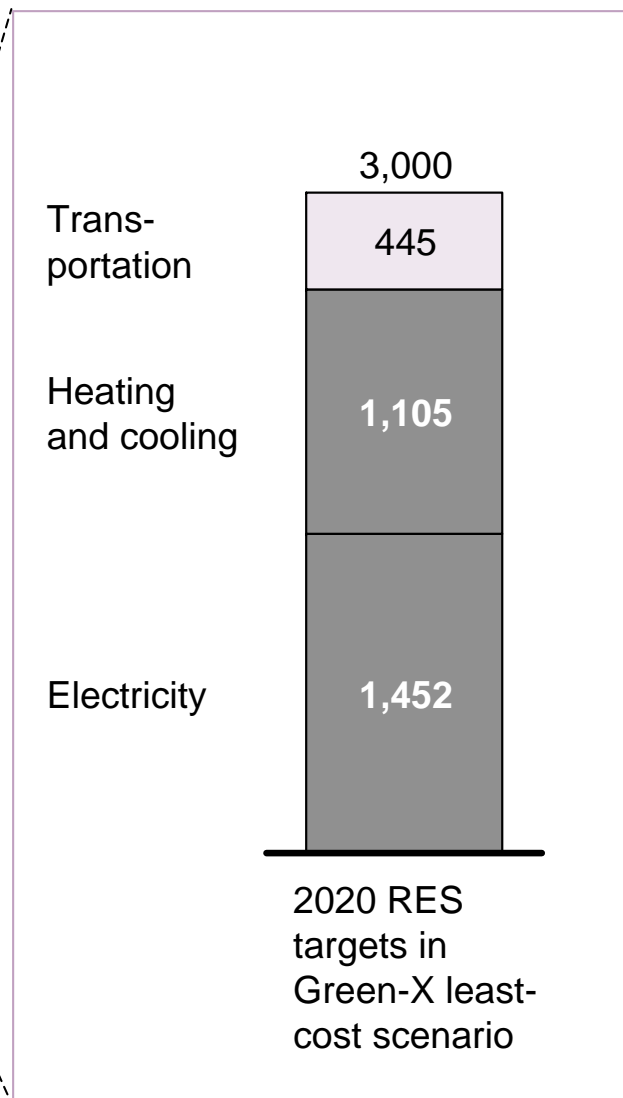
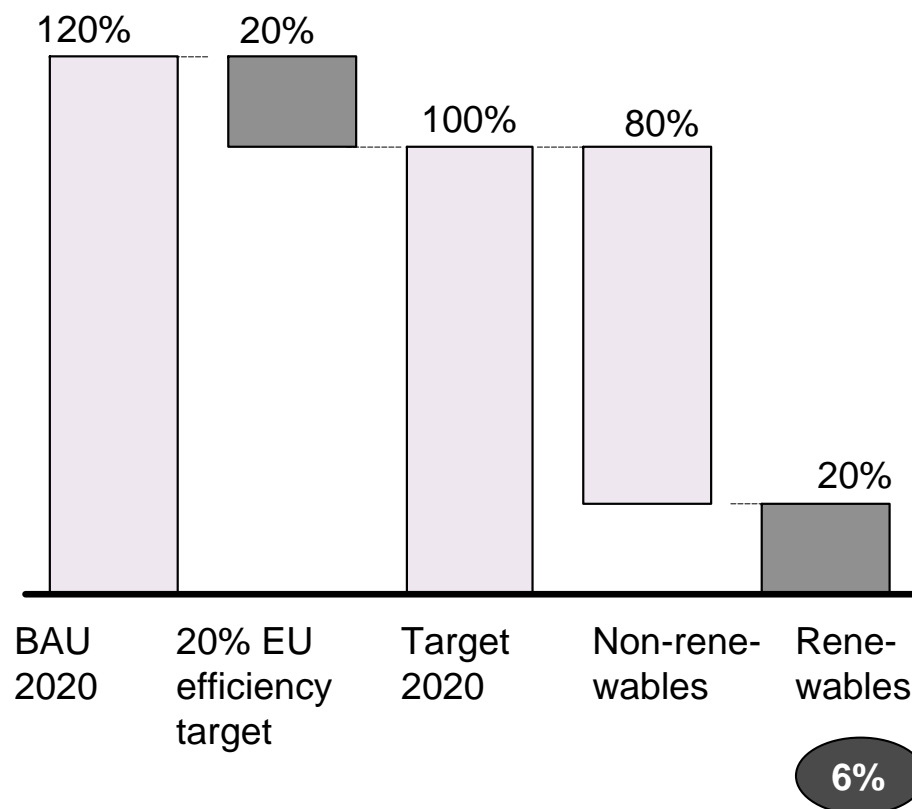
Biofuels: 10% of all transportation fuels from bio-sources by 2020 (part of renewables)

How big are the ambitions?



The Commission's and the national governments' ambitions on energy efficiency and renewables (RES) are high

