

Sustainable Biomass: Issues and Global Perspectives (for Africa?)

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presented at the

**COMPETE Conference and Policy Debate on 'Biofuels Sustainability
Schemes - An African Perspective', June 16-18, 2008, Arusha, Tanzania
Session 2: Sustainable development pathways for bioenergy production**

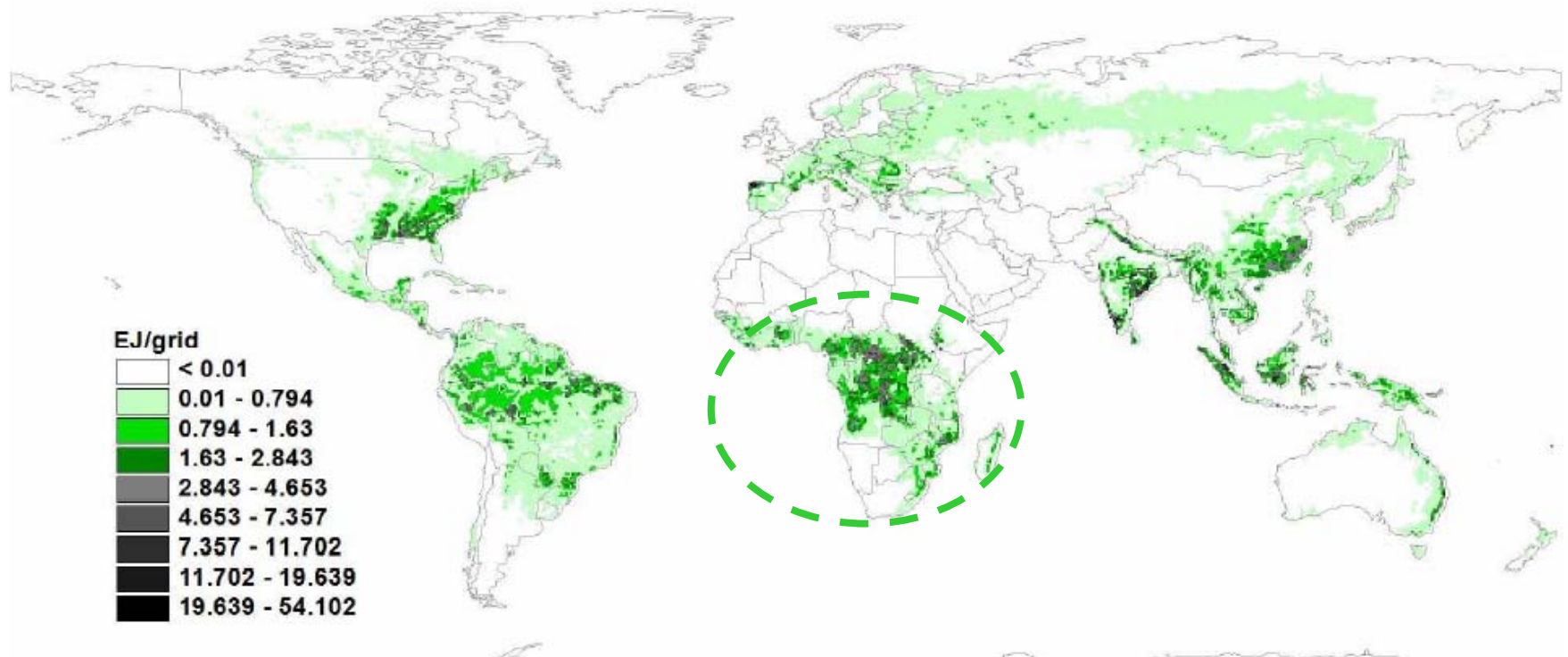
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- **Bioenergy could have positive impacts:**
 - GHG reduction (through fossil-fuel substitution); more agrobiodiversity; soil carbon increase, less erosion
 - Economic impulses, rural development and employment, food security, re-vitalizing agriculture
- **But impacts could also be negative:**
 - GHG from direct + indirect land-use changes; loss of biodiversity, water use, agrochemicals, erosion...
 - Economic loss, food insecurity, land tenure stress...
- **Safeguards and guidance needed!**

