

Biomass for the Bioeconomy

High-Level Policy-maker Conference on Biorefineries

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Agriculture and
Rural Development

The bioeconomy...

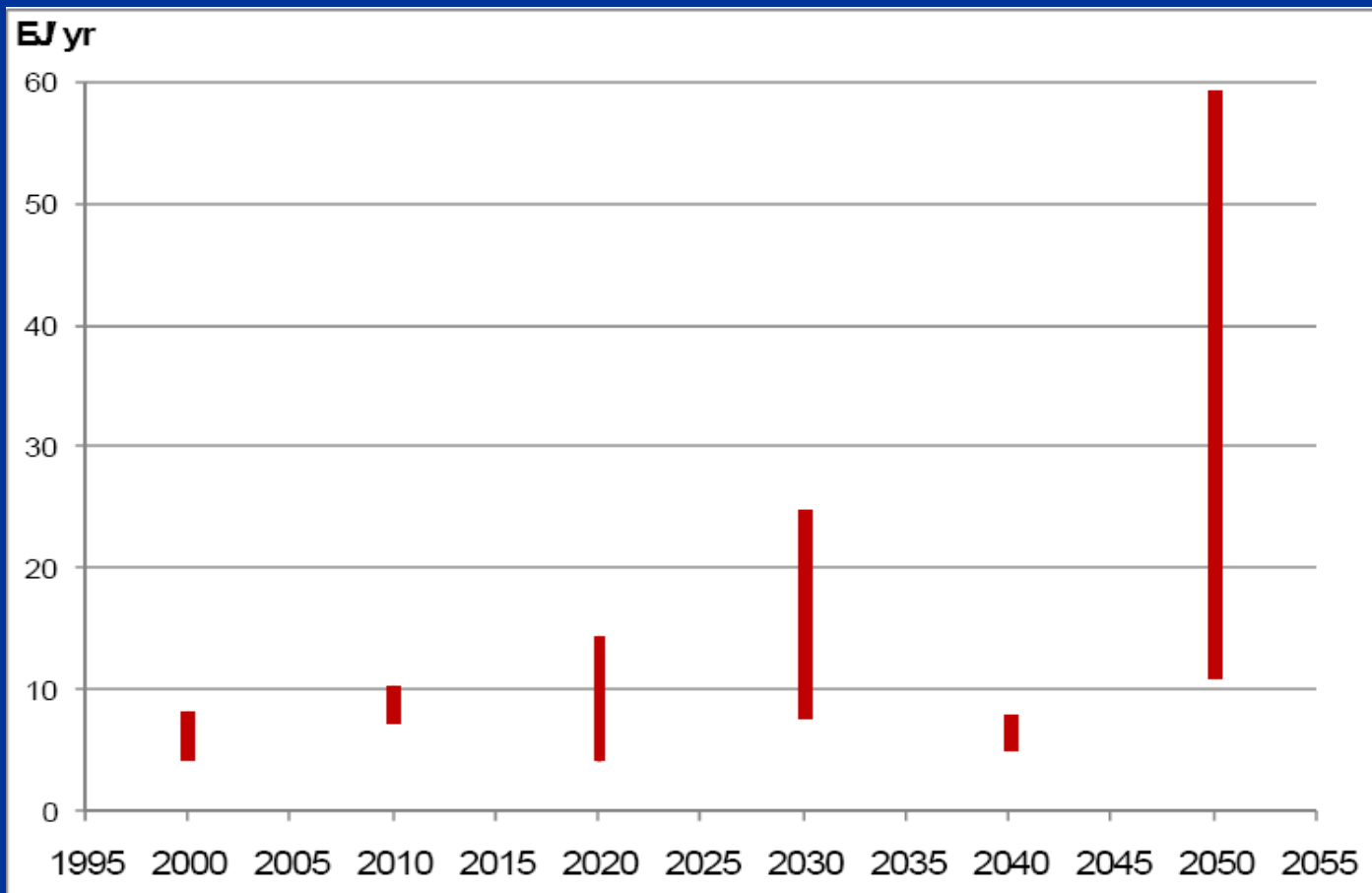
... promotes the sustainable production of renewable resources from land and sea and their conversion into food, bio-based products, biofuels and bioenergy.