Final energy consumption EU-25, 2020, TWh
100% = 15,000 TWh

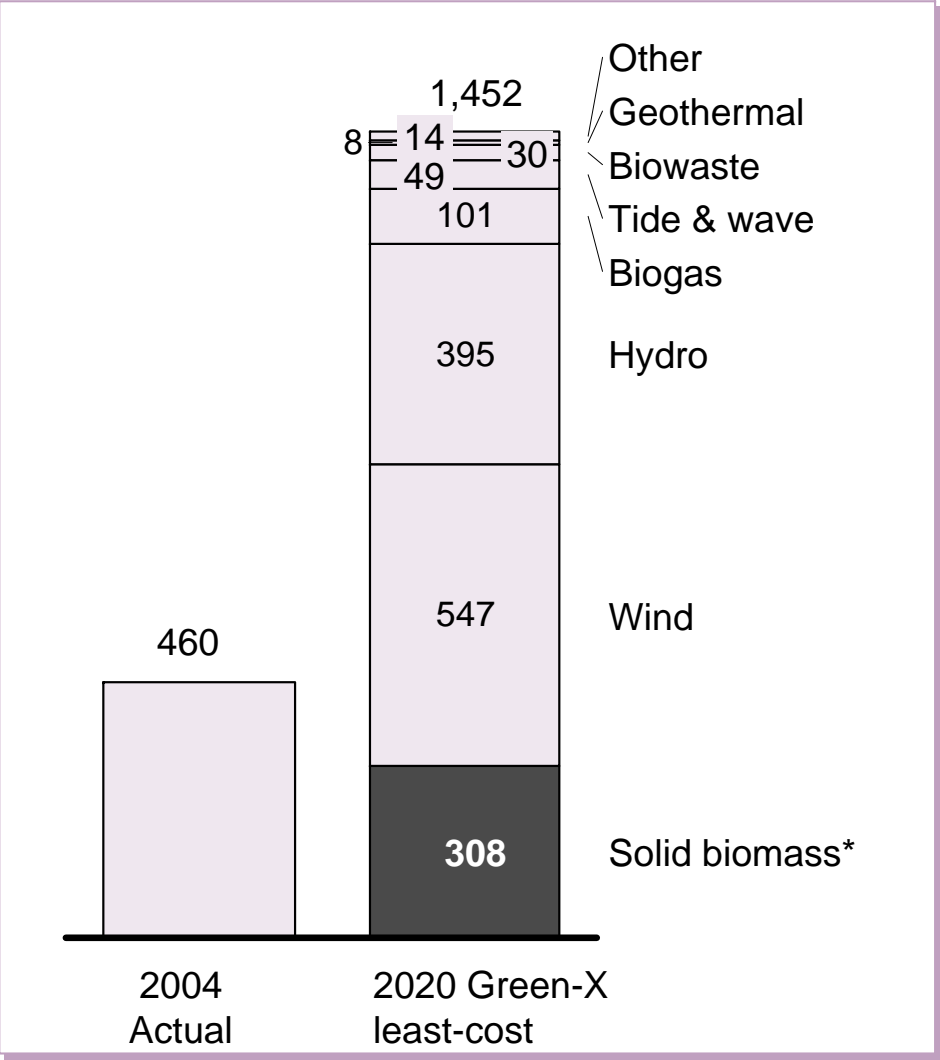


Solid biomass will need to play a critical role to meet the RES targets

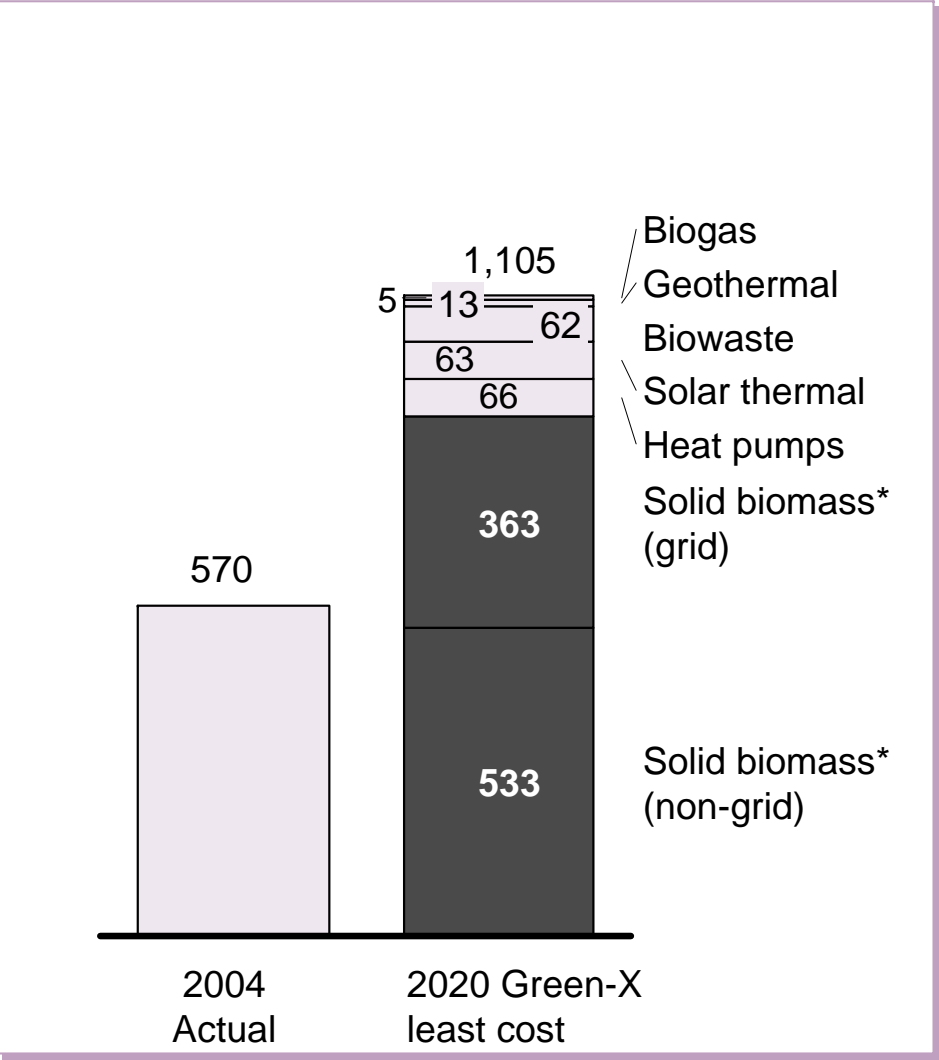
TWh energy output, EU-25



Electricity



Heating and cooling



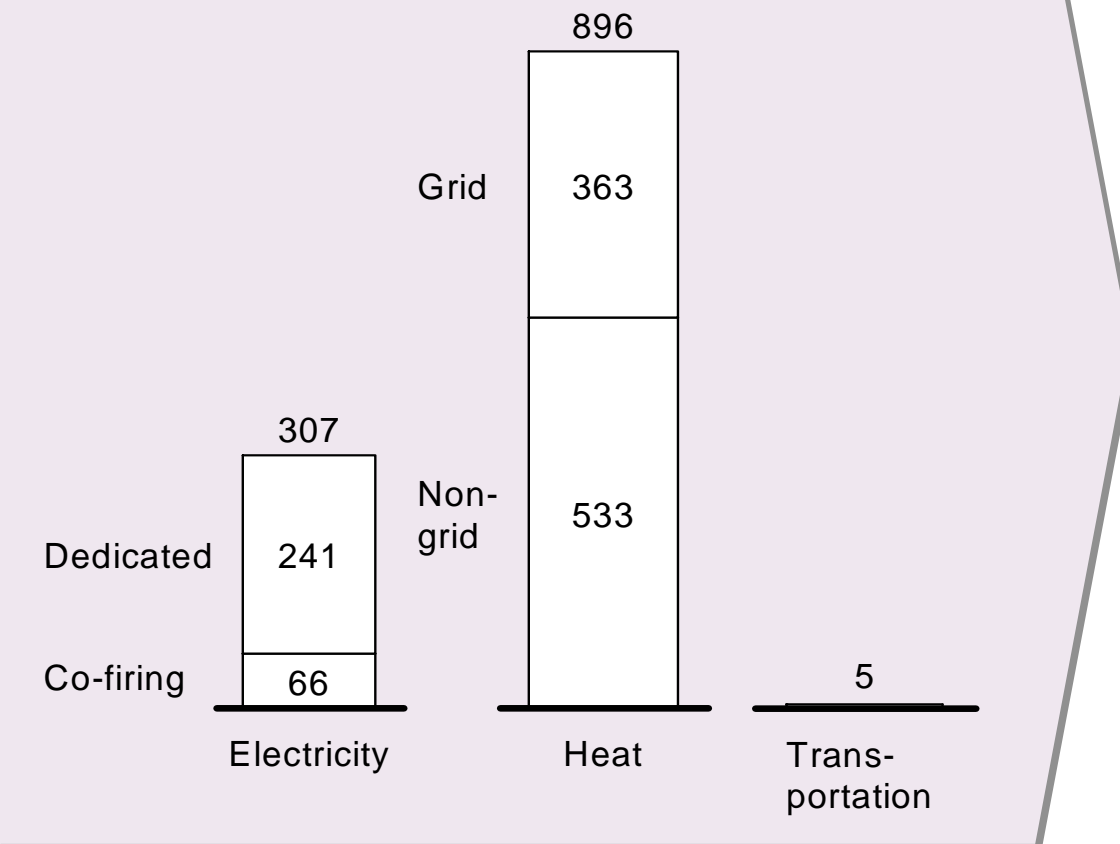
* Both forest and other solid biomass

Source: Green-X economic analysis of reaching a 20% share of RES in 2020

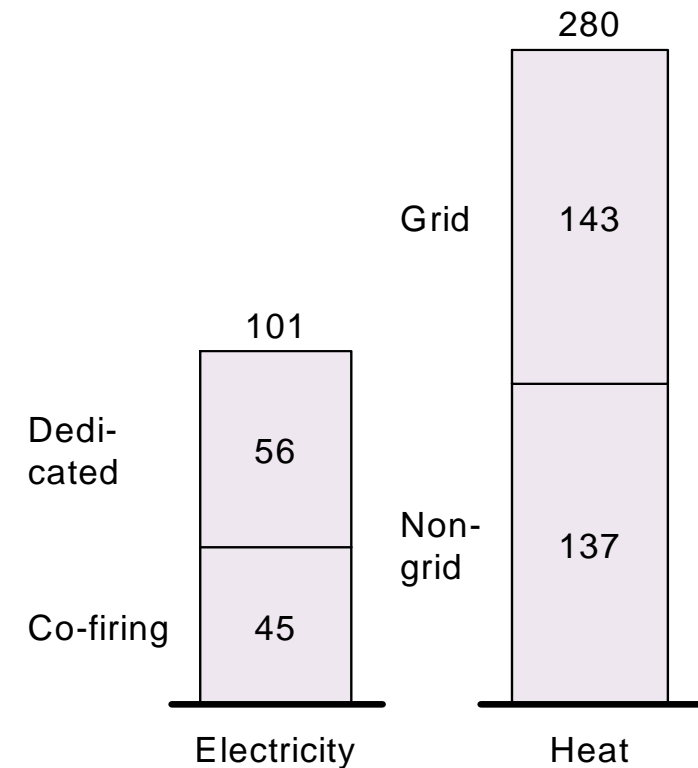
