

# Bio-trade: Ecological issues

## Land Uses

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- The “ecological cost” of agriculture has been overlooked in most economic analysis
- With current intensive agriculture there is a serious land degradation problem, loss of top soil, chemical pollution, etc. All these factors affect bioenergy
- Current intensive agriculture based on heavy technological subsidies of fossil fuel is ecologically unsustainable

- The food system consumes 10 times more energy than it provides to society in food energy
- We need to address not only energy but also how to manage natural resources sustainably, population and what is an acceptable standard of living
- Current pattern of human development is not ecologically sustainable
- Technology cannot make accessible more natural resources, except increase their efficiency

# Sustainable use of RE possible, if:

- Sustainable agricultural technologies are implemented
- The use of RE energy is speed up
- Major increase in energy savings are achieved
- Natural resources are used sustainably (e.g. population control)
- 1/3 of arable land & forests lost in past 40 years

# Land issues

- Crop land is about 1340 Mha
- Soil organic carbon (SOC) losses have been estimated at 0.06% C/y of cultivation
- Cumulative historic loss of C (agriculture) has been estimated at 55 Pg (IPCC/95)
- Land degradation affects c. billion/ha
- Bioenergy can help but can solve these problems

# Cropland degradation (Mha)

• Water erosion	266
• Wind erosion	87
• Chemical degradation	133
• Physical degradation	66
<b>– Total</b>	<b>522</b>

# C sequestration potential

- World cropland soils- arable land (Pg/yr)
- \* soil erosion control 0.08-0.12
- \* Soil restoration 0.02-0.03
- \* conservation (tillage & residue management) 0.150-0.175
- \* improve farming 0.18-0.24
  
- \*Off-set through biofuel production 0.30-0.40