Availability of forest resources in Europe

EUwood – Real potential for changes in growth and use of EU forests:

Marcus Lindner & Hans Verkerk

Biomass and resource efficiency: the need for a supply-led approach to forest productivity,
The European Parliament, 10th November 2011, Brussels

Project background

EUwood (Call for tenders No. TREN/D2/491-2008)

Real potential for changes in growth and use of EU forests

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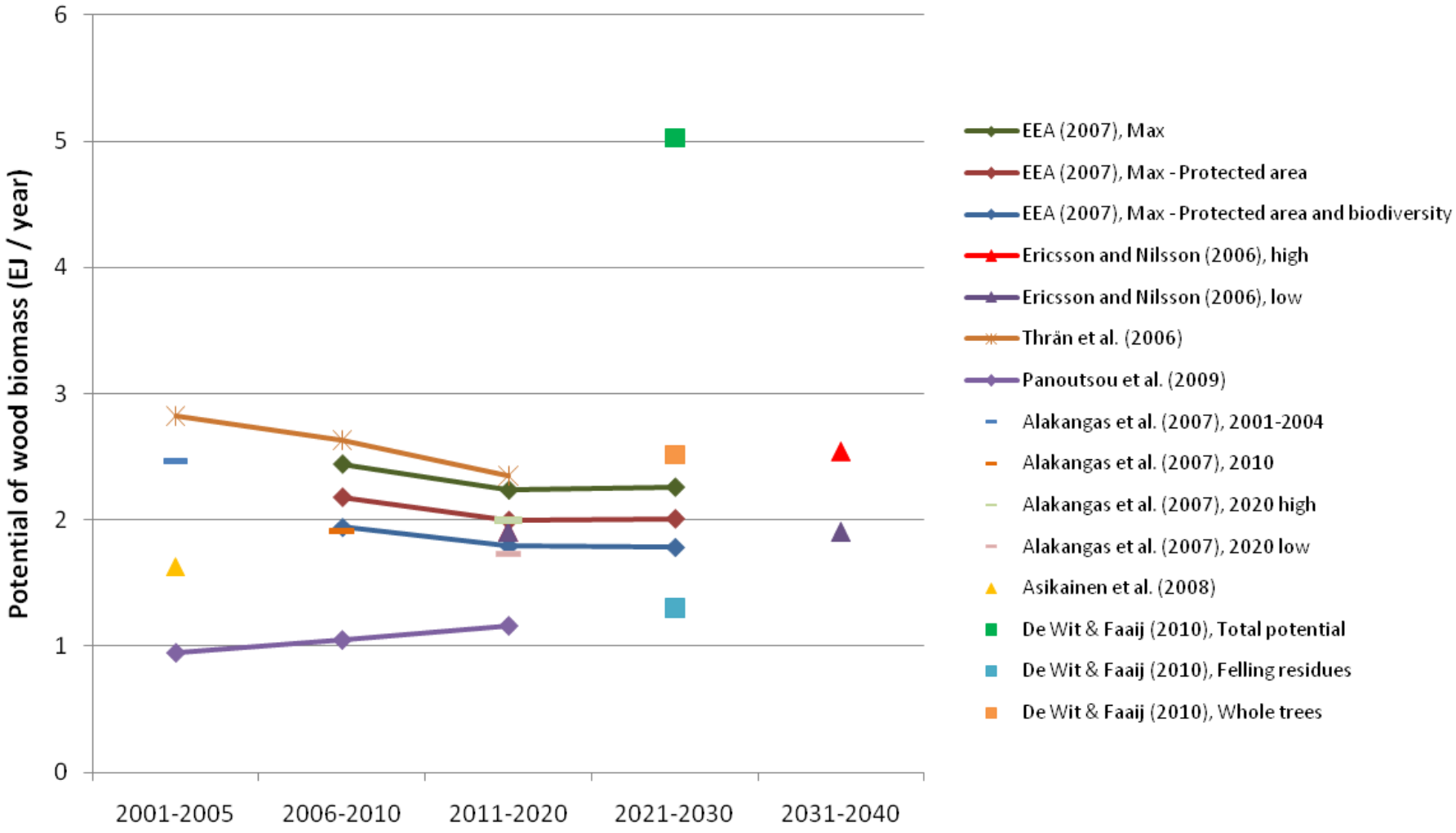
Introduction



Forest biomass potential for energy use only (not for material use) (EU27)