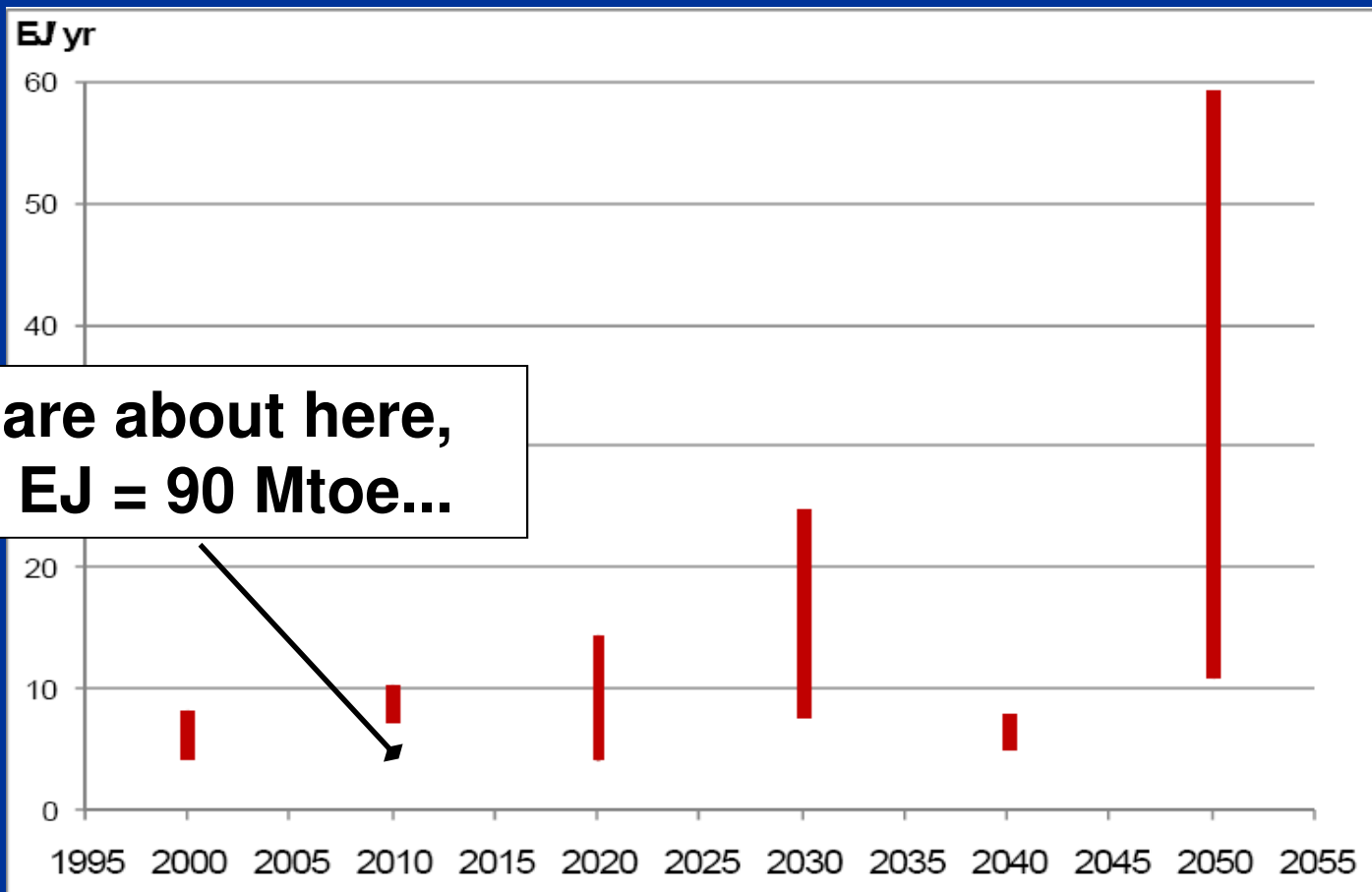
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EU 27 Total Biomass Potential (BEE, 2008)