The EU targets translated in wood terms

ESTIMATES

Estimated energy consumption based on solid biomass
CEPI-16, TWh



Estimated demand for forest biomass and recovered wood
CEPI-16; Million m³*

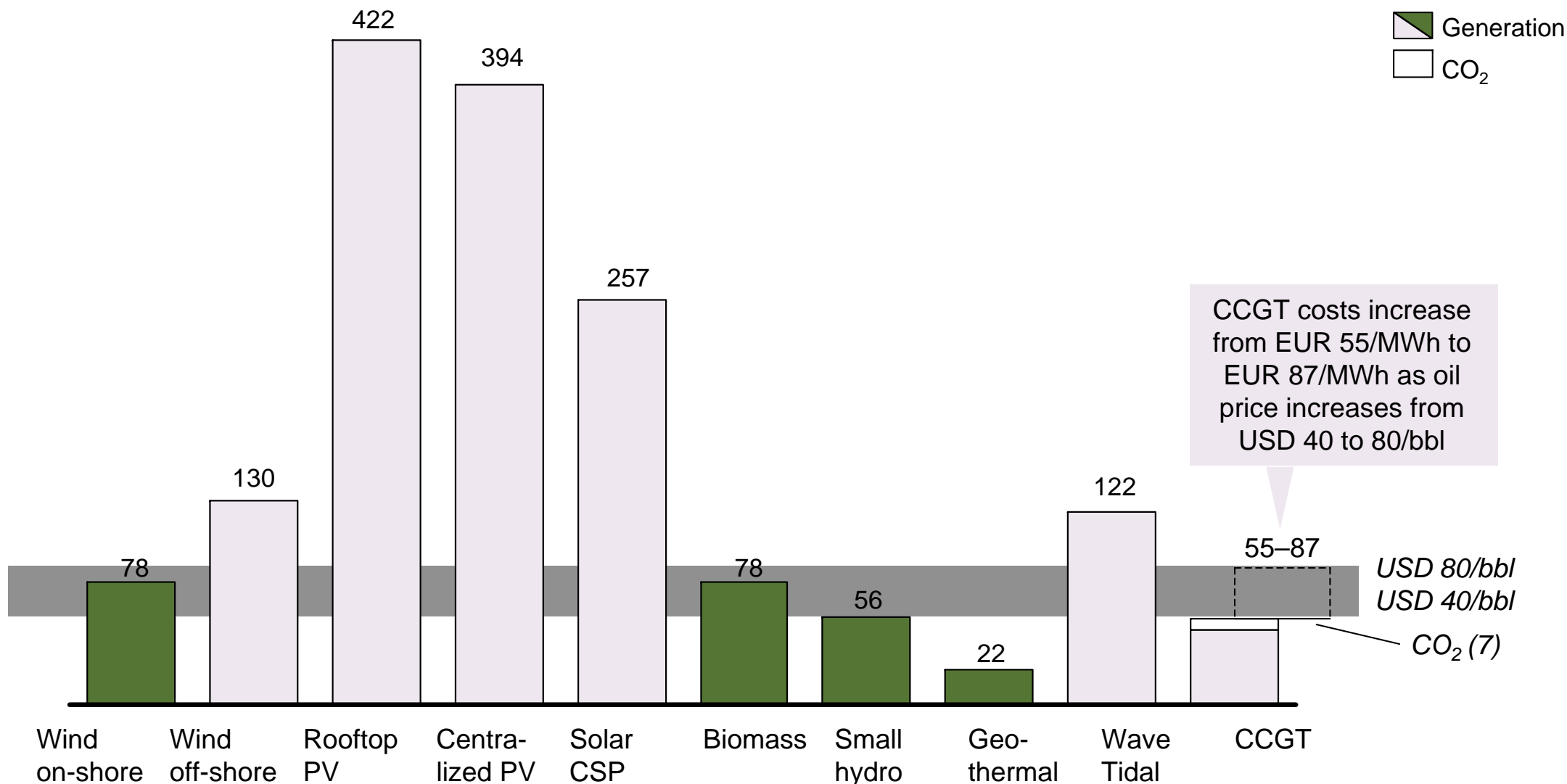


* Based on total primary energy input from Green-X report on least cost scenario: 1 million m
Source: Green-X; team analysis

³ equals 0.17 Mtoe (2 MWh/m³)

Why biomass ? And why soon ?