Source: Rettenmaier et al. 2010 / BEE

The EUwood project

Potential supply

Potential demand

Forest resources

Forest industry

Other woody biomass

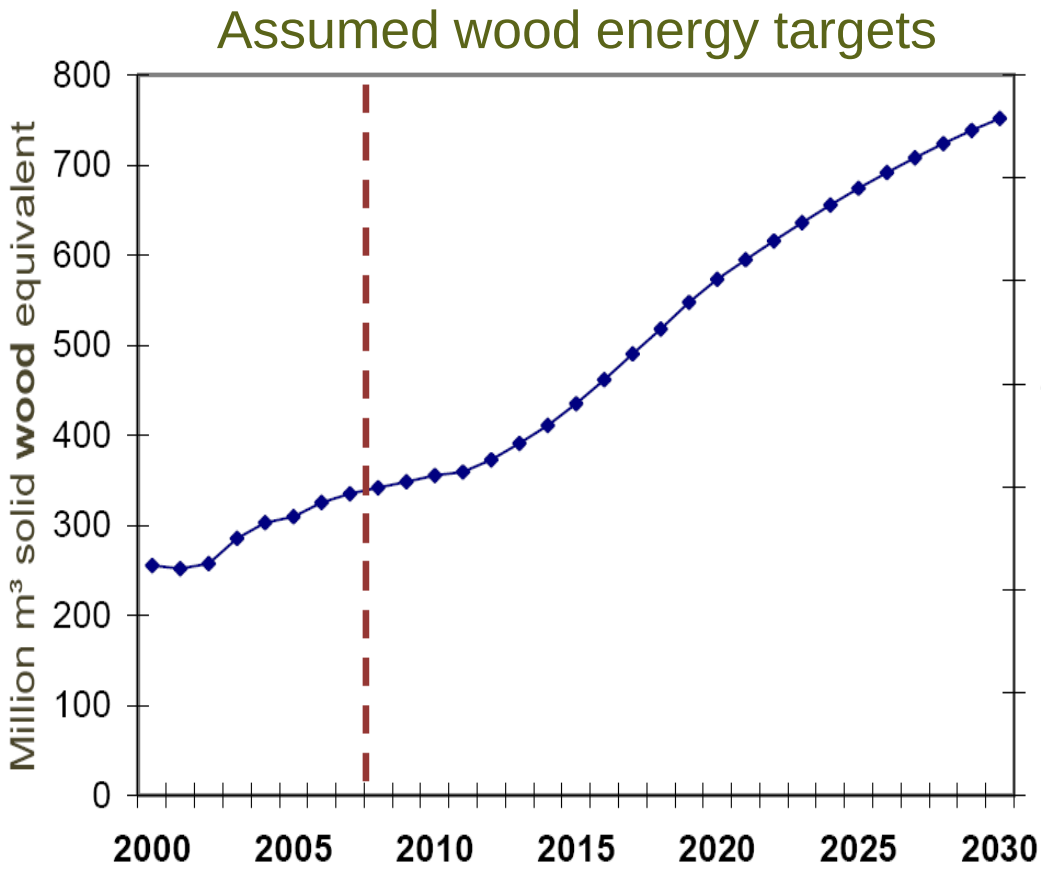
Energy user

Results available at:
http://ec.europa.eu/energy/renewables/studies/bioenergy_en.htm