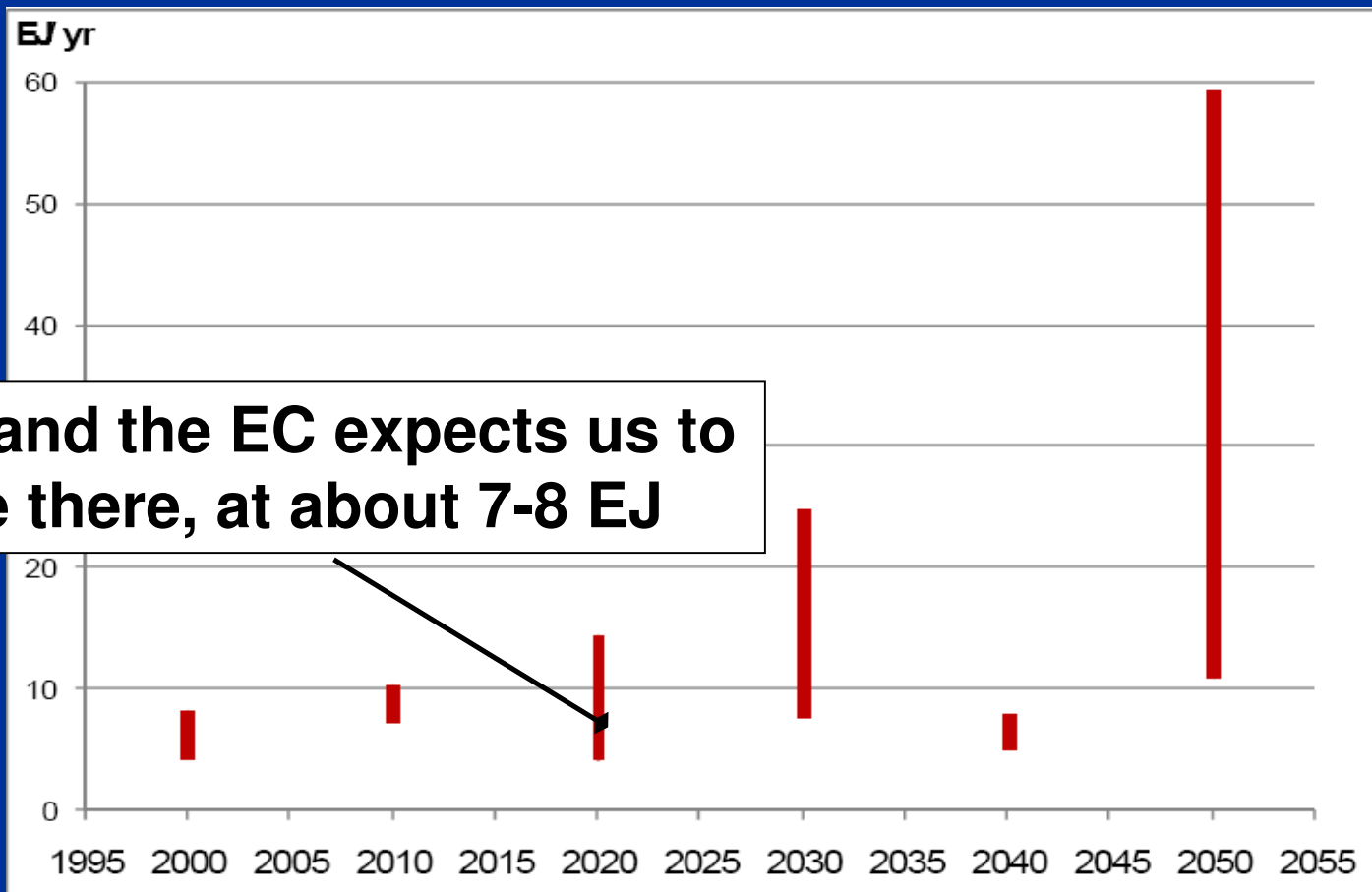
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