Global Biomass Potential



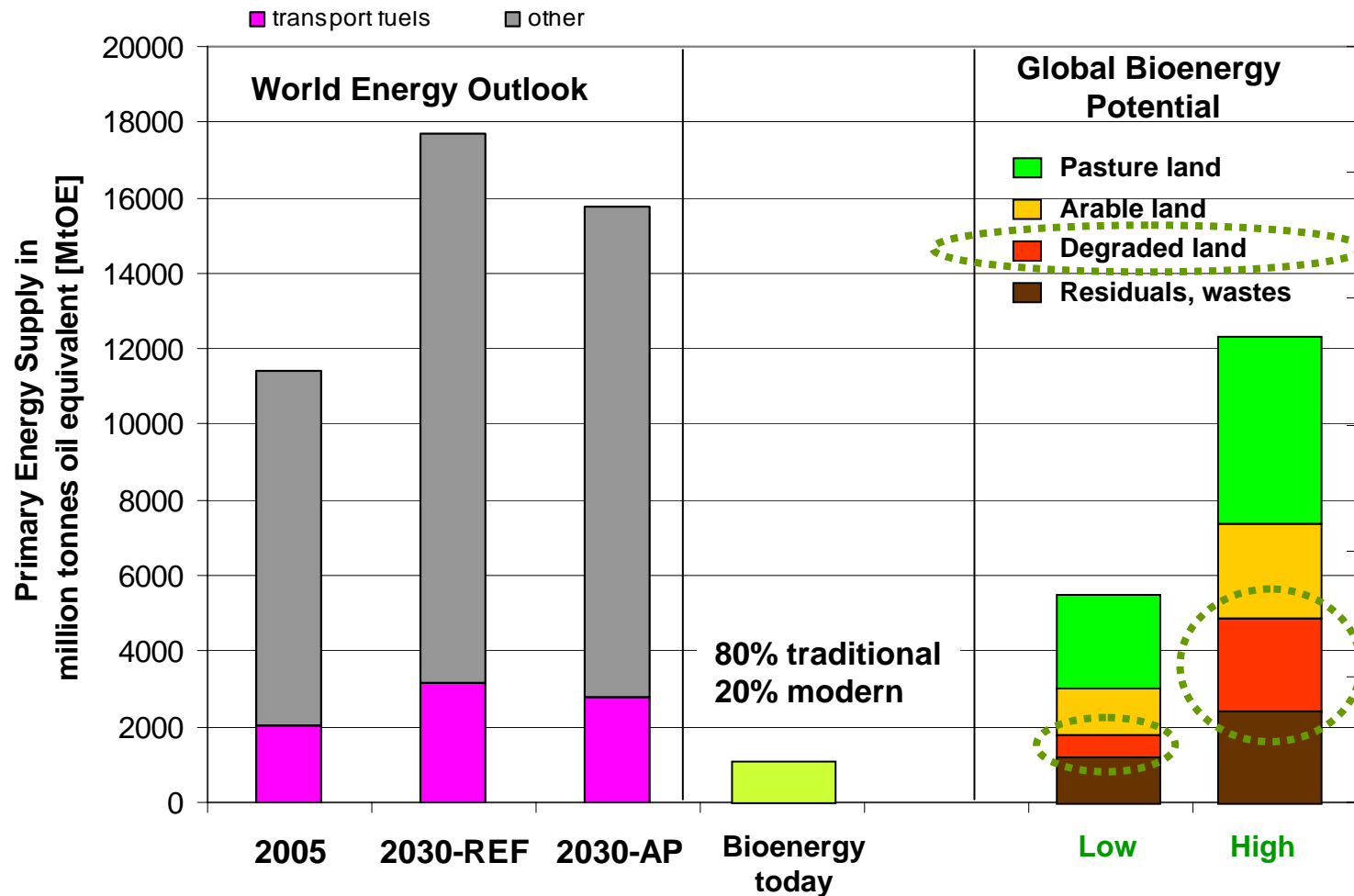
Source: IIASA, Kraxner 2007, Rokiyanskiy et al. 2006