Source: Mantau 2010 / EUwood

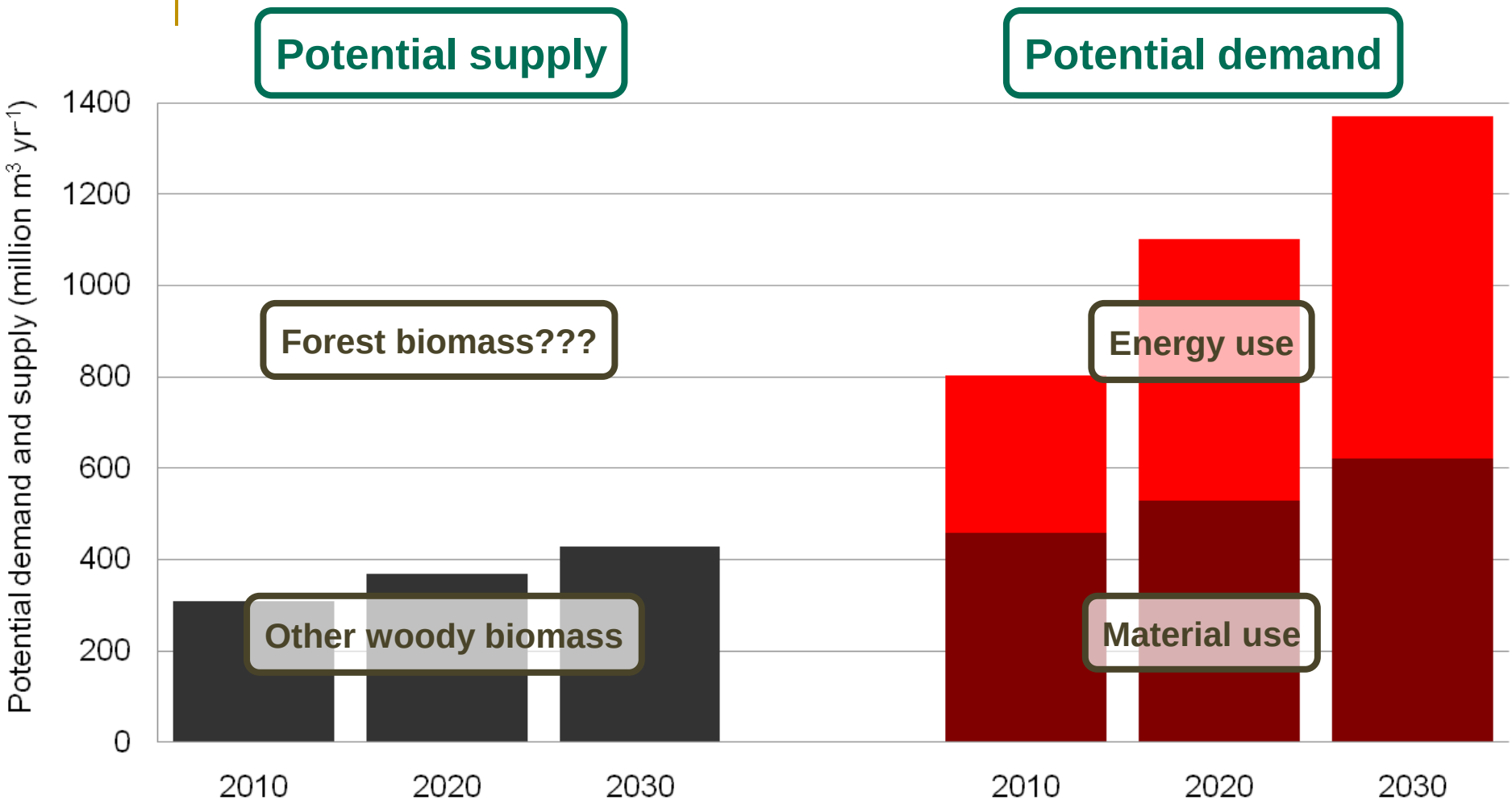
Wood energy

- Currently, 8 – 9 % of the gross energy consumption from renewable energy sources
- Wood energy accounts for about 50% of energy from renewable sources
- Policy target: 20% of the gross energy consumption from renewable energy sources



Source: Steierer (2010) / EUwood

Development of all sectors



Supply: medium mobilisation scenario
Demand: IPCC A1 scenario

Source: Mantau 2010 / EUwood

EFISCEN modelling framework










Volume

Age

Constraints on biomass supply from forests

Environmental

Technical

Socio-economic

Constraints on biomass supply from forests

- High scenario: strong focus on the use of wood for producing energy and for other uses, effective implementation of current recommendations on wood mobilisation

- Medium scenario: existing recommendations are not all fully implemented or do not have the desired effect

- Low scenario: strong environmental concerns against the intensified use of wood and forest owners are more reluctant to harvest

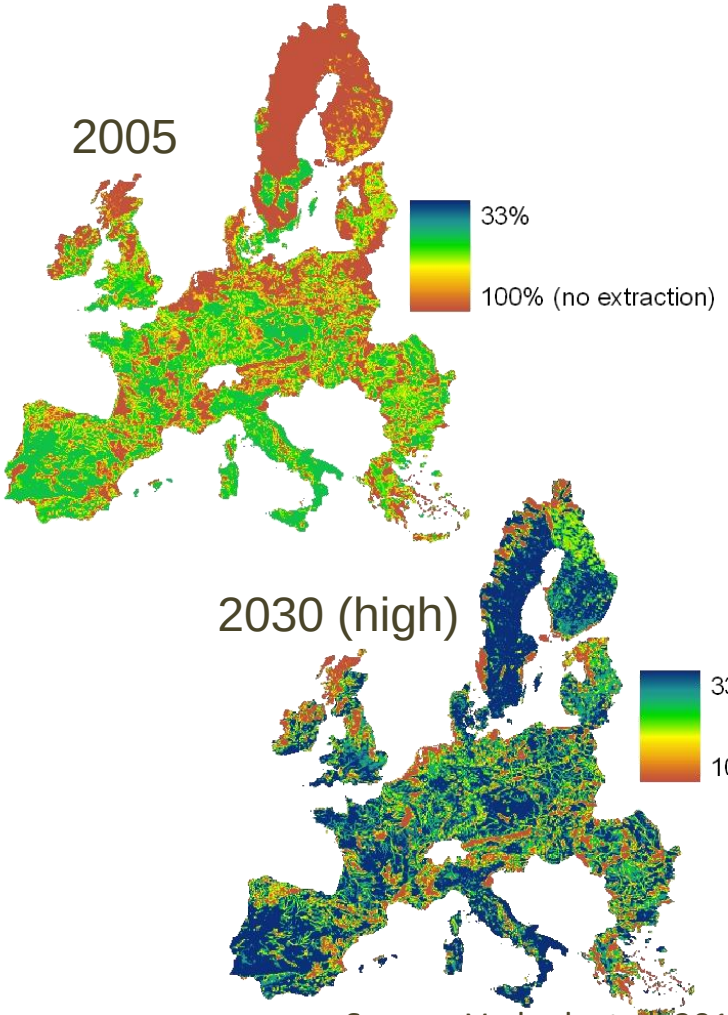
Constraints on biomass supply from forests

