



Life Cycle considerations in standards from renewable material to reuse and recycling Land and biomass as resources

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Introduction

More than 10 years ago bioenergy or biobased products have been considered “green” as such!

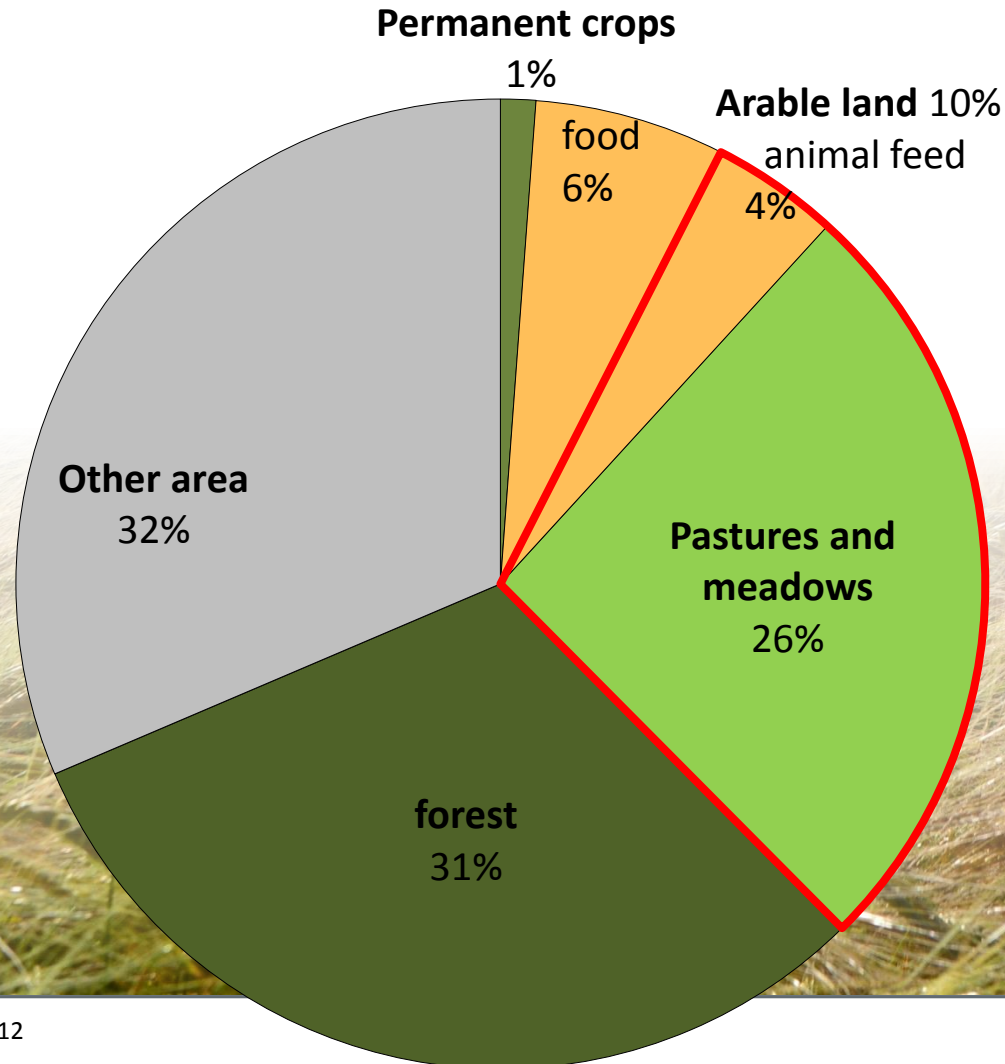
Then concerns have come up with regard on sustainability aspects.

