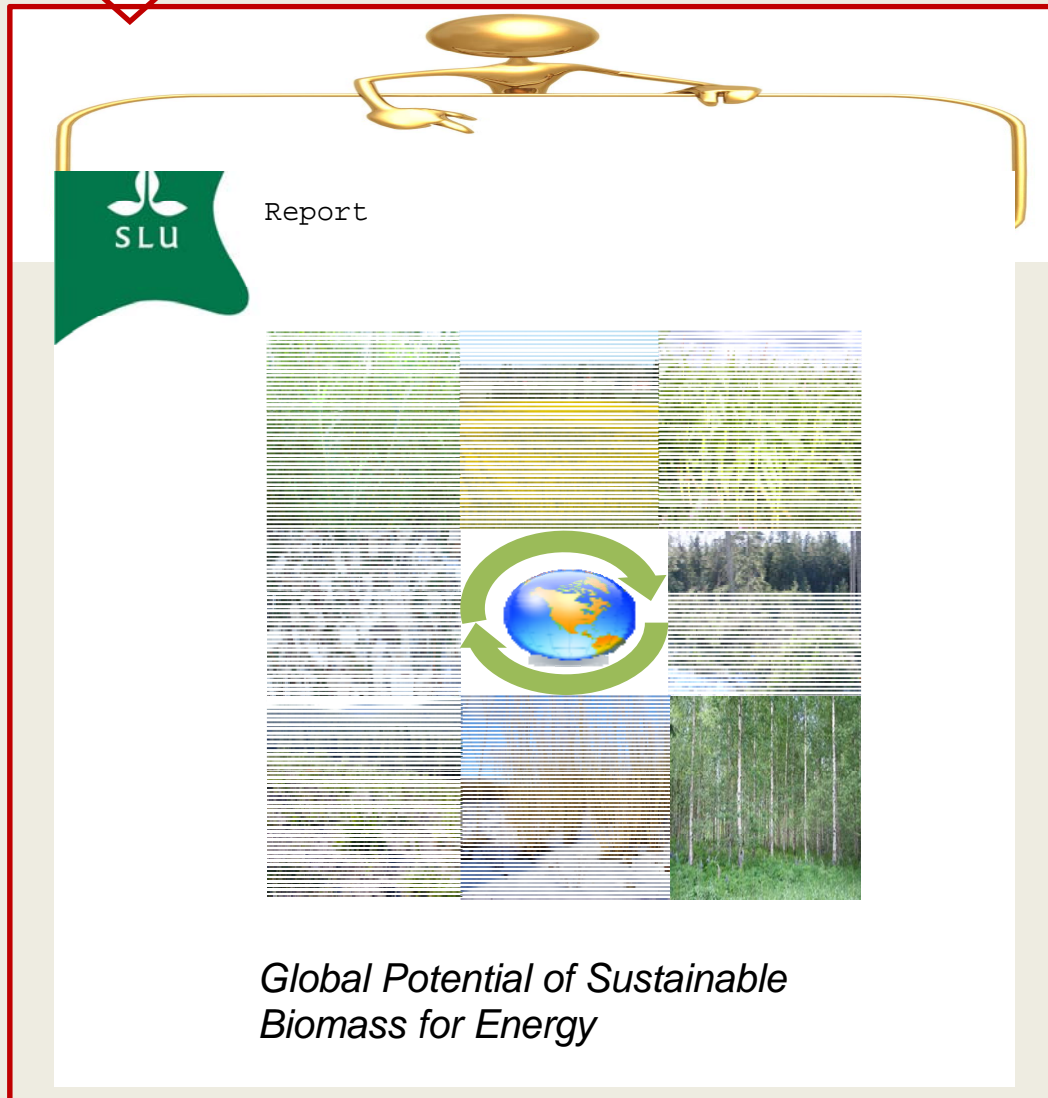


World Bioenergy Association (WBA)