Final fellings

Commercial thinnings

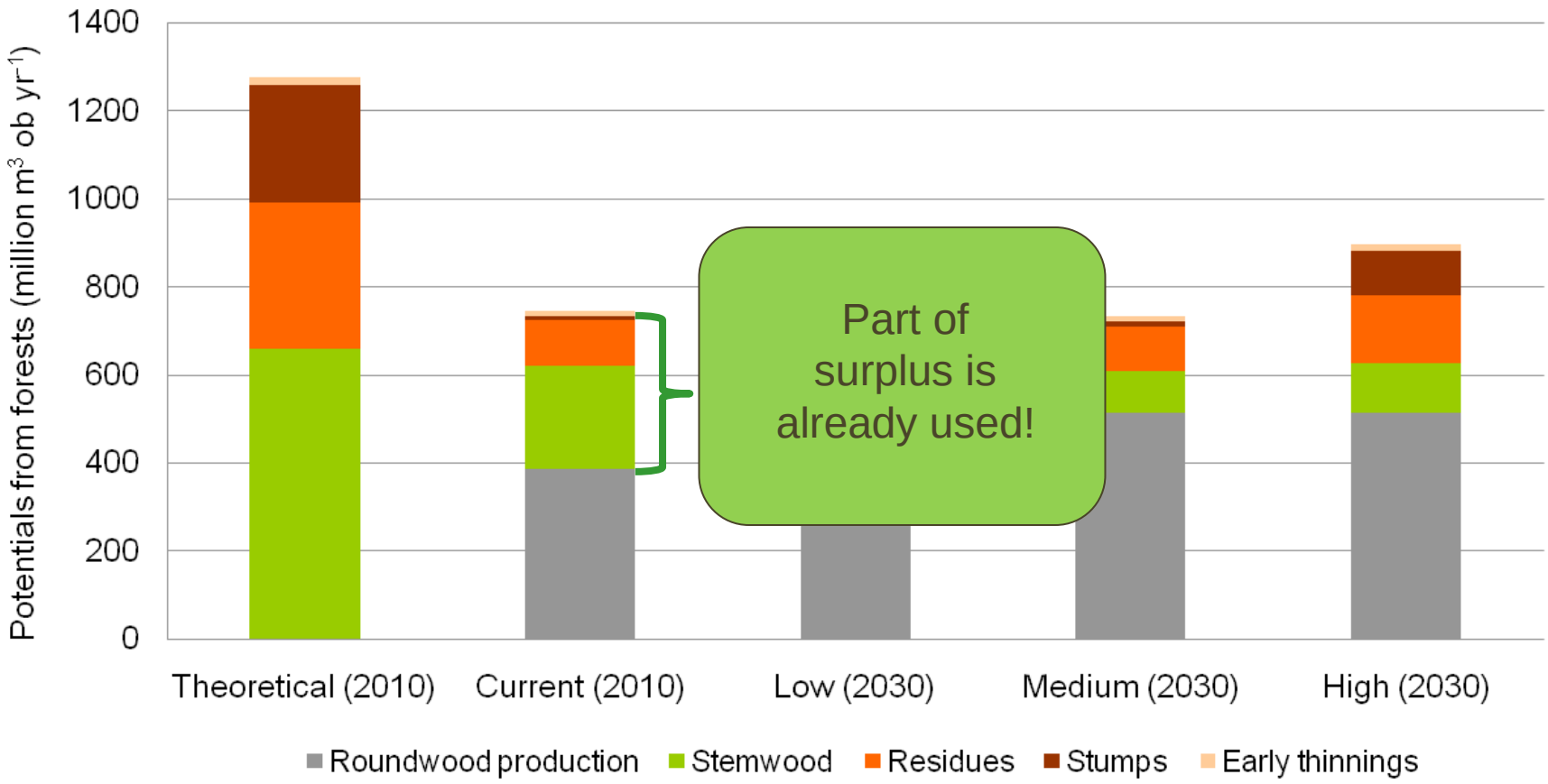
Early thinnings

Reduction in theoretical potential due to environmental and technical constraints