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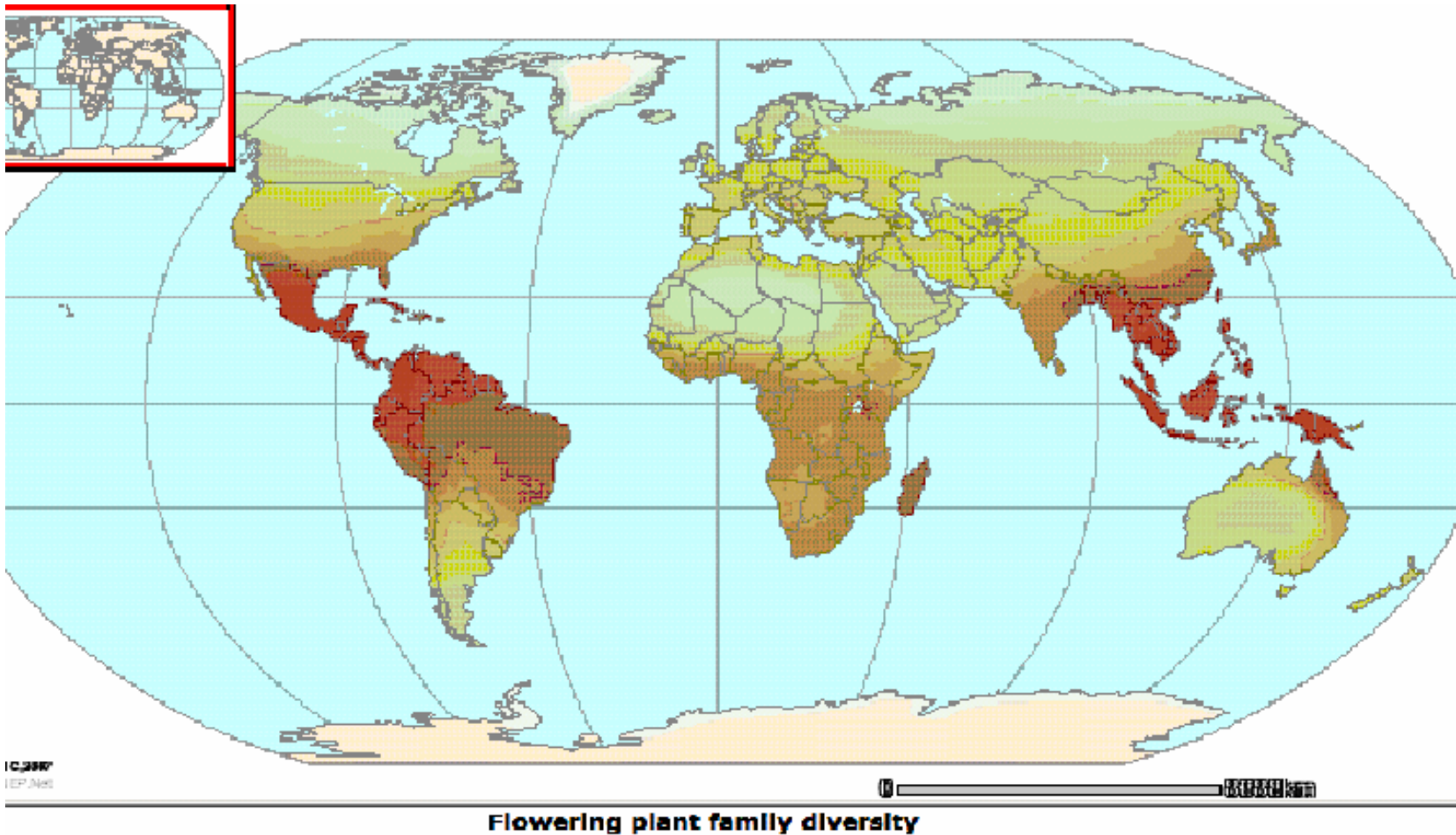