Project: **BIOENERGY, CERTIFICATION** and **SUSTAINABILITY CRITERIA**



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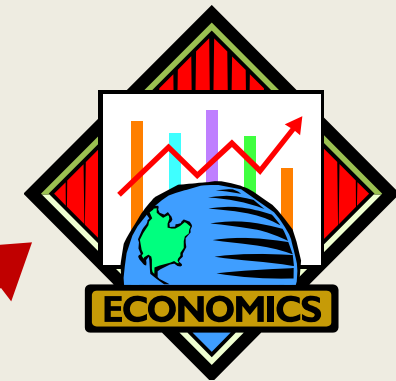


Global Potential of Sustainable Biomass for Energy

(literature review)



Security



Environmental



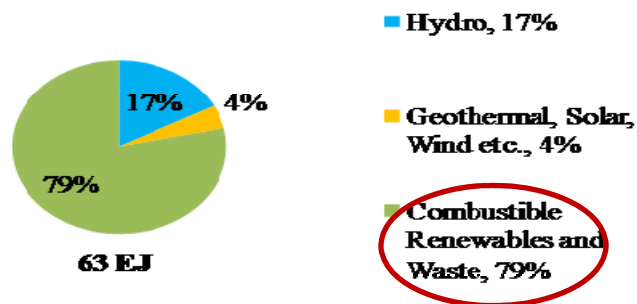
Social

Everything, in essence, is about energy



ENERGY

Main categories in total renewables

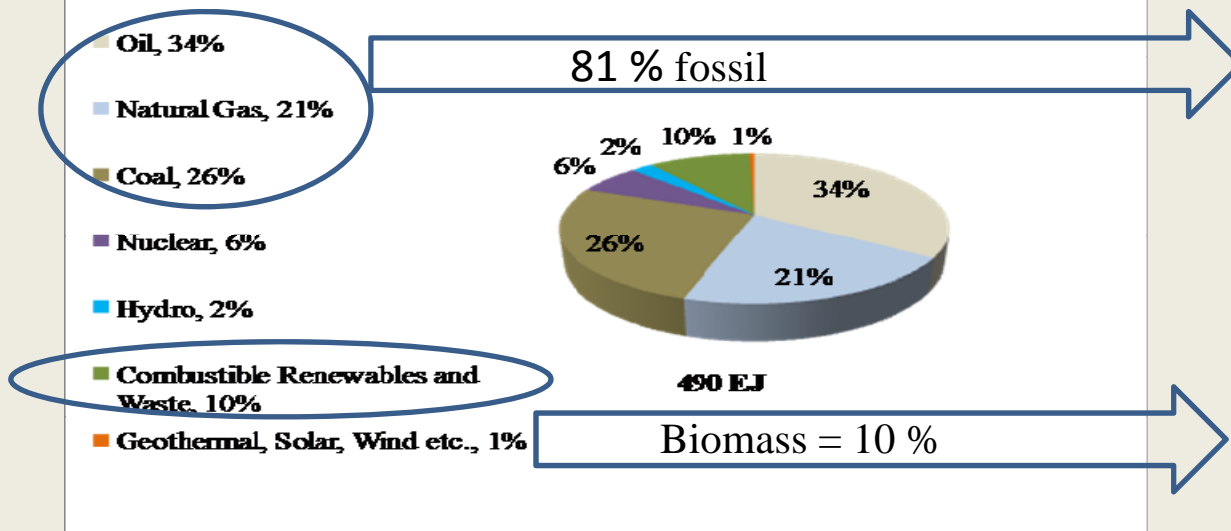


Advantage: the largest RE source at present

Concern:

- energy shortage
- shortage of material resources
- environmental issues are becoming one of the most important problems

Global energy demand



...need to change the situation..