Source: Verkerk et al. 2011 / EUwood

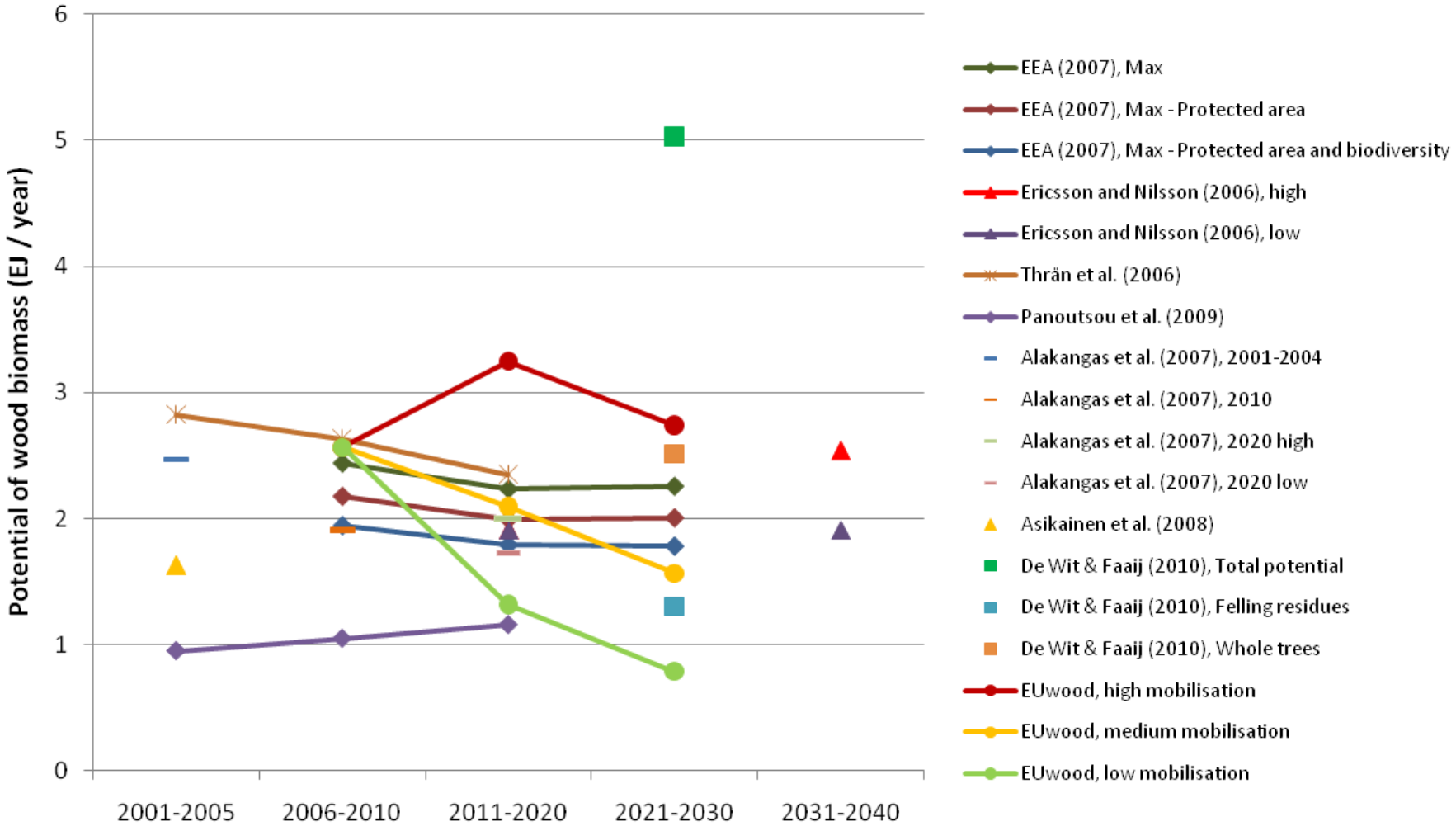
Realisable potential from European forests



Total forest biomass potential (for material and energy use)