2005 full generation cost in EUR/MWh*



Note: PV=Photovoltaic cells; CCGT=Combined Cycle Gas Turbine; CSP=Concentrating Solar Power

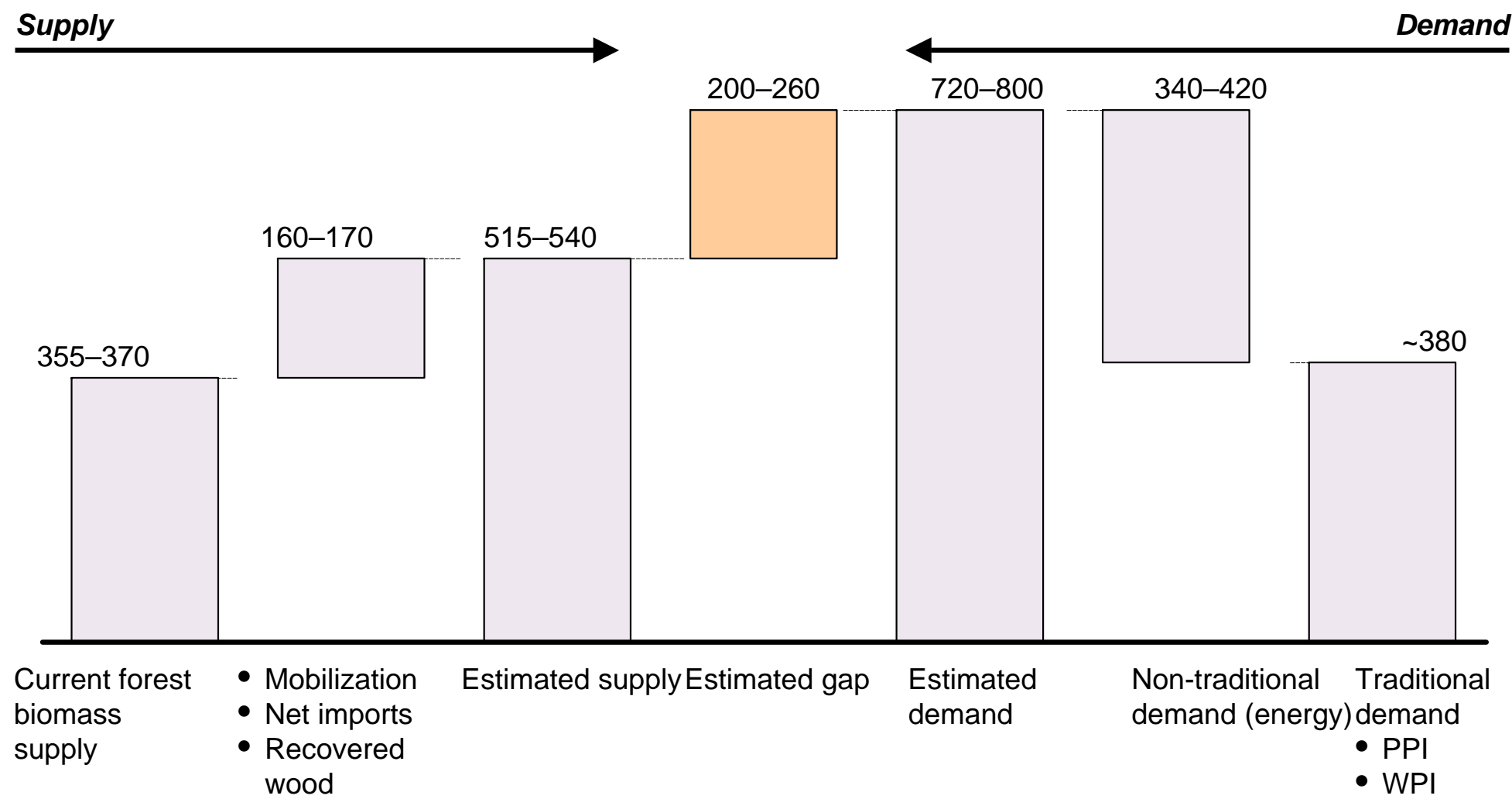
* Includes capital costs, O&M, fuel, and CO₂ cost at 20 EUR/ton; best available technology at average location

Source: Public data and client workshops; McKinsey analysis based on interviews

With current assumptions we see a gap between supply and demand of more than 200 million m³ wood by 2020