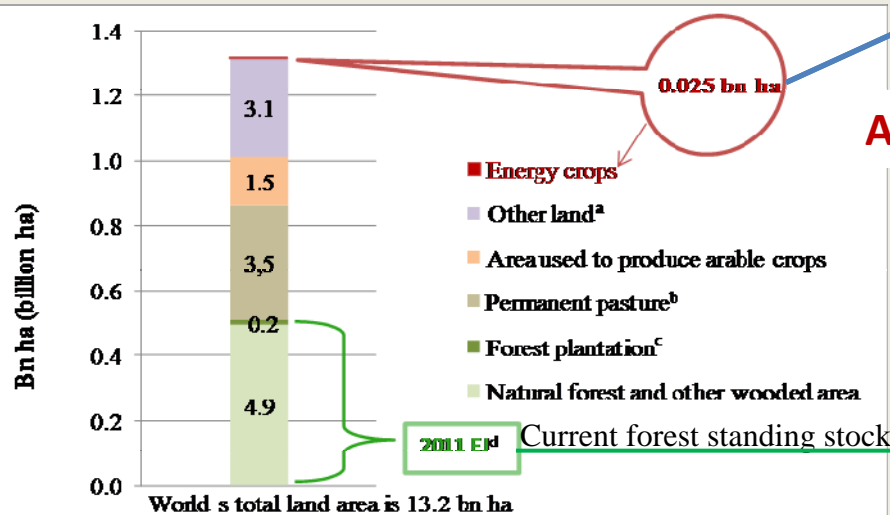
EU-objective: 20% of energy from renewables in 2020

Advantage: Biomass-energy systems can contribute to the security of energy supply and protection of the environment.

Energy from Biomass – land availability



= 0.19% of the World's total land area



Advantage: World's total land area is B-underused

5% of 2011 EJ = 21% of demand₂₀₀₆

... is a large reservoir of bioenergy

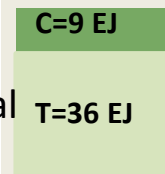
Potential > Demand₂₀₅₀

10% of 1548 = 155 EJ = 32% of dem₂₀₀₆

current use of biomass energy (50 EJ) is only 3% of 1548

Fig. 8. Distribution of land use types in world's total land area (Sources: Faaij, 2008; ITTO 2006ab, Smeets et. al., 2004).

H: Contribution of current biomass to the global energy demand of 491 EJ is only 10%... mainly in the form of traditional non-commercial biomass



GPP = 4,500 EJ/yr (Sims2004)

6% of GPP (270 EJ) > 50% of 491 (246 EJ)