Source: Verkerk et al. 2011 / EUwood

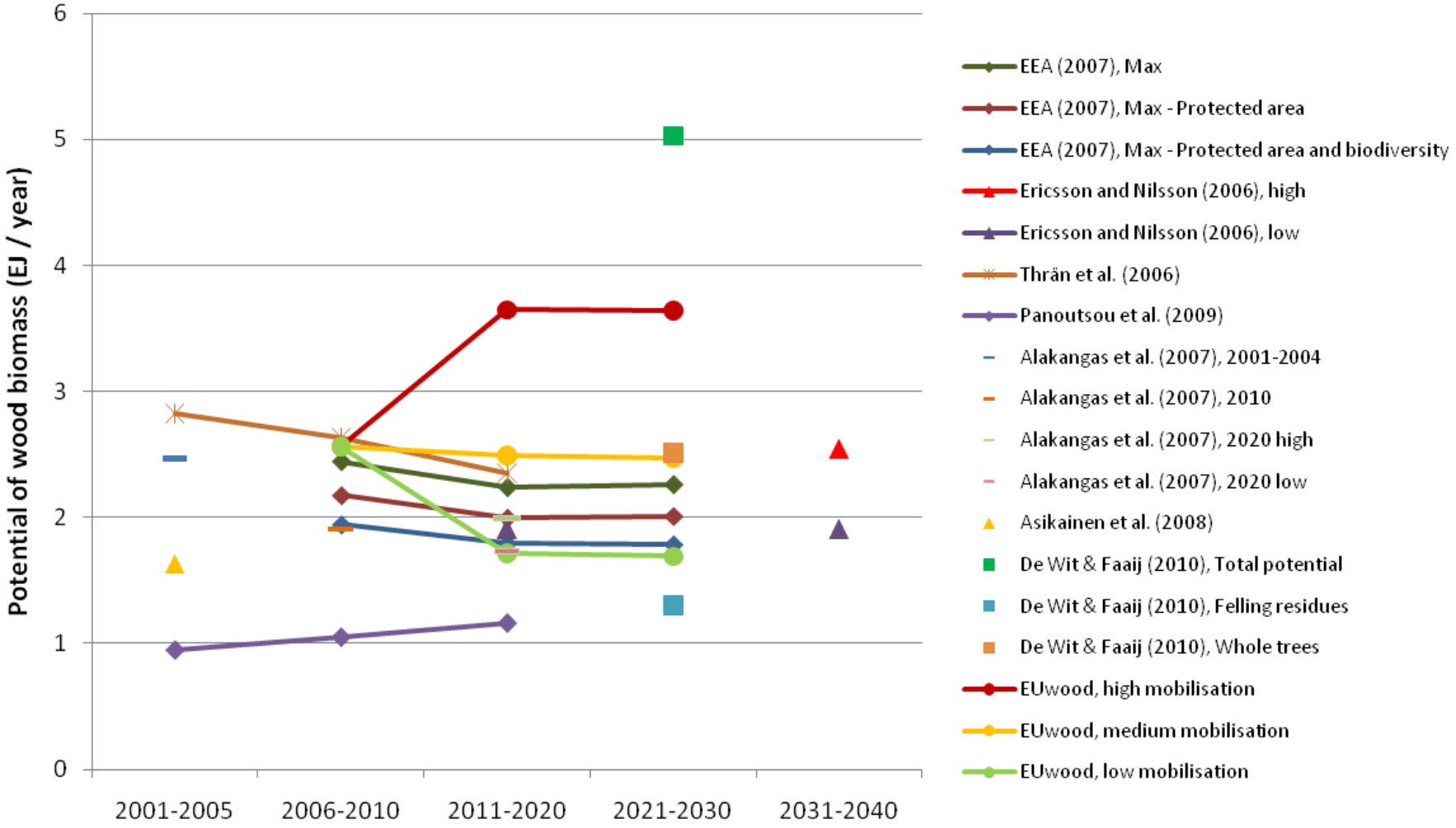
Comparison with other studies



Increasing demand for material use (IPCC A1; Mantau and Saal 2010 / EUwood)