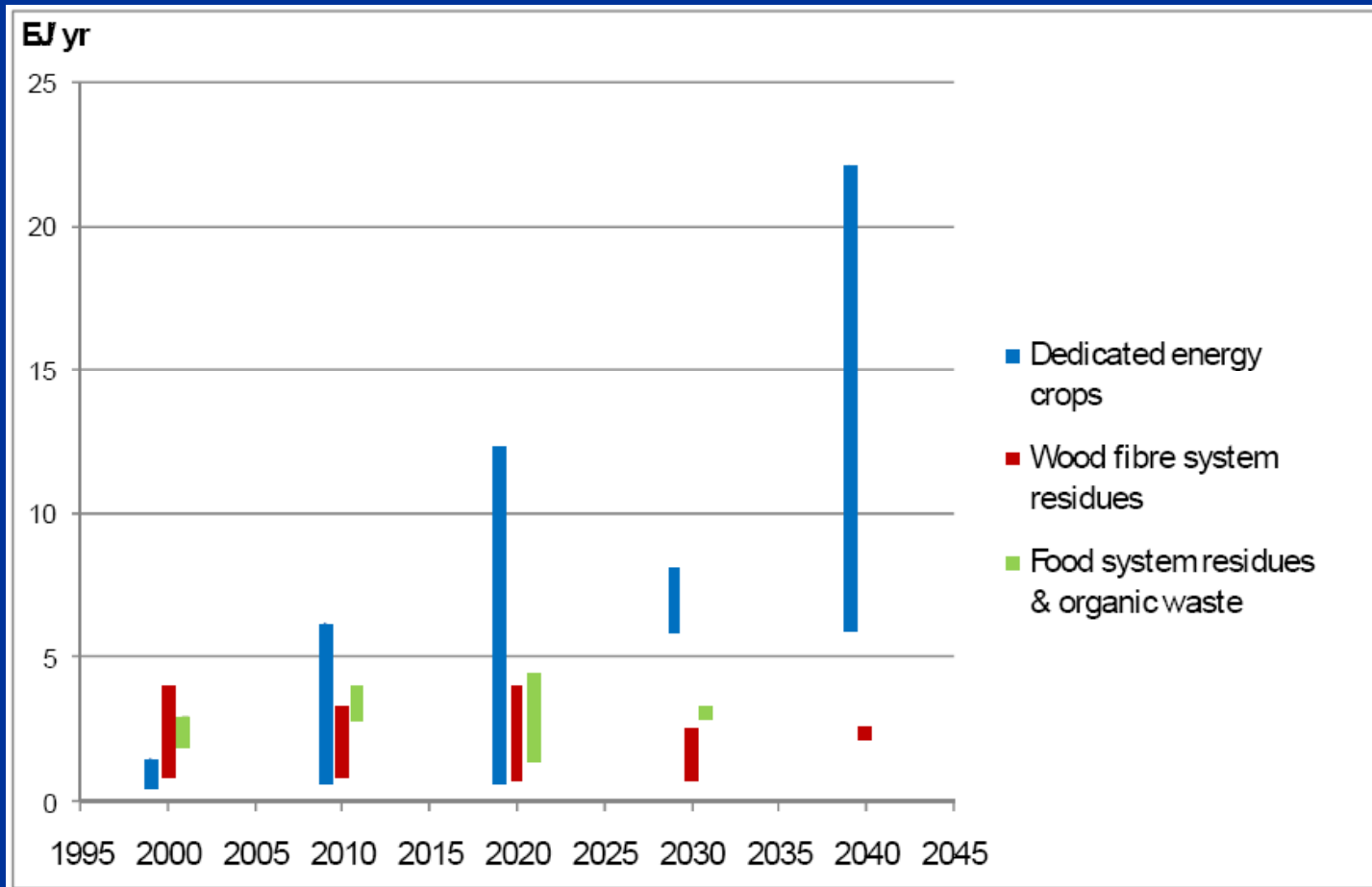
**We are about here,
at 4 EJ = 90 Mtoe...**