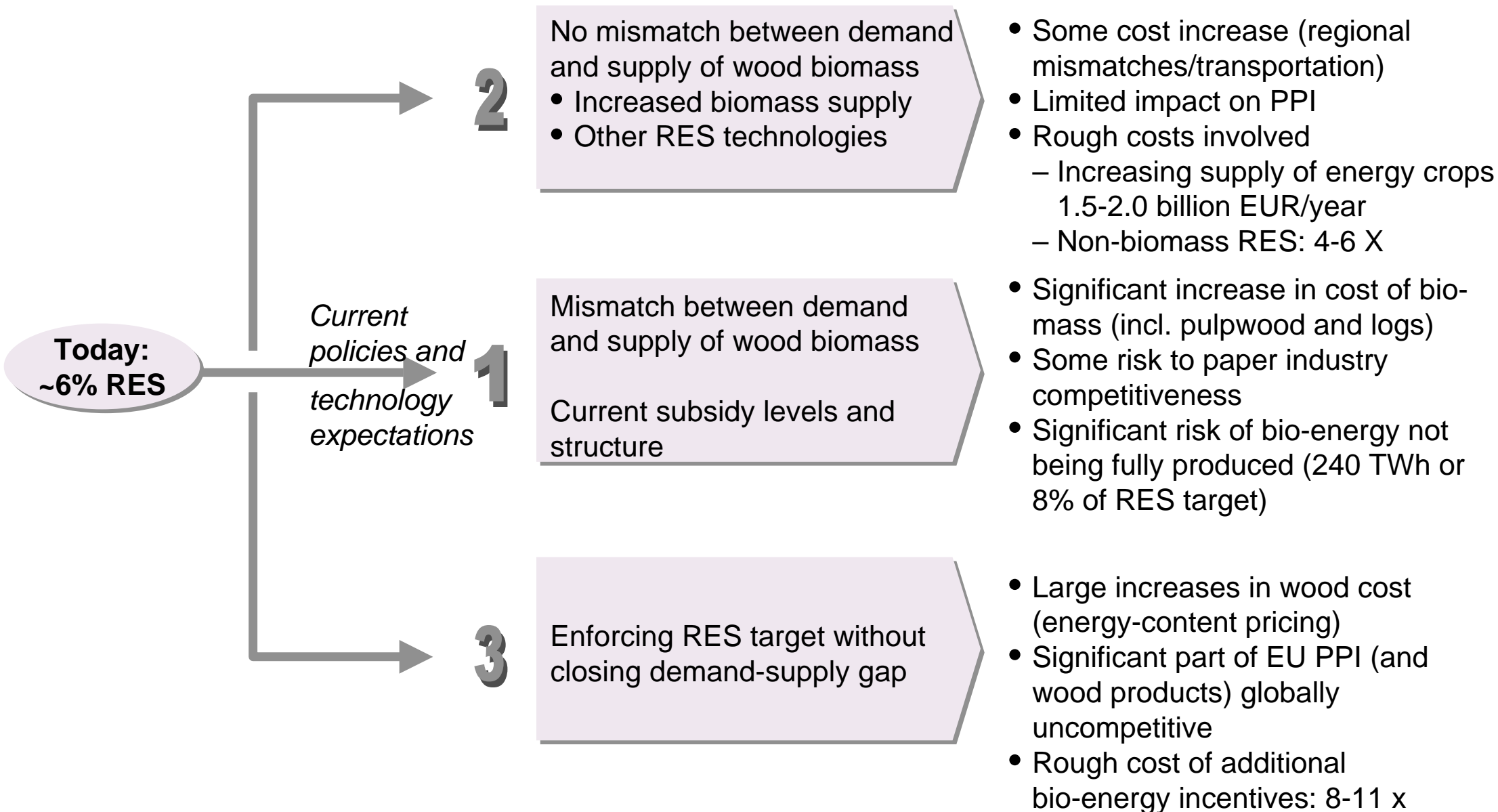


CEPI-16, wood supply and demand; million m³ (under bark); 2020



Source: McKinsey/Pöyry team analysis

Three main scenarios as result of efforts to reach 20% RES



Source: McKinsey/Pöyry team analysis

Brief conclusions from scenario modeling

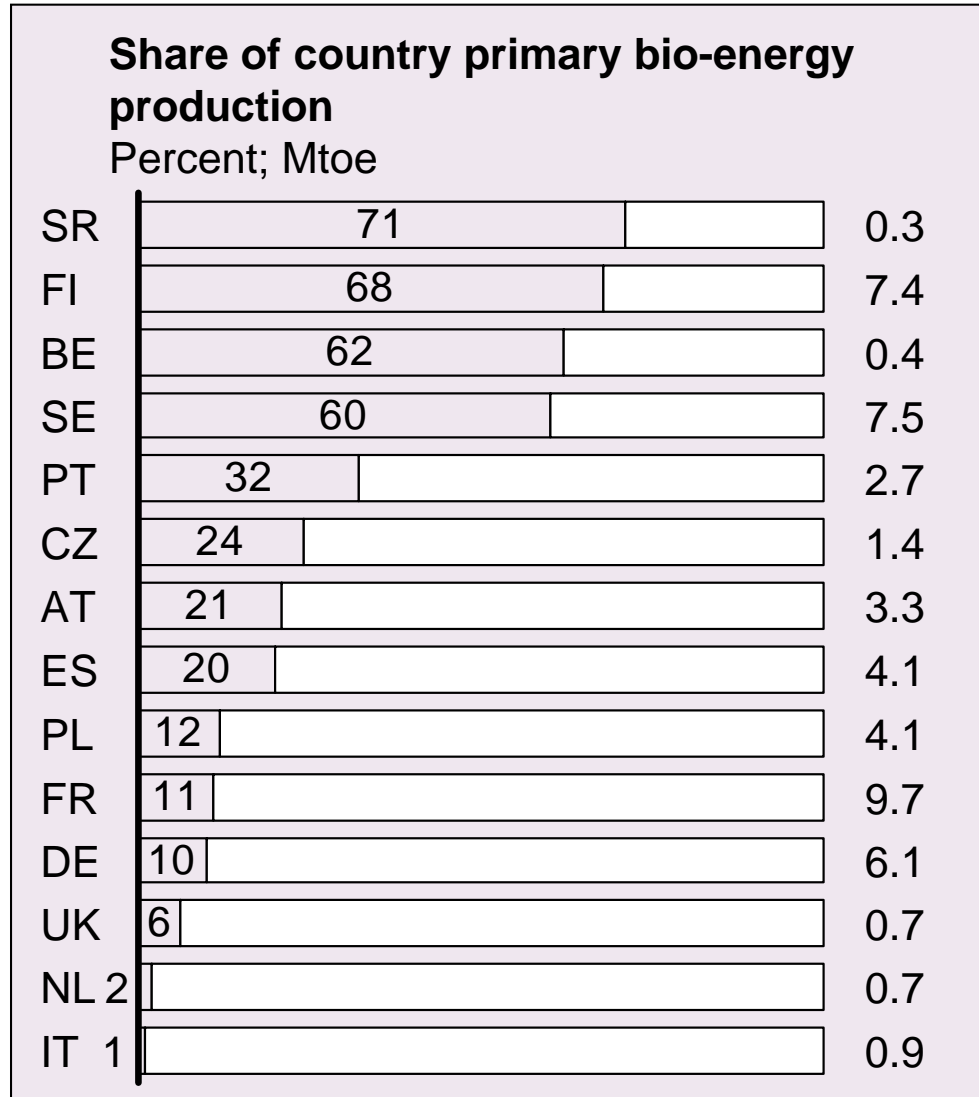
If current RES roadmap assumptions remain and no actions are taken, the estimated future fiber demand-supply mismatch is worrisome

Cost increases could compromise the viability of plans to reach the RES targets or threaten the competitiveness of the European paper industry (or both)

The way for the energy sector to reach RES targets (and specifically, to fulfill its needs of biomass) should be a key issue in future impact assessment of politically set support systems

The pulp and paper industry is part of the solution

The PPI is already a substantial participant in bio-energy production...