270 EJ – possible on a sustainable basis (Hall et al., 1998)



Advantage: Biomass potential - underused

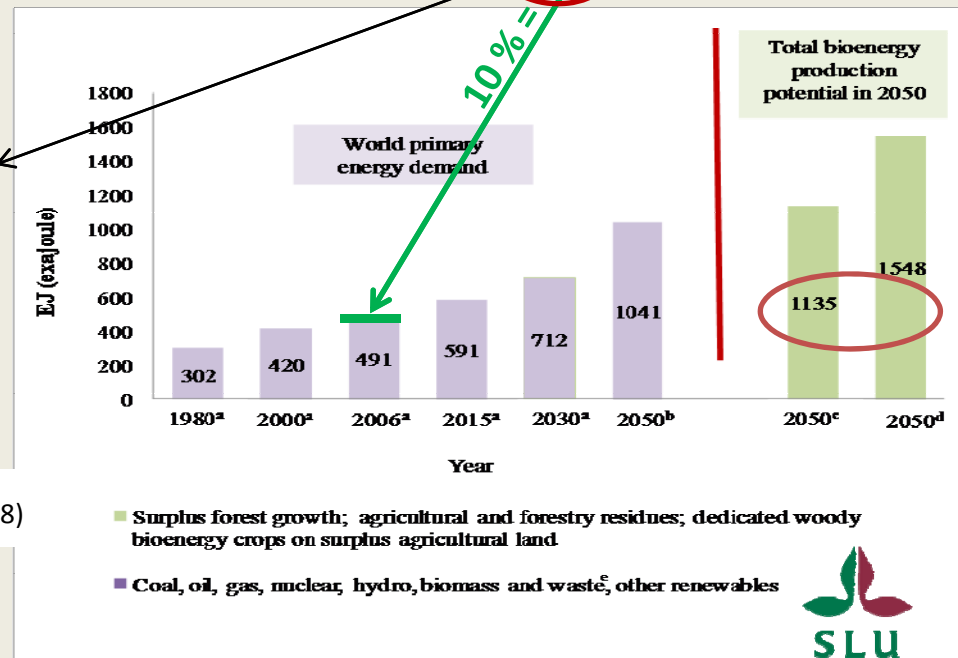
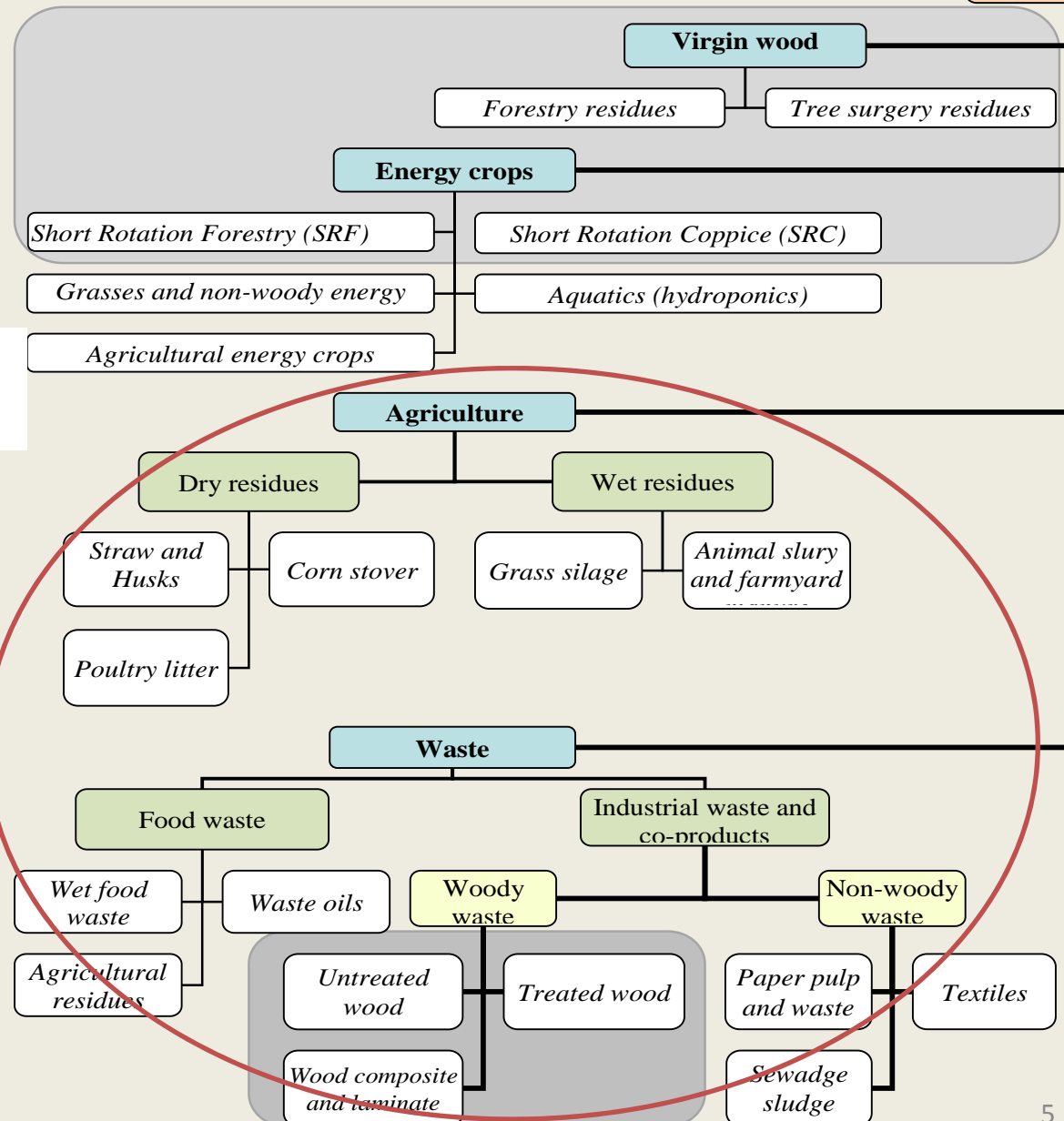


Fig. 7. World primary energy demand and forecasts for years and the total global bioenergy production potentials for years



Sources of biomass for production of energy.