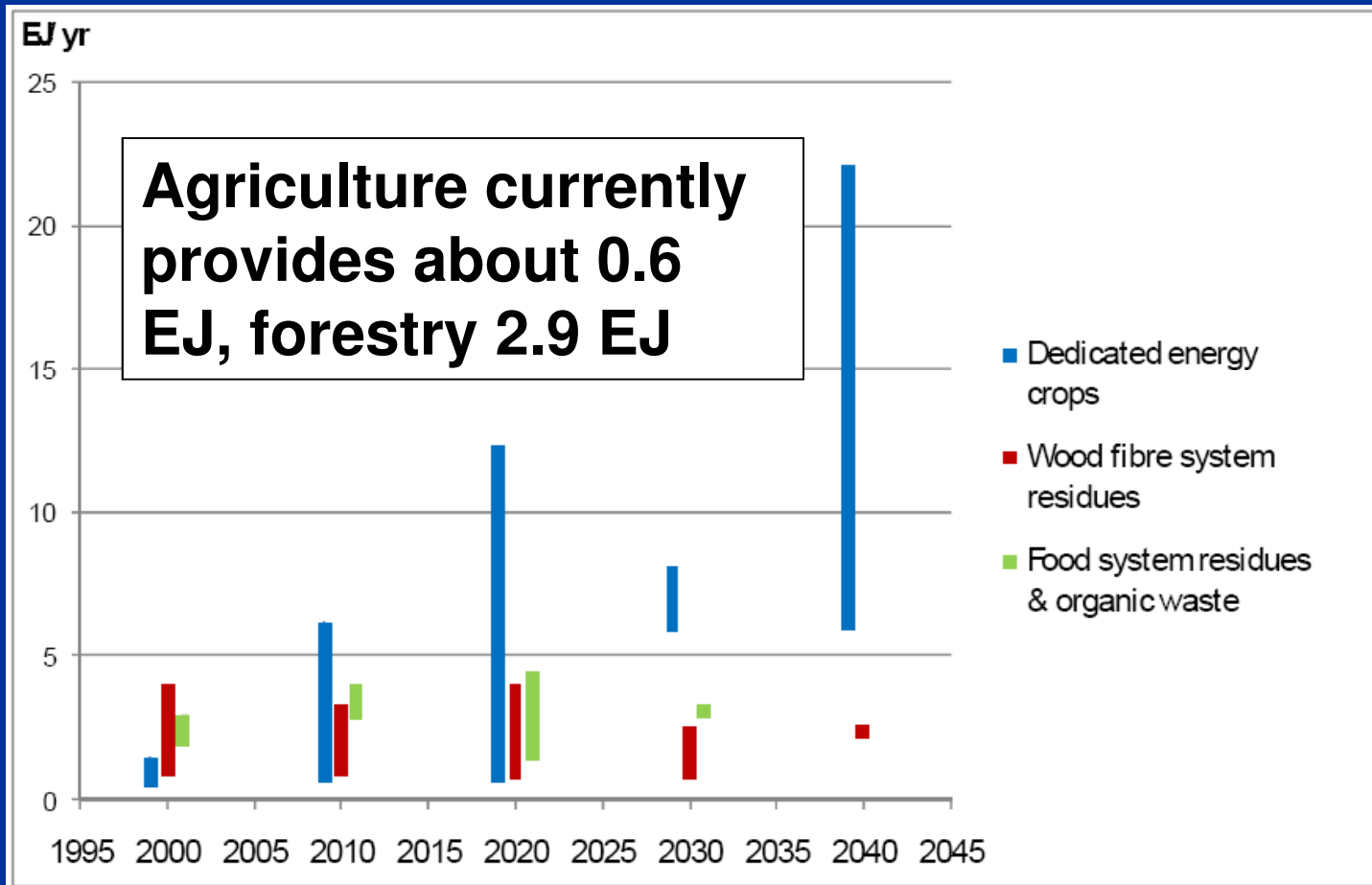
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EU 27 Biomass Potential by Sector (BEE, 2008)