...and can be a key enabler for reaching future RES targets

The paper industry has:

The infrastructure

The locations

The efficiency

Source: CEPI bio-energy survey; SBB; McKinsey/Pöyry team analysis

The key enabler

Bio-energy producer

~25% of European bio-energy currently produced within the FBI

In addition, the FBI has:

The infrastructure

Biomass generation and sourcing organizations in place

The locations

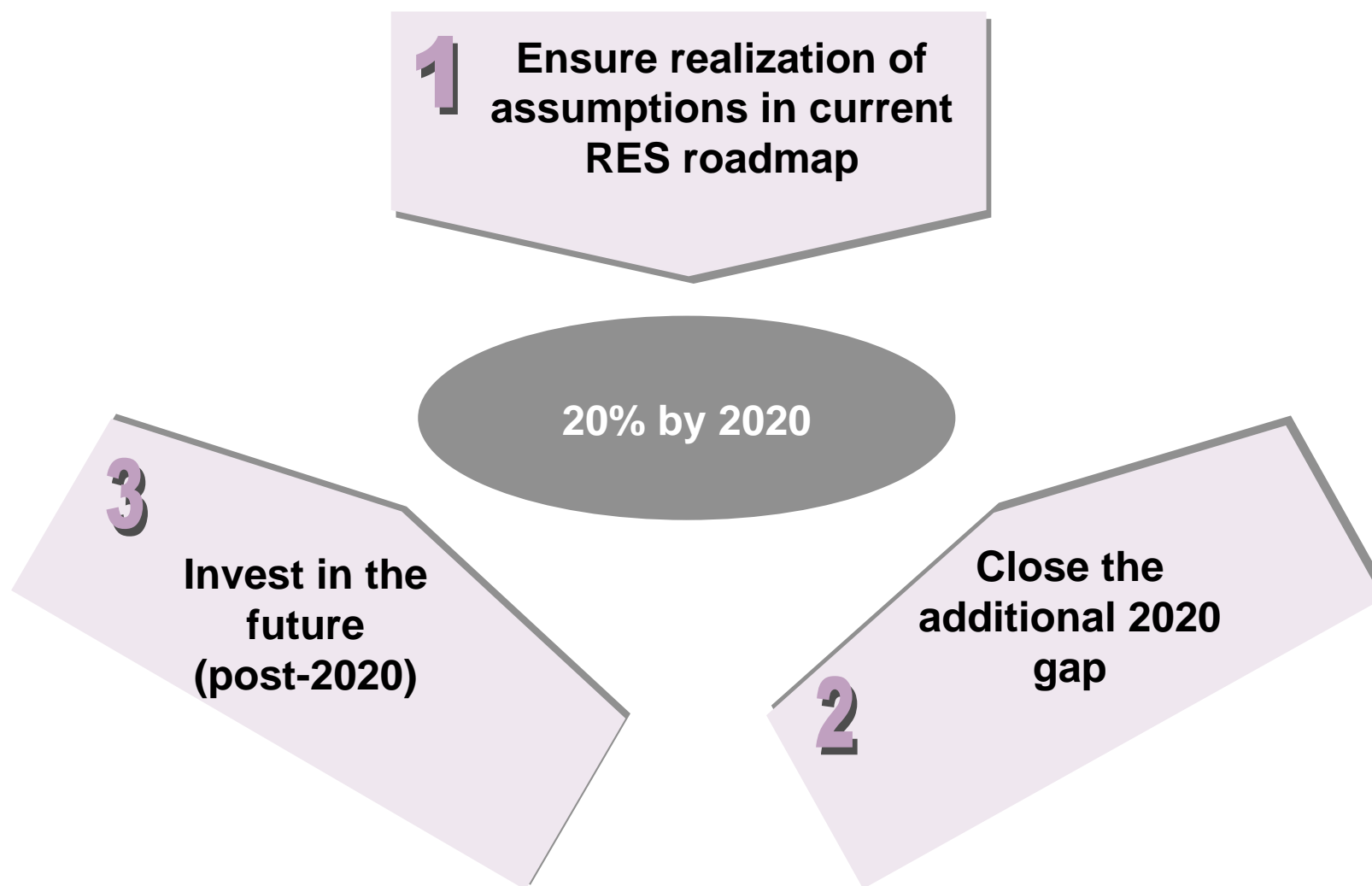
Network of installed assets that can be used

The efficiency

The highest possible efficiency of using heat

- The FBI sources almost 400 million m³ of wood today
- Chemical pulp mills have large cost advantages to produce 2nd generation biofuels
- Cost efficiency in producing wood pellets at saw mills or pulp mills
- Large installed base of Combined Heat & Power plants give generation efficiency of 85-90% (vs ~35% in coal condense plants)

