

# Climate Change and Trade: Land Use, Agriculture & Biofuels

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# Agriculture, land use and biofuels

- UNFCCC - Article 2 “stabilization (should) ensure that food production is not threatened and.. Enable economic development in a sustainable manner.”
- All countries periodically provide national inventories of anthropogenic emissions by sources and removals of sinks, publish and update national mitigation programs and adaptation measures
- Article 4.1(a) technology (and practices and processes) promotion, application and diffusion to reduce or control emissions required, including in agriculture and forestry

# Kyoto Protocol

- Annex I parties allowed to meet commitments by including “net changes in greenhouse gas emissions by sources and removals by sinks resulting from direct human-induced land use change and forestry activities,” Article 3.3
- Article 3.4, Annex I countries can opt to include such measures in annual reports
- LULUCF was agreed AFTER reduction commitments agreed

# Carbon Market Instruments

- Kyoto Protocol: Annex I countries can trade emission reduction units - as defined by COP re relevant principles, modalities, rules and guidelines
- CDM - Clean Development Mechanism - Annex I countries and private entities can finance project activities in developing countries that will result in certified emissions reductions, and count these in meeting their reduction commitments
- Developing countries are required (Article 10) to develop national inventories of emissions and to formulate plans to mitigate them and facilitate adaptation, including in agriculture and forestry

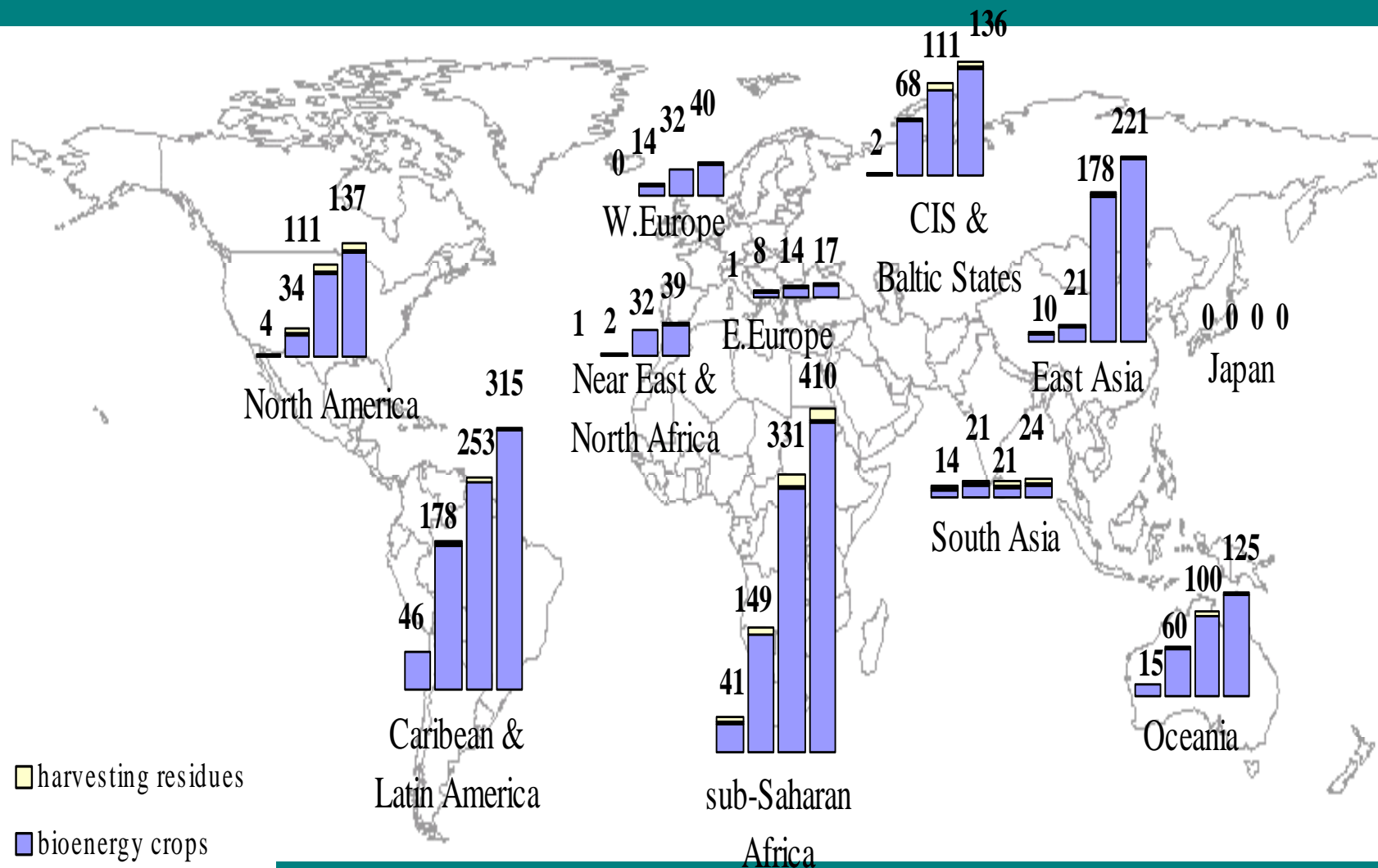
# Agriculture (IPCC 2007)