EU 27 Biomass Potential by Sector (BEE, 2008)

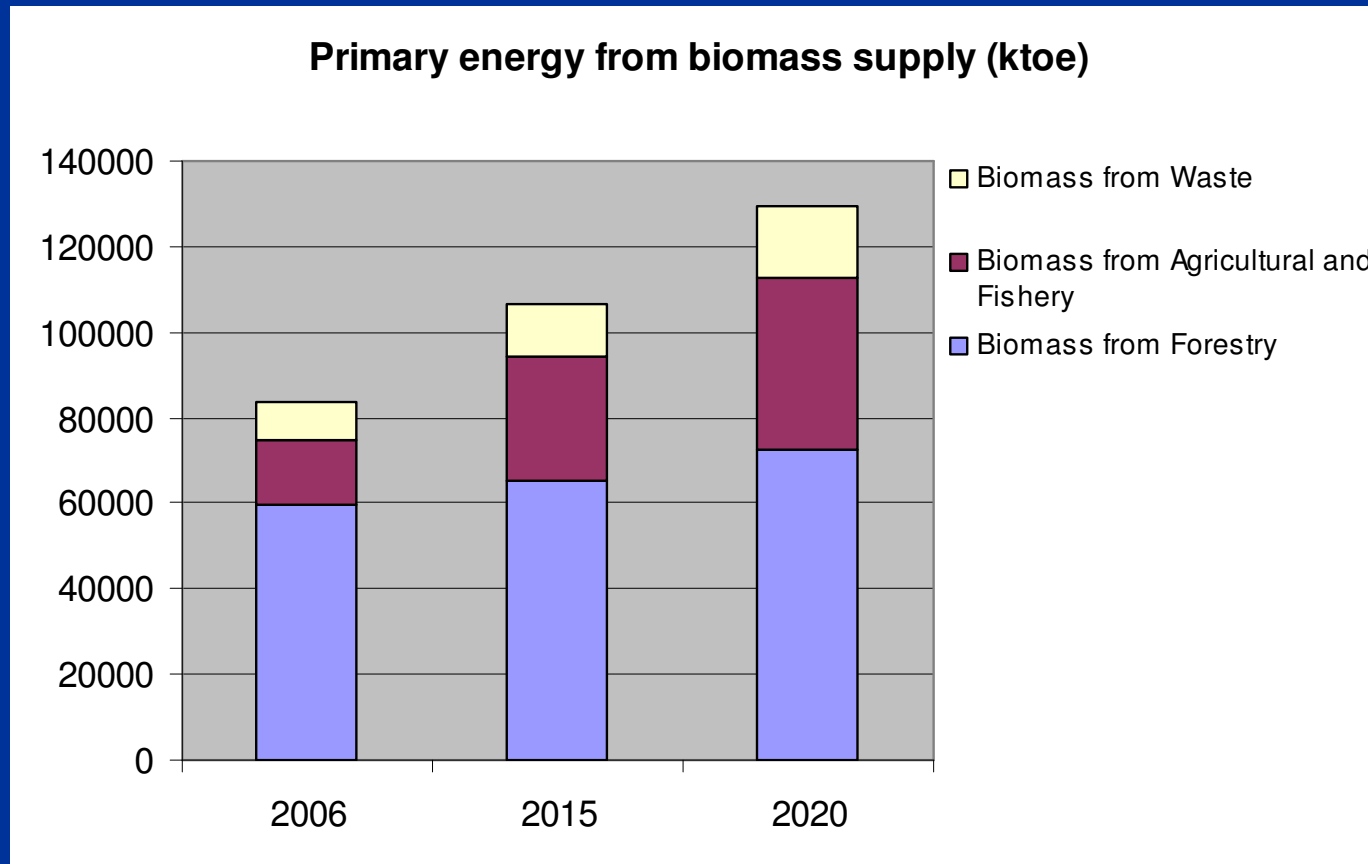


Key role of agriculture

- wood system potential is basically fixed
- same for organic waste
- genuinely new potential from dedicated crops/agriculture
- but uncertainty is very high



NREAPS: Expected biomass sources



NREAPS: Biomass sources(II)

- Whereas about half of total agricultural bioenergy in 2020 will come from the subcategory "energy crops", mainly driven by the 10% RE target for transport...
- ...the other half will come from the second subcategory "agricultural waste and residues" which is expected to grow even faster than the former



EU Biomass production (Mio toe)

	2005	2030	2050
•Crops	5	53	134
•Of which 2 nd generation crops	0	40	127
•Agricultural residues (including black liquor)	17	32	49
•Forestry	40	51	59
•Waste	25	63	87
•Import	2	12	26
Total	90	212	356



The bioeconomy...

...will pave the way for a lower emission and more resource efficient society that reconciles food production with the sustainable use of renewable resources for industrial purposes and environmental protection.



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Land use

- The EU renewable energy target for transport increases crop area globally by 5.2 mio ha or 0.7%
- Although there may be ample idle land on this globe: Fertile arable land is not a renewable resource.



Food versus Non-Food

- The EU renewable energy target for transport increases cereal prices by about 6-10%
- From field to plate, at least one third of the calories are lost.



Residues

- Straw: Role for soil fertility and carbon, for bedding animals - is a commodity!
- Deadwood, branches, leaves: role for biodiversity, organic matter in soils.
- Use of manure, food waste, woody material from landscape management, pruning etc desirable.



Elements for the solution

1. Increase productivity sustainably
2. Identify and mobilise idle land which is not needed for other ecosystem services