Adequate conditions are needed




Ensure realization of assumptions in current RES roadmap

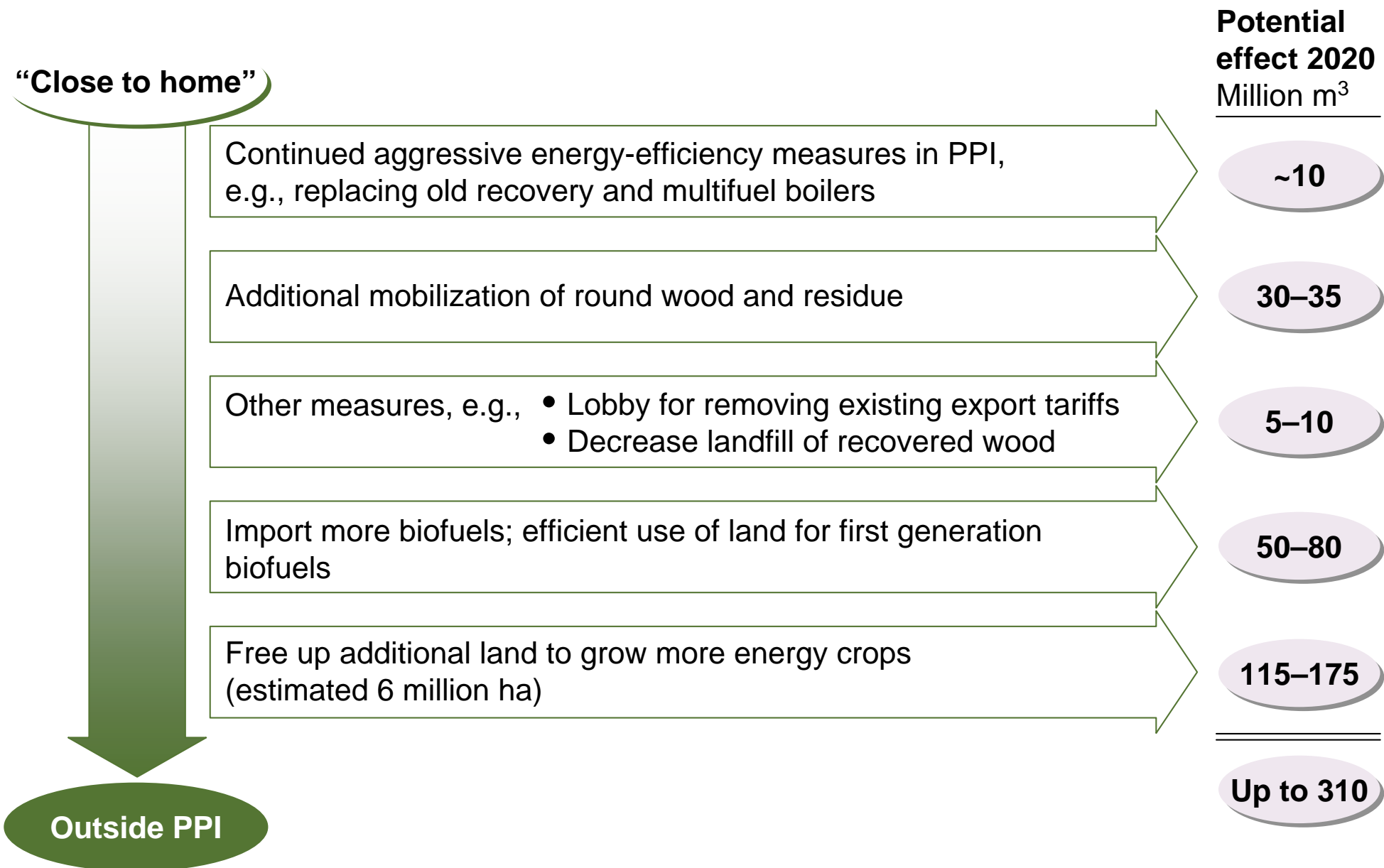
- **Accelerate policies** to increase energy efficiency in consumption (20% target needs to be met)
- **Accelerate policies** to increase energy efficiency in generation, e.g., through stronger incentive systems for high-efficiency generation (e.g., PPI) and ensuring predicted increase in CHP
- **Accelerate the development** of other renewable energy sources (e.g., wind) to take at least the share of generation foreseen in the Commissions' RES roadmap
- **Ensure implementation** of planned land use for biomass (10 million ha)
- **Support the development** of 2nd generation biofuels
- **Harmonize policies** that classify black liquor as biomass



Further biomass actions to avoid the additional 2020 gap

- **Maximize sourcing of wood/RP in EU**
 - Mobilise, mobilise, mobilise 
 - Develop forest management practices that better use European forests potential (sustainably)
 - Ensure better recovery of wood, e.g., through banning land fill of recovered wood
- **Ensure sufficient land for energy crops** and optimize the efficiency of that
 - Ensure actions (as recommended by the EEA), to free up land for efficient energy crop production (6 million ha above what is already planned for in the EC roadmap)
 - Do not encourage the use of land for 1st generation biofuels
 - No import barriers for sustainably produced biofuels
 - No support systems for growing 1st generation feedstock
 - Ensure attractiveness to grow energy crops, e.g., through development of supporting financial instruments and premiering high-yield crops
- **Actively work on increasing and facilitating overseas supplies of raw material and biomass**
 - Support planting of forests outside the EU
 - Simplify process for CDM permits in forestry
 - Work to remove or reduce existing export tariffs on wood
- **Adopt a principle of resource efficiency (in line with the Waste Hierarchy)**

Identified actions could possibly avoid the gap in 2020 – but most solutions are outside the PPI



- **2nd generation biofuels** kicks in as user of wood
- **60-80% reduction of CO₂** required by 2050



- **Accelerate policies** to encourage afforestation within EU
- **Develop** sustainable long-term growth of European forest resources
- **Focus** R&D efforts on the efficient use of raw materials and energy sources. Support the development of new technologies in biomass-based power generation. Support the development of other renewable-energy technologies

In a nutshell, RES policies should:



- Be realistic and fact based. Have an overall EU view.
- Have an integrated view on forestry, agriculture and trade, biomass and biofuels.
- Focus on efficiency – of tax payers money, land use, biomass use and energy production.
- Ensure sustainable production and use of bio-energy and avoid conflicts between different uses of biomass.
- Acknowledge the FBl as key enabler.
- Focus on mobilising biomass – a key opportunity.



Thank you!

