

Food, Fuel and Sustainability Concerns with Biofuels - Introduction

Dr Mairi J Black

Socio-Economic Impacts of Biofuels: A Research Roadmap
15th November 2008, Gleacher Center, Chicago.

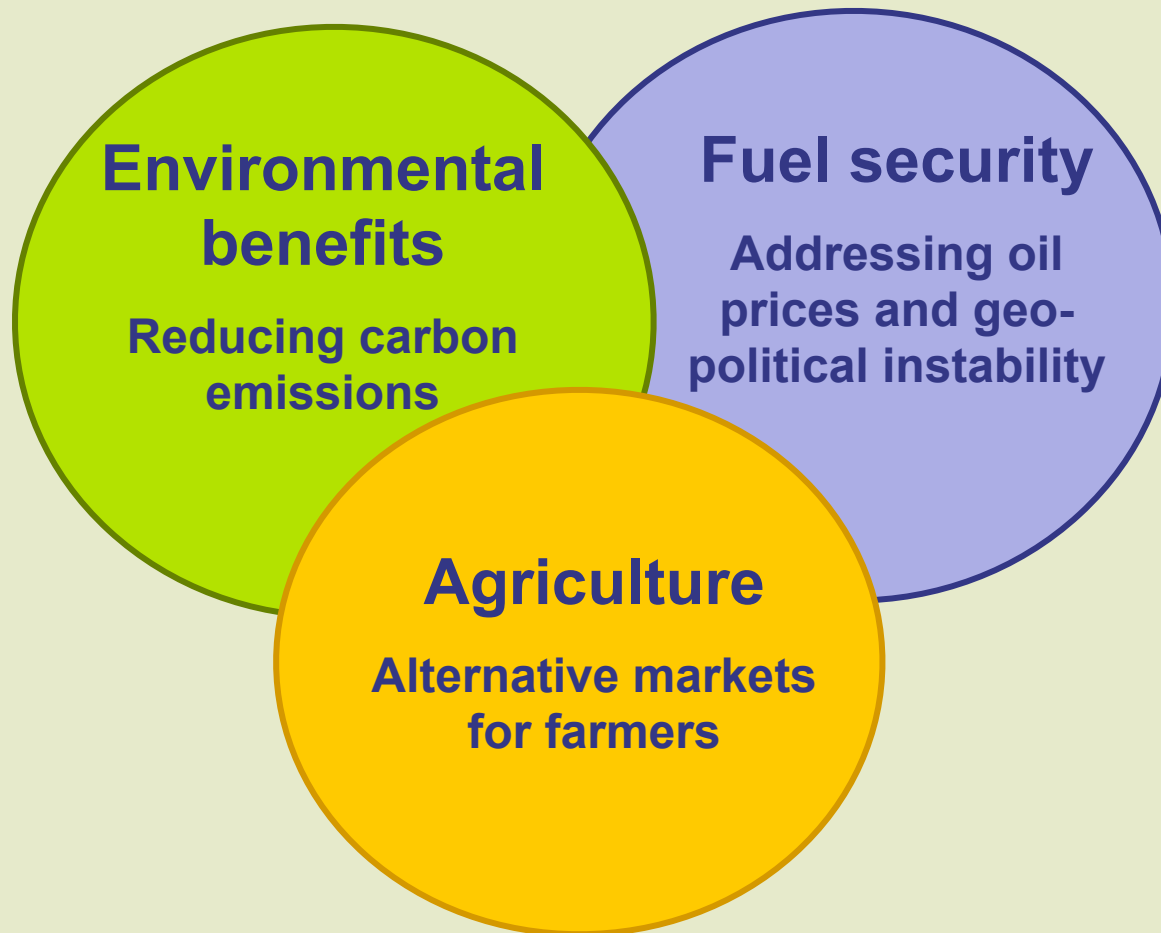


Overview

- **Why biofuels?**
- **Concerns about biofuels**
- **Safeguarding against negative impacts**
(Carbon and Sustainability reporting)
- **On-going issues**



Why Biofuels? - In the beginning.....



Emphasis changes depending on country



...But what about...