3. Reduce, give lower priority to energy use of biomass
4. Find ways to use cellulosic and ligno-cellulosic biomass for high value purposes, reducing land use and competition with food use
5. Use and re-use biomass as much as possible (zero waste!)



Sustainable agriculture?

- Energy-intensive N-fertilizer: How to substitute? Can we mimic the natural N fixation by bacteria which make air N usable by the host plant?
- Phosphate: Stocks will be depleted in about 50 – 100 years. How to recover P? How to increase P efficiency?



Our world...

- food demand increases by 70% until 2050
- energy demand doubles by 2050
- global warming at +2°C?
- runs out of fossil fuels
- loses natural resources, biodiversity



The bioeconomy...

...combines a wide array of sciences (e.g. life sciences, agronomy, ecology, forestry sciences, fisheries sciences and social sciences) and enabling and industrial technologies (e.g. biotechnology, nanotechnology and information and communication technologies) with local and tacit knowledge.



The CAP towards 2020

- *Objective 2: Sustainable management of natural resources and climate action*

“Foster green growth through innovation which requires adopting new technologies, developing new products, changing production processes, and supporting new patterns of demand, notably in the context of the emerging bioeconomy”



Rural Development Policy

...offers many possibilities for supporting the bioeconomy:

- support to farmers for establishing perennial crops as raw material for bio-based products
- support for the development of infrastructures for processing of agricultural or forest biomass
- support for advisory services, training and information actions to disseminate knowledge on the bioeconomy
- encourages the cooperation between farmers, the raw materials processing industry and/or other parties through innovative approaches in developing new products, processes and technologies.



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