Biofuels and their impacts on people, food security, biodiversity and climate

Quercus biofuel science briefing, Lisbon, June 2011

Dr. Chris Malins

icct
THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

The ICCT

- A council of leading clean transport regulators globally
- A staff of about 30
- Provides support to regulators through research and analysis

icct
THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

Contents

- Carbon emissions and savings
- Environmental sustainability
- Food prices/food security
- Other social impacts

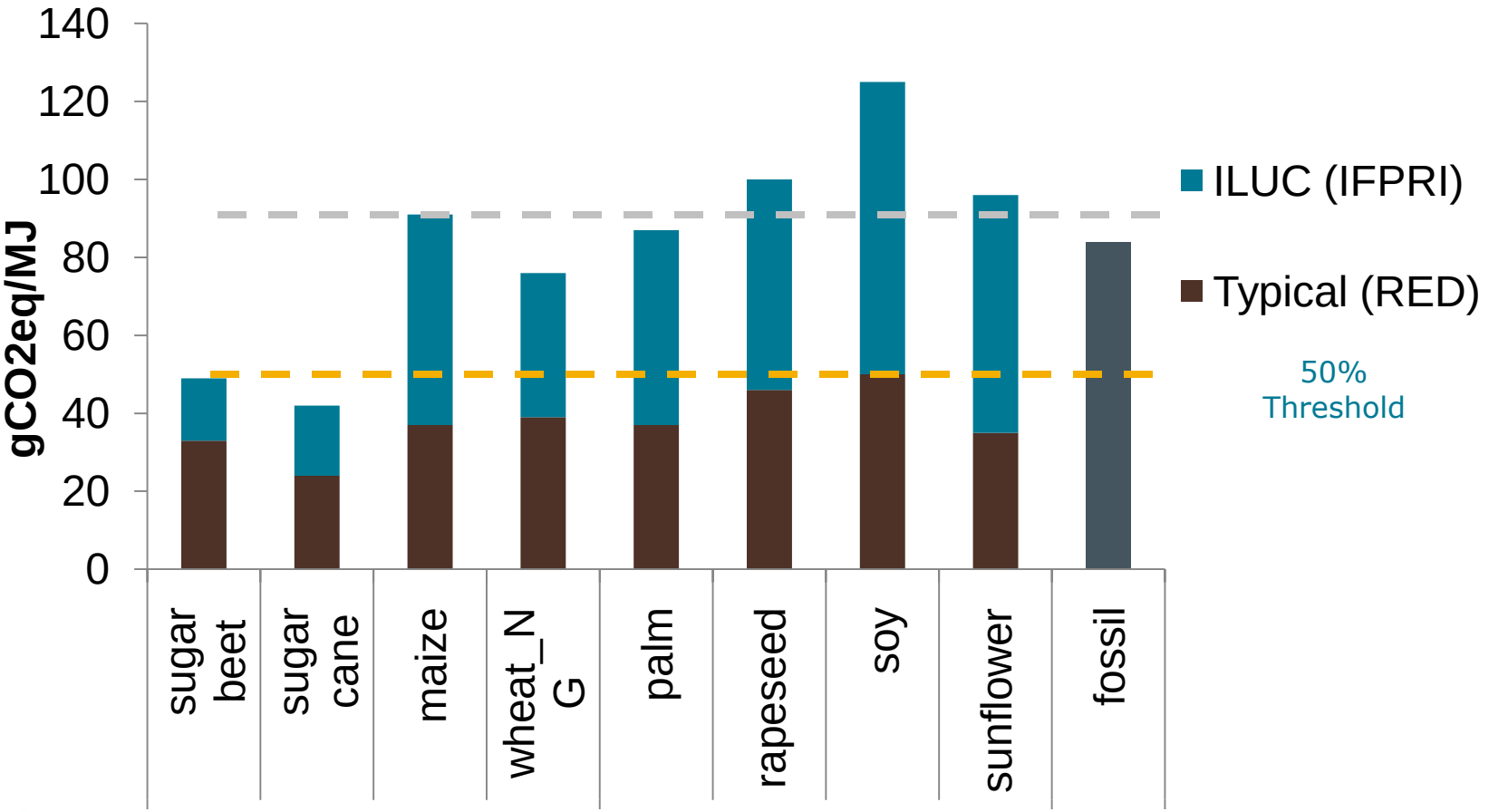
Indirect land use change

- Demand for biofuel feedstocks must be met by one of:
  - Increased production on the same land (yield increase)