The core of these concerns is all connected with land use:

- Soil erosion, eutrophication, loss of biodiversity, water
- Land-use change → carbon stocks, more loss of biodiversity,
→ land rights, food vs. fuel

Land is a scarce resource

Global land use



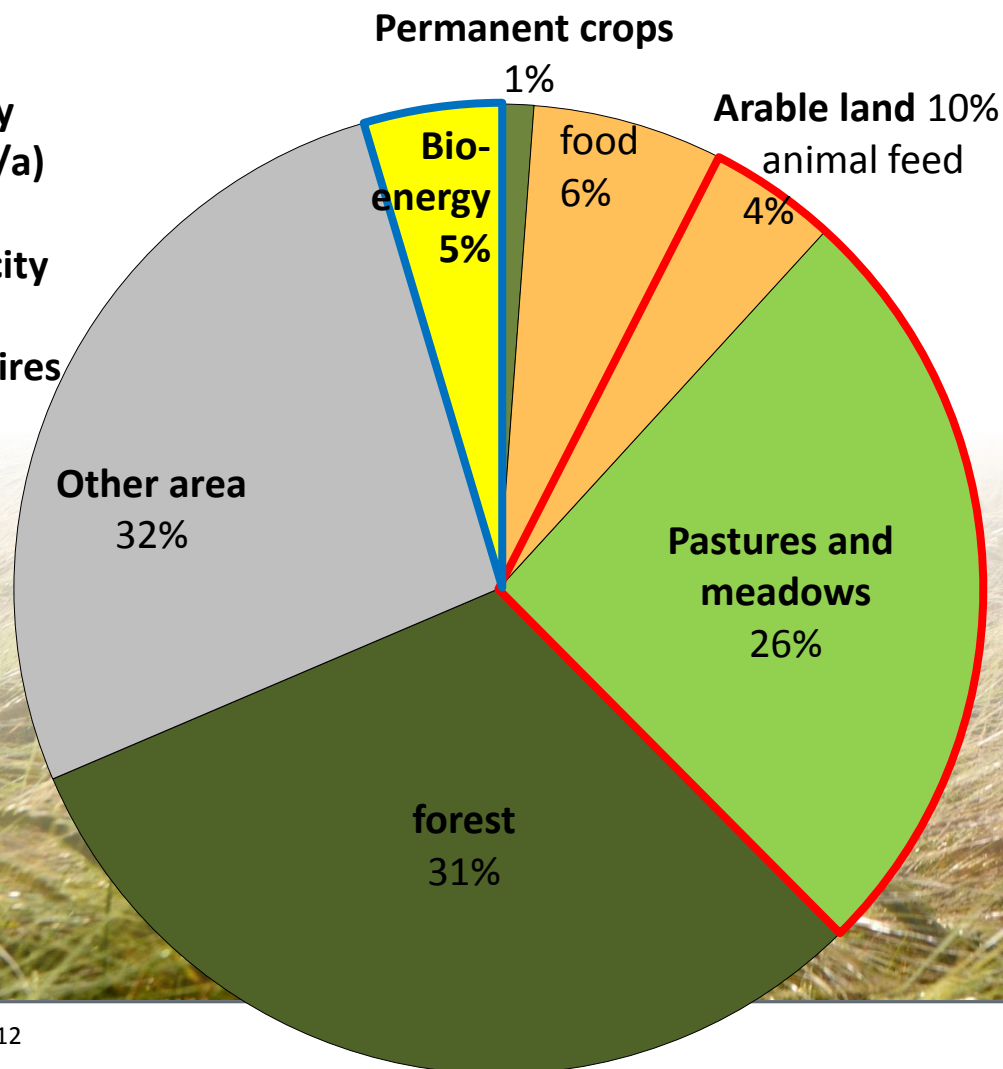
Land is a scarce resource

Global land use including bioenergy

Assumption:

10% of global energy demand (ca. 600 EJ/a) will be covered by biofuels and electricity from biomass.