Source: BEE

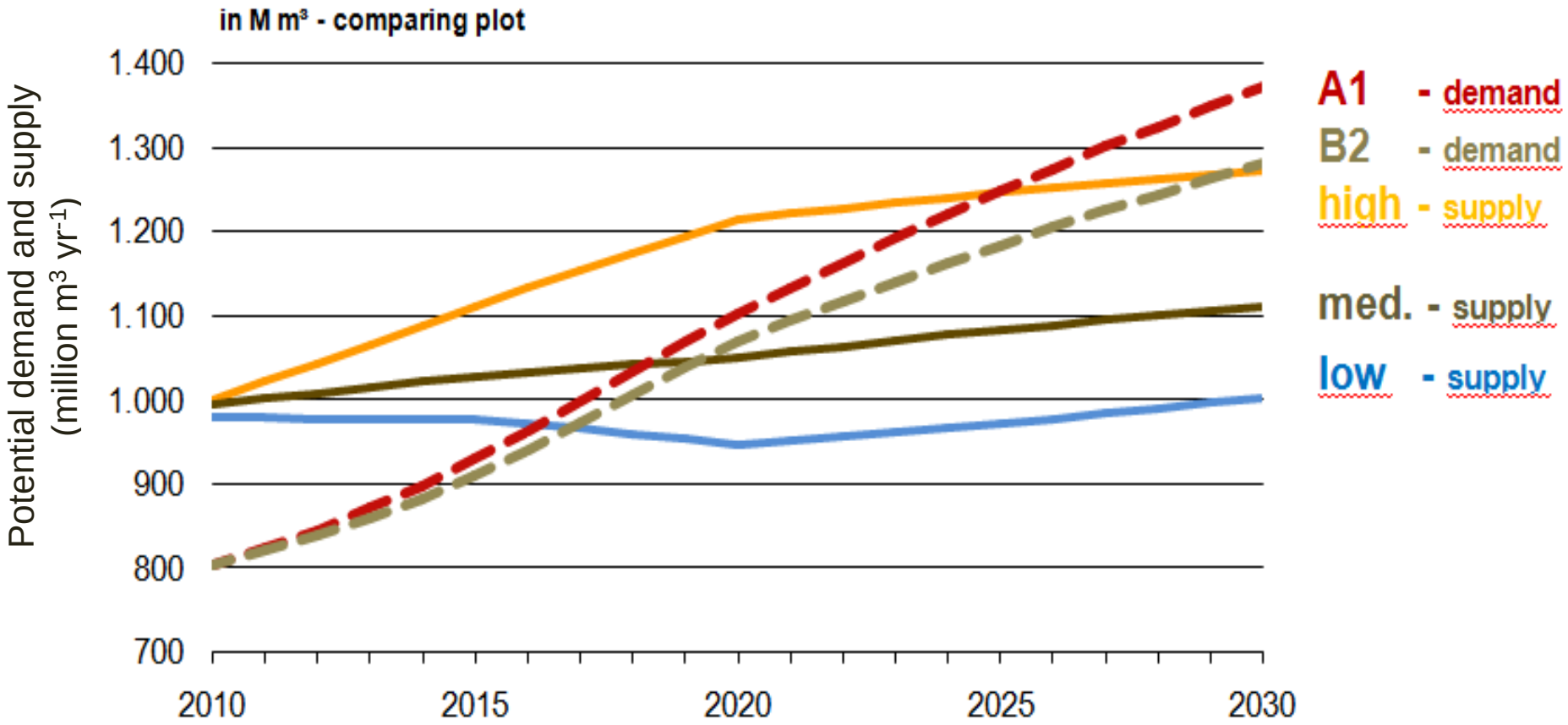
Comparison with other studies



Constant demand for material use (harvest in 2010)

Source: BEE

Comparing potential demand and supply

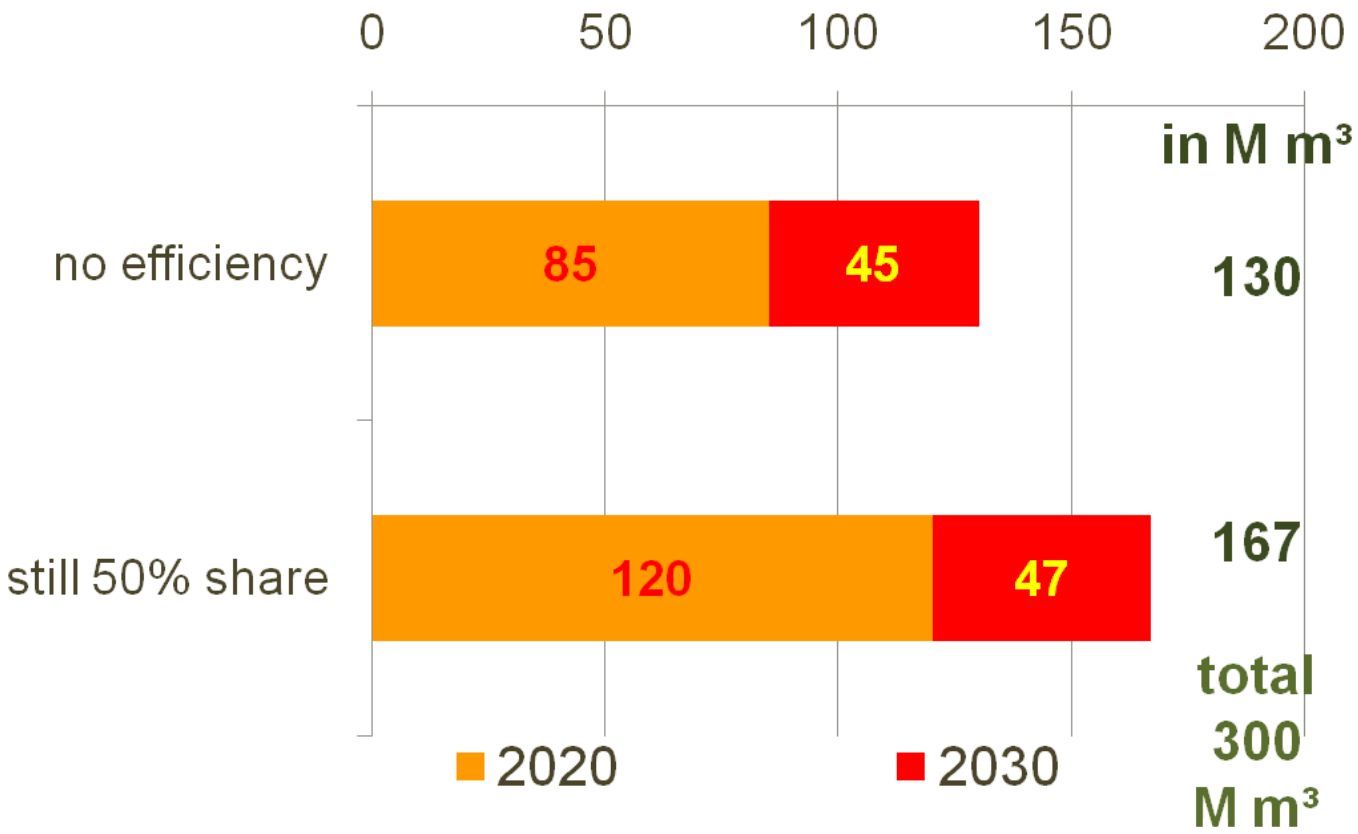


Potential supply from forest and other sources and demand for wood for material and energy use (EU27)

Source: Mantau 2010 / EUwood

Sensitivity of projected demand – difference with base scenario

- How much more wood demand if … ?