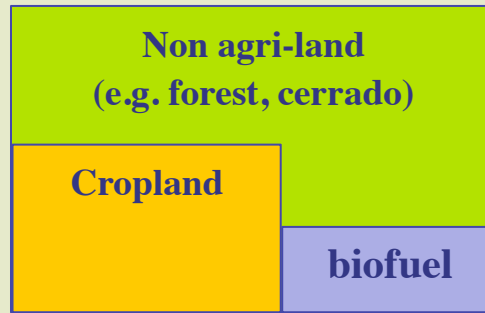
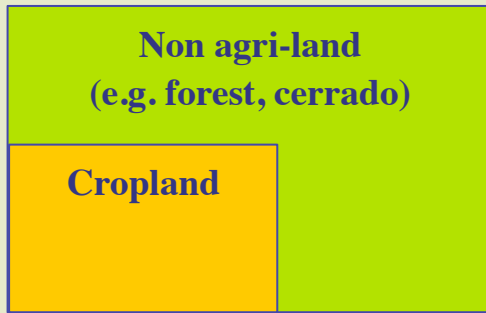
- **Deforestation?**
- **Biodiversity loss?**
- **Ecosystem loss?**
- **Higher GHG outputs (CO₂ or N₂O)?**
- **Soil and water quality?**
- **Population displacement?**
- **Food price increases?**



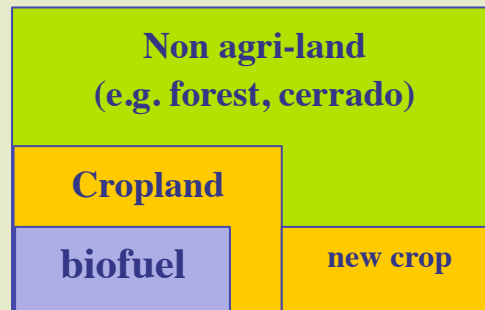
...And what about...

- **The impacts of changing land use**

- Direct Land Use Change



- Indirect Land Use Change



Points of uncertainty

- **The provision of feedstock for biofuel production may be achieved by**
 - biomass use substitution
 - crop area expansion
 - yield increase on currently used land
 - shortening rotation
 - supply chain efficiency
- **Disagreement about ‘responsibility’ for indirect land use change**
- **Assumptions about land use intensification and prospective yields**
- **Efficiency of production methods, co-product ‘credits’ and process energy services**



Land Use and Terminology

- **Data for land use globally needs reviewing and updating (current data used for land use studies is incomplete for some regions)**
- **Perceptions of land use and value vary**
- **Terminologies can be poorly defined and misleading e.g. idle, marginal, abandoned, degraded, wasteland, empty, under-used, sleeping....**
- **Land use suitability (e.g. by agro-ecological zoning work) may provide direction for “optimal use”**



Safeguarding against negative impacts

UK Policy

The UK Renewable Transport Fuel Obligation (the RTFO) requires suppliers of fossil fuels to ensure that a specified % of the road fuel supplied in the UK is made up of renewable fuels. The RTFO requires companies to submit reports on carbon emissions and sustainability of biofuels.

(Renewable Fuels Agency 2008)



UK RTFO – Carbon Reporting

GHG / Carbon calculations

- Current methodologies are supply chain specific
(ethanol from sugarcane, sugar beet, molasses, wheat and corn; FAME from tallow, used cooking oil, soy, palm, oilseed rape; biomethane from anaerobic digestion of MSW and manure; ethanol converted to ETBE)
- On-going debate on methodologies used
- Land use change issues unresolved (Gallagher Review)
- Data may available and accessible for large scale commodity crops
- Default values can be extremely broad where data not available
- GHG and lifecycle analysis will improve



UK Sustainability Reporting

Meta-standard approach benchmarks against Environmental and Social standards comprising of “Principles”, further defined by “Criteria”

Environmental Principles - Feedstock Production

- will not destroy or damage large above or below ground carbon stocks
- will not lead to the destruction or damage to high biodiversity areas
- does not lead to soil degradation
- does not lead to the contamination or depletion of water sources
- does not lead to air pollution

Social Principles – Feedstock and Biofuel Production

- does not adversely affect workers rights and working relationships
- does not adversely affect existing land rights and community relations



Addressing the issues

- **The Royal Society: Sustainable Biofuels Prospects and Challenges**

Biofuels have a potentially useful role in tackling climate change & energy supply. Current policy frameworks may miss important opportunities to cut greenhouse gas emissions.

- National policies need greenhouse gas reduction target for fuels
- Long term frameworks to encourage innovation e.g. extend RTFO to 2025
- Carbon certification and sustainability criteria developed and applied
- UK leadership in technology and methodology
- Biofuels are not a silver bullet for transport



Addressing the issues

- **The Gallagher Review of the indirect effects of biofuels production**

Concerns about the impacts of land use (and its exclusion from the current RTFO methodology for GHG calculations) prompted the government to undertake a review of land availability to ensure the provision of feedstock to meet biofuel policy expectations is not unsustainable. The Gallagher Review was published on 7th July 2008. The Executive summary stated the following:

- There is probably sufficient land for food, feed and biofuels
- Biofuels production must target idle and marginal land and use of wastes and residues
- A genuinely sustainable industry is possible
- Stronger, enforced global policies are needed to prevent deforestation