1 GJ Bioenergy requires approx. 0.01 ha.



Land is a scarce resource pressures and responses



- More demand of food → conversion of land (mostly forests and biodiversity hot spot areas)
- More demand of biomass (non-food use) → pressure on food demand and price
- Intensification of livestock → land use change → more arable land for animal feed and less biodiverse grassland

Land is a scarce resource

Conclusion



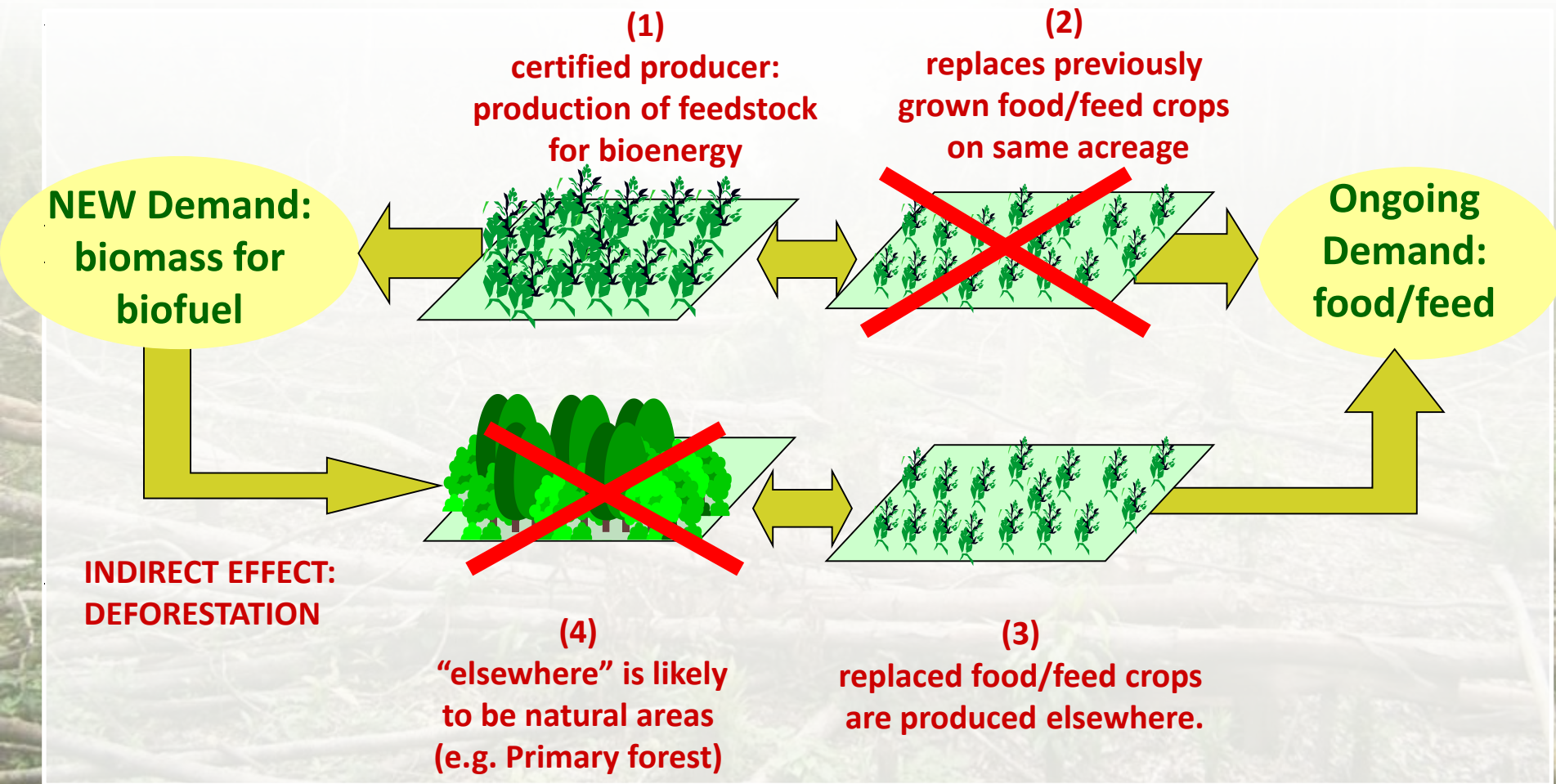
- Land scarcity will be an outstanding challenge
- We cannot rely on sufficient increase of yields
- Biomass (non-food use) shall not claim additional land use
- Unless non-food projects can give evidence on positive influences (e.g. fostering yield increases, restoring of degraded land)