- 10-12% total global GHG emissions in 2005, 4% global GDP
- 60% of total nitrous oxide, 50% methane, which increased by 17% from 1990 to 2005
- Over 70% of global mitigation potential in non-OECD countries
- Uses 87% of total extracted water in low-income countries, 74% in middle income countries, 30% in high income countries
- Agriculture perceived as the biggest threat globally to natural ecosystems

# Biofuels

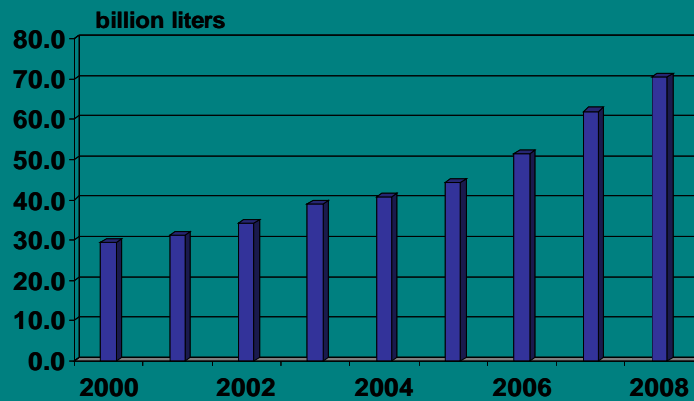
- Can compete with food crops for land
- Arguably responsible for 25% of recent food price increases
- Increasingly subject to sustainable sourcing requirements
- Arguably responsible for high rates of deforestation and land use change
- Indirect effects required to be assessed in major markets

# Relative Bioenergy Production Potential: Four Scenarios (Copernicus Inst.)



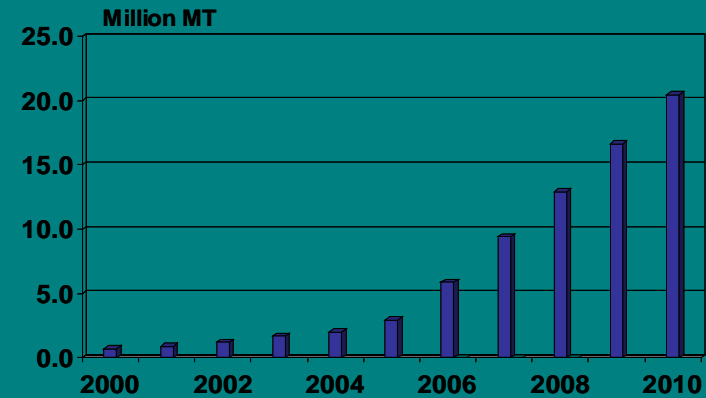
# Biofuels production increases

## World Ethanol Production



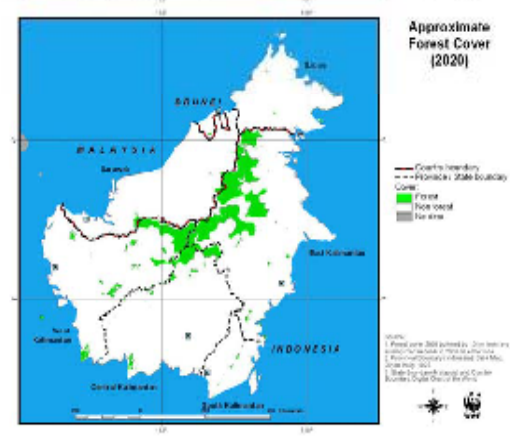
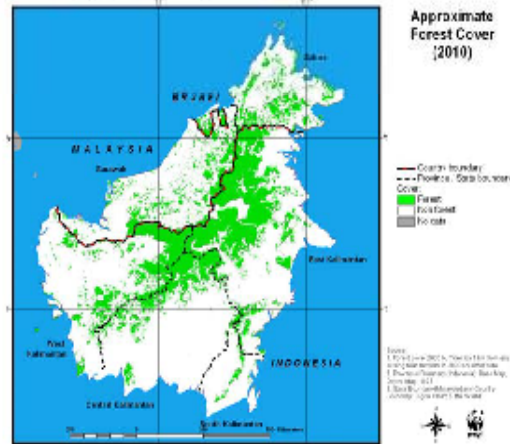
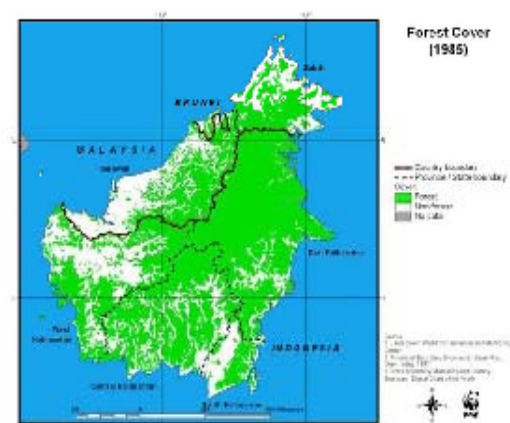
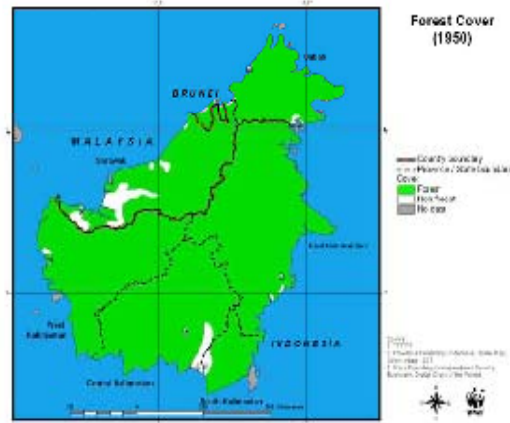
Source: F.O. Licht