Biomass



Advantage:
Renewability and Versatility

Advantage: large volumes of
unused residues and wastes



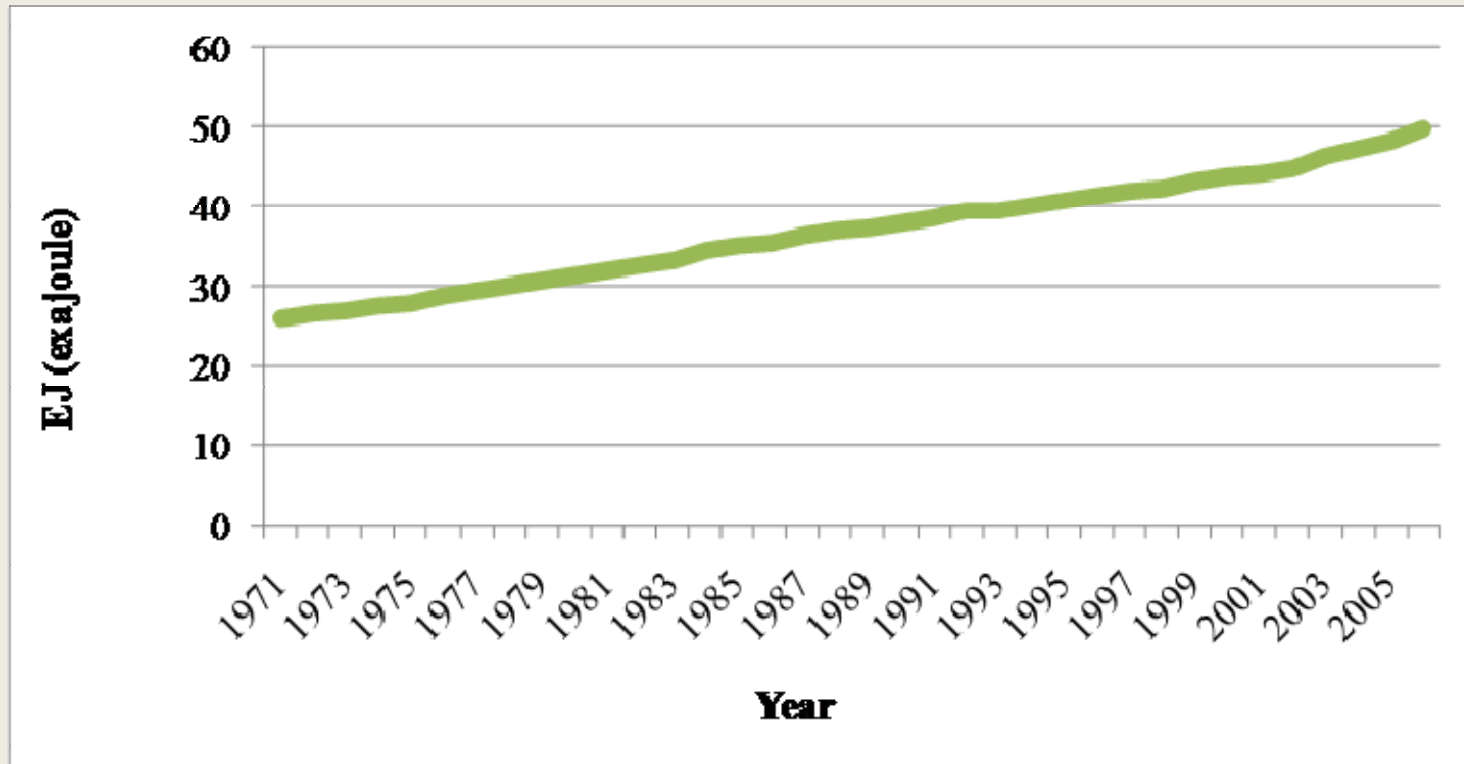


Fig. A. World use of combustible renewables and waste 1971 – 2006. (Source: World Bank, 2009)

CONCLUSIONS

There are many advantages of biomass for energy

1. Biomass is the most important renewable energy option at present
2. World`s total land area is biomass- underused
3. Biomass has the potential to become the world`s largest and most sustainable energy source and will be very much in demand
4. Biomass potential is large enough to meet the global bioenergy demand in 2050



**Thank you for your
attention**

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2011-01-19



Swedish University of
Agricultural Sciences