  - Reduced consumption in other sectors (food vs. fuel)
  - Reducing global stocks (unsustainable)
  - Bringing new land into production (iLUC)

Direct emissions

- Cultivation
- Processing
- Transport
- Direct land use change

Do biofuels reduce GHG-emissions compared to fossil fuels?



Slide courtesy of Bart Dehue, Ecofys

A few things included in the iLUC analysis

- Yield improvement
  - IFPRI MIRAGE assumes that rising prices cause yield increases
- By-products
  - IFPRI MIRAGE models the market impacts of distillers grains (DDGS) and oilseed meals
- Changing food consumption
  - IFPRI MIRAGE assumes that people eat less as prices rise

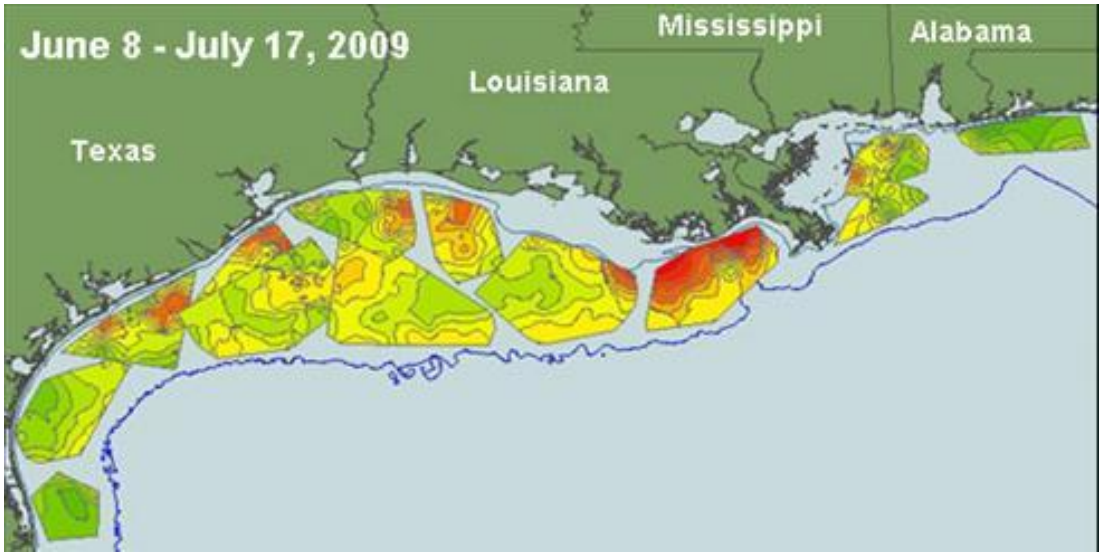
Other environmental sustainability issues:

Biodiversity

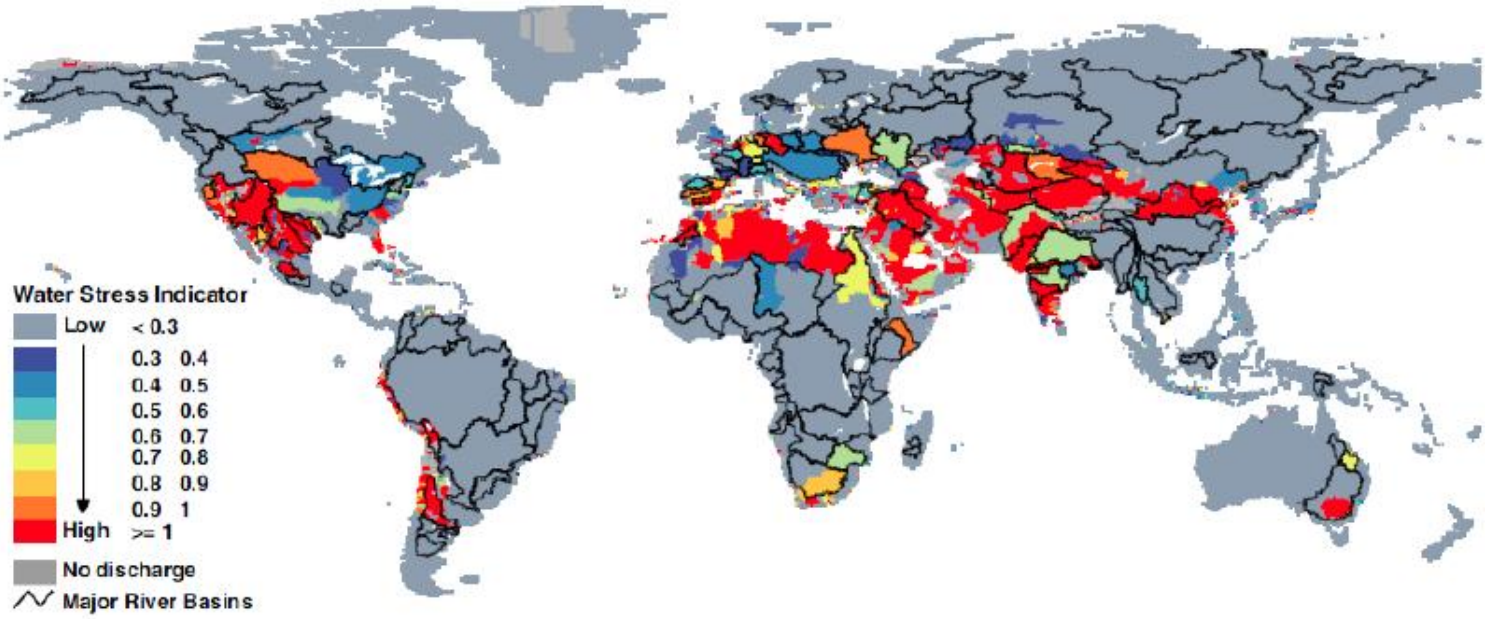
Biofuel crops are typically monocultures. In general, after conversion to monoculture agriculture, biodiversity is reduced.

Chemical pollution

- Intensive agriculture requires the application of large quantities of nitrogen fertiliser
- Nitrogen runoff contributes to phenomena like algal blooms and the dead zone in the Gulf of Mexico
- Pesticides, herbicides can cause air and water pollution, impacting health and wildlife