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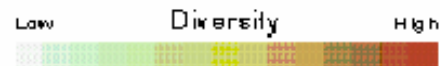
Global Bioenergy Potentials



Global Biodiversity



Source: UNEP IMAPS

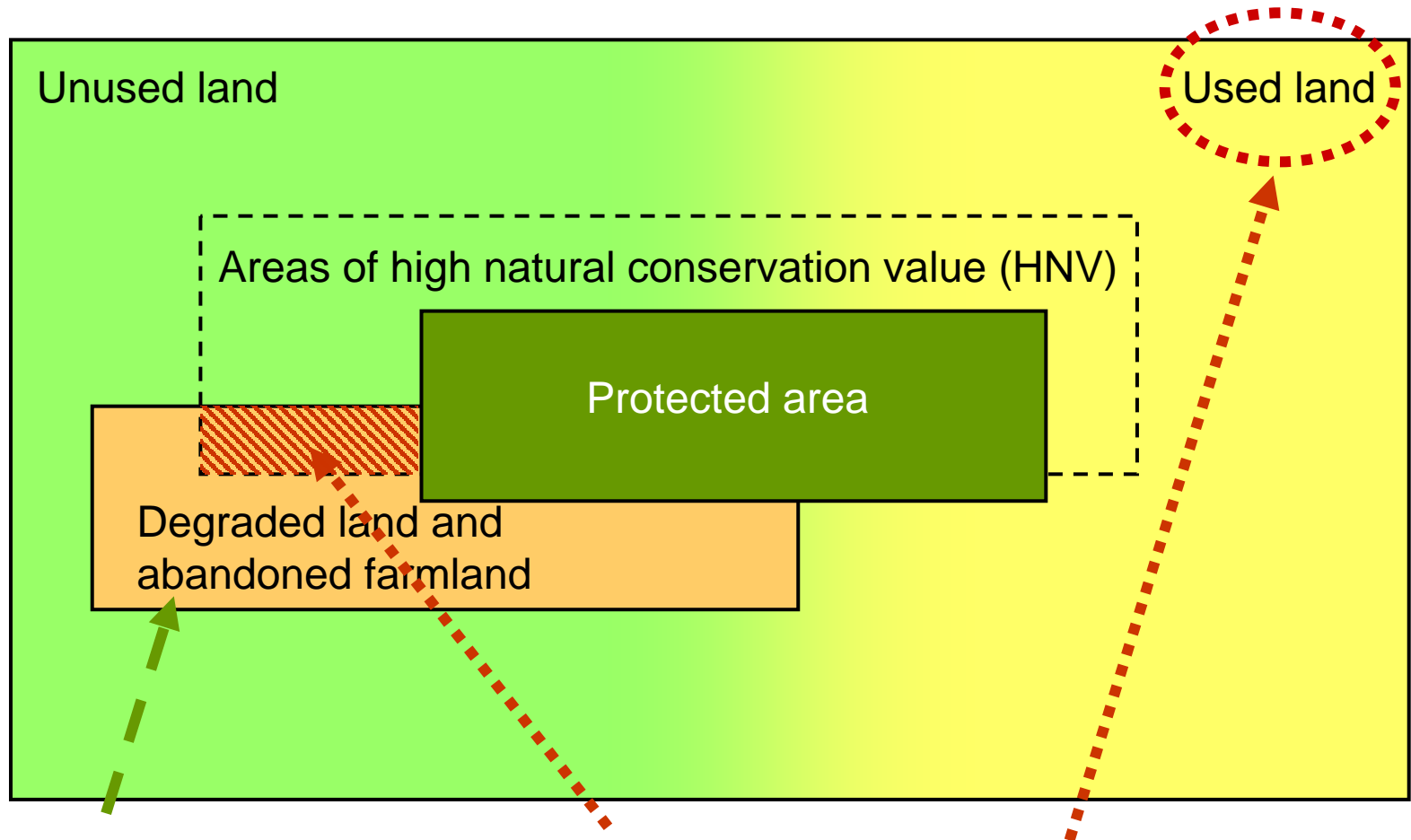


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Land