www.cepi.org

www.paperonline.org

www.paperrecovery.org

www.forestrycertification.info

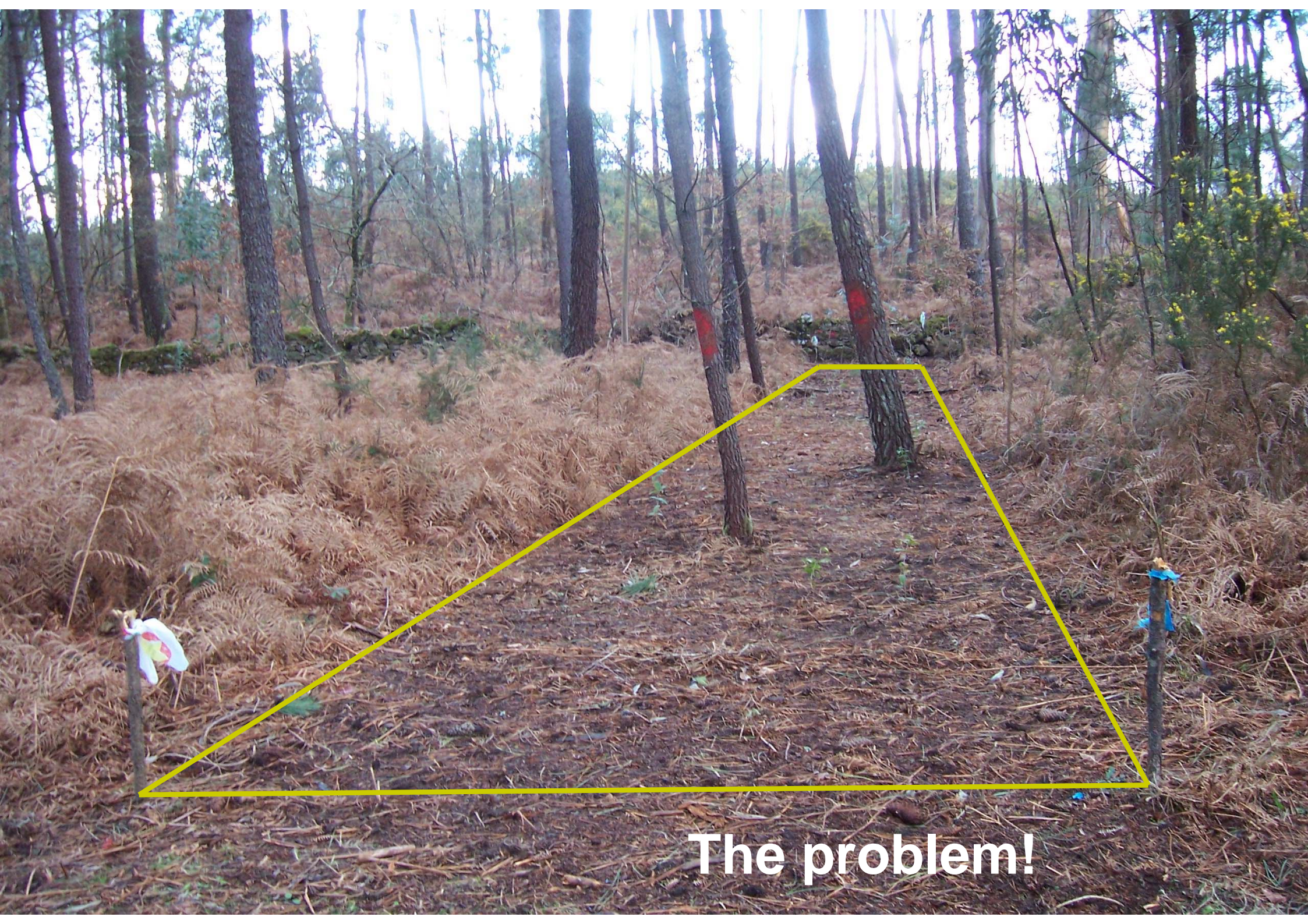
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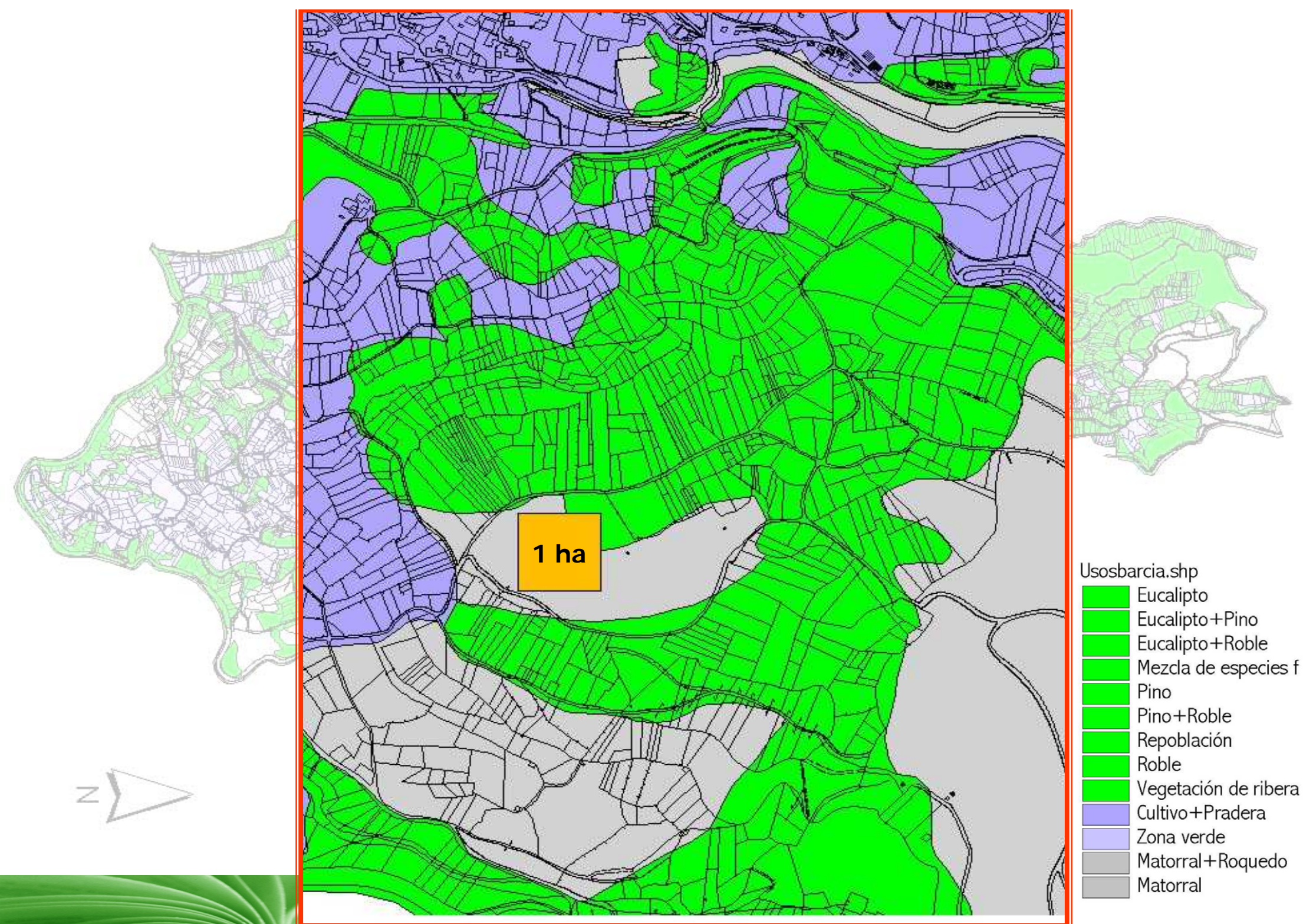
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The problem!



The other problem!