icct
THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION



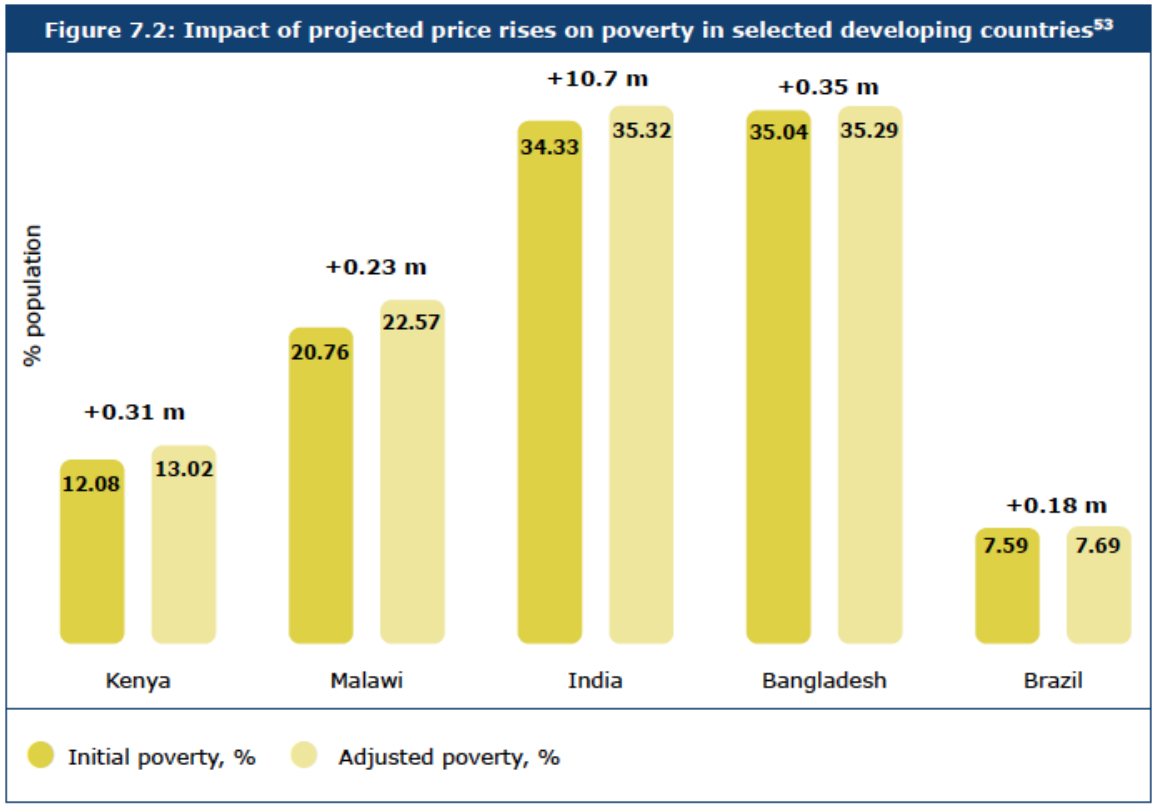
Source: SIWI, 2006

Water use

The Earth's water resources are already heavily exploited by humans, especially for agriculture. The combination of agricultural expansion and climate change will further pressurise these resources.

Food prices

- The economic models say prices will go up in the medium term
- Biofuels indicated in 2008 price spikes
- Biofuel mandates = inelastic demand
  - Biofuels likely to increase price volatility
- Longer term rises will likely be low to moderate, but still significant



Gallagher review

Work for the UK Government predicted that in the medium term tens of millions would be pushed into poverty.

Food security

- Globally, most poor people are net food buyers
- Raised food prices is bad for welfare
- The poorest are particularly vulnerable to staple commodity price changes
- Modeling suggests welfare losses from prices will exceed gains to producers

Land rights, workers rights

- Agricultural expansion in developing world often happens at expense of local/indigenous communities (‘land grabs’)
- Jobs on monoculture agriculture plantations may be low quality
- Workers can be mistreated and subjected to health risks

Development opportunities

- Biofuels can help support farm gate income in developed world
- In countries like Mozambique biofuel investment *could* help support poverty alleviation
- Many studies that identify development opportunities in Africa look at small-scale production for local use (≠ mandate driven export crops)
- Sustainability certification can help guarantee more beneficial outcomes

In conclusion…

- You cannot say that biofuel policies reduce emissions without addressing iLUC
- In general, biodiesel use is probably not a good climate strategy
- There are more issues with ag expansion than just carbon
- Global social impact of EU mandate likely to be negative without further controls
- Sustainability schemes (e.g. RSB) won't deal with iLUC, but could address other concerns

Obrigado

chris@theicct.org