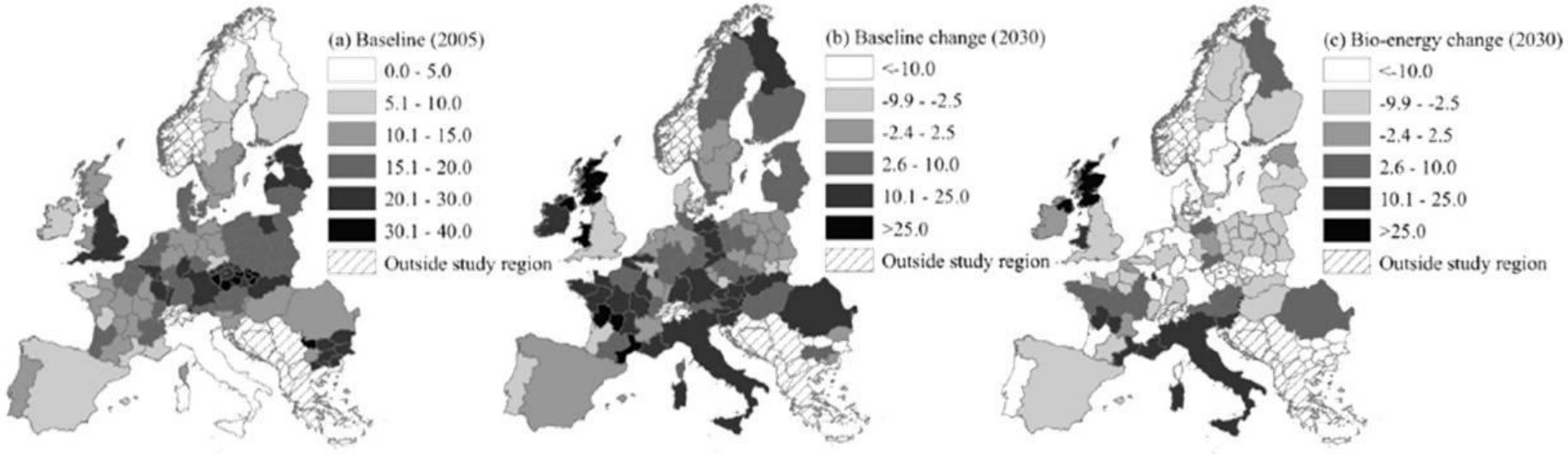


Source: Steierer (2010) / EUwood

Impacts on other goods and services

Impacts on other goods and services

Biodiversity: dead wood



Source: Verkerk *et al.* 2011, Ecological Indicators 11, 27-35.

Conclusions

- The forest energy potential from European forests is estimated at 2.6 EJ in 2010 and could range from 0.8 to 2.7 EJ in 2030
- Future policy and management will play a decisive role in determining the achievable level
- There is a risk that there may not be enough wood to meet the demand for wood for material and energy use in the future
- High biomass mobilization would require very intense resource utilization with likely negative trade-offs on ecosystem services

References

- EUwood: http://ec.europa.eu/energy/renewables/studies/bioenergy_en.htm
  - Mantau, U. 2010: Is there enough wood for Europe? pp 19-34. in: EUwood – Final report. Hamburg/Germany, June 2010. 160 p.
  - Steierer, F. 2010: Energy use. pp 43-55. In: Mantau et al. EUwood - Final report. Hamburg/Germany, June 2010. 160 p.
  - Verkerk, P.J., Anttila, P., Eggers, J., Lindner, M., Asikainen, A., 2011. The realisable potential supply of woody biomass from forests in the European Union. Forest Ecology and Management 261, 2007-2015.
- BEE: http://www.eu-bee.com/
  - Rettenmaier, N., Schorb, A., Köppen, S., Berndes, G., Christou, M., Dees, M., Domac, J., Eleftheriadis, I., Goltsev, V., Kajba, D., Kunikowski, G., Lakida, P., Lehtonen, A., Lindner, M., Pekkanen, M., Röder, J., Torén, J., Vasylyshyn, R., Veijonen, K., Vesterinen, P., Wirsenius, S., Zhelyezna, T.A., Zibtsev, S., 2010. Status of Biomass Resource Assessments, version 3 (deliverable D3.6). Biomass Energy Europe project. Institute for Energy and Environmental Research, Heidelberg.