Current situation

- Standards and certification schemes for sustainability will continue to be defined against the RTFO Meta-standard approach
- Global groups continue to address sustainability

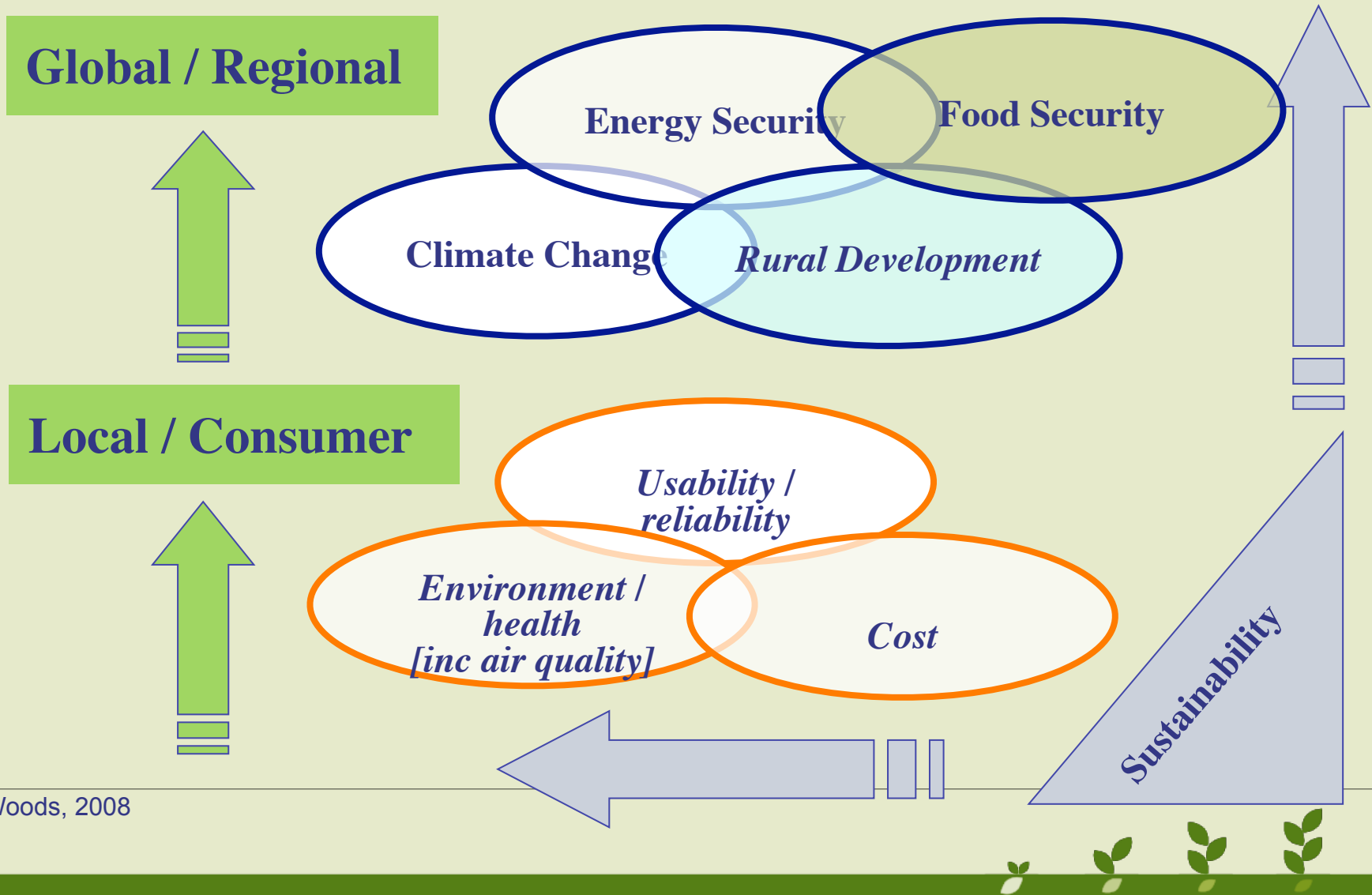
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| International | Global Bioenergy Partnership (GBEP) | | Roundtable on Sustainable Biofuels |
| European | Renewable Energy Directive | CEN/BSI | Fuel Quality Directive |
| National | Germany | UK | Netherlands |

Renewable Fuels Agency Presentation, 2008

- Responses to the Gallagher Review and Land Use are currently being accepted by the RFA. Application of methodologies for calculating LUC and ILUC are currently considered.



Drivers and Obstacles for Biofuels



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