## World Biodiesel Production



Source: F.O. Licht

# Oil Palm and Forest Cover in Borneo



# Emerging Standards for Biofuels

- Technical Standards – Tripartite Task Force (Brazil, EU and USA), White Paper December 2007
- Biofuels Sustainability Standards – Public Sector
  - EU, and EU Member States
  - US, and some US States
  - Global Bioenergy Partnership (GBEP) + IEA Task 40
- Biofuels Sustainability Standards – Private Sector
  - Roundtable on Sustainable Biofuels
  - Council for Sustainable Biofuel Production
  - Soy, Palm Oil, Sugar Cane, Agriculture
  - Industry standards (ex. UNICA)
  - Private sector procurement – Walmart?

# Sector-specific Initiatives

- Roundtable for Sustainable Palm Oil (RSPO) – [www.rspo.org](http://www.rspo.org)
- Roundtable for Responsible Soy (RTRS) <http://www.responsiblesoy.org>
- Better Sugarcane Initiative (BSI) <http://www.bettersugarcane.org>
- Green Gold labels (wood pellets, grass)
- Forest Stewardship Council (FSC) and SFI, others, <http://www.fsc.org>
- UNICA (Brazil Sugar Cane Industry Association)
- Sustainable Agriculture Initiatives - organic?

# Production Lifecycle: Seek Lowest Impacts

Relative consumption over life-cycle\*:

Feedstock	Water	Fertilizer	Pesticides	Energy
<i>corn</i>	Very high	Very high	Very high	Very high
<i>sugar cane</i>	Very high	Very high	High	High
<i>canola</i>	Very high	High	High	Medium
<i>soy</i>	Very high	Medium	High	Medium
<i>oil palm</i>	Very high	High	Low	Low



\*depends on methods

# Smallest Ecological Footprint: Minimize Land Area Used

Millions of ha land needed to meet  
50% of US transportation fuel demand:

native prairie	soy	corn	residues	switch grass	sugar cane	woody biomass	canola	oil palm	algae
>580 ?	>330	>290	>275	>110	>85	>60 (>11)	>55	>45	>1

➤ Algae has *by far* lowest potential footprint

# Minimizing land use change and adverse effects of agriculture and biofuels

- Soil organic quality
- Minimize erosion and topsoil loss
- Conservation tillage and no-till
- Water use efficiency, minimal effluent
- Maximize yield, efficient fertilizer use
- Manage grazing lands
- Control methane from animals and rice
- Integrated pest management
- Appropriate varieties and appropriate land use

# Yesterday's News

- Indonesia to reopen peatlands for development
- USDA will look at instituting farm payments based on carbon sequestration in the wake of the stimulus bill
- US EPA is expected to act soon to begin to regulate carbon dioxide emissions under the US Clean Air Act - this will set regulatory processes in motion

# Trade/Climate Change interface

- Absent a Doha result, will agricultural subsidies be reconfigured for climate change purposes, and is this consistent with the SCM and the AOA?
- Are “voluntary” sustainable agriculture and biofuels programs to certify producers for eligibility to receive government benefits consistent with WTO rules? Can they be used as import requirements?
- Is land use conditionality consistent with WTO rules (Article III)?
- Will carbon trading regimes appropriately value carbon in imports and post-use scenarios?

# Climate change/trade interface

- Should WTO rules constrain efforts to ensure that carbon costs are internalized?
- Does WTO dispute settlement provide a useful venue for resolution of problems arising from national implementation of climate change policies?
- Do WTO standards agreements limit voluntary market-based approaches to carbon trading or offset eligibility?