Indirect land-use change

- No international agreed definition of iLUC
- **ISO DIS 13065 Sustainable Criteria for Bioenergy** defines indirect effects by the opposite of direct effects (“... under direct control of the economic operator ...”)
- ➔ Nevertheless there are hundreds of scientific works dealing with iLUC

The trouble with iLUC

What is meant by “iLUC”?



IFPRI Report (October 2011):

... emissions related to land use changes driven by biofuel policies are a serious concern.

This finding is robust

The LUC effect reduces the environmental gains of the biofuel policy and should not be neglected.

Source:

Laborde, D., (2011). Assessing the Land Use Change Consequences of European Biofuel Policies, Final Report. ATLASS Consortium, Contract No SI2. 580403.

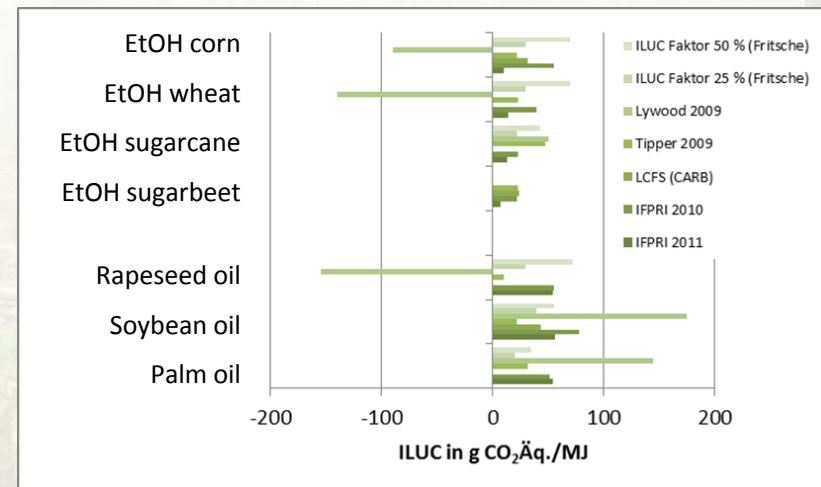
Available at:

<http://www.ifpri.org/sites/default/files/publications/biofuelsreportec2011.pdf>

The trouble with iLUC how to measure it?



- It is a matter of market relations
 - It is a matter of magnitude
 - There are many approaches the range of results is vast
- There is no way to avoid a large number of conventions and assumptions.



How standards address land use

Land use is key in sustainability schemes for biomass
this is also true for:

- ✓ **European standard** - EN 16214:2012 Sustainability criteria for the production of biofuels and bioliquids for energy applications
- ✓ **International standard** - ISO FDIS 13065 Sustainability criteria for bioenergy
- ➔ Most criteria and indicators are related to land-use context: land as such, biodiversity, soil, water but also right rights.
- ➔ Focus on single bioenergy operator - but is it sufficient to certify that each single producer is good in land-use practices?

How standards address land use

Land use has to be considered as a global issue

→ **Global Bioenergy Partnership (GBEP) develops effective policy frameworks for the whole land-use policy of a country**

The scope should be:

- Total area of land for bioenergy feedstock production, and as compared to total national surface and agricultural and managed forest land area
- Percentages of bioenergy from yield increases, residues, wastes and degraded or contaminated land
- Net annual rates of conversion between land-use types caused directly by bioenergy feedstock production

Conclusions

The issue is as much complex as it could be.

Advancing standards for good land-use practices driven by non-food sectors may lead to beneficial developments for land use as a whole.

However land is scarce – food production must be first priority

Hence, the non-food sectors should focus on secondary biomass
BUT: Will there be sufficient feedstock?
When will it be economically viable?





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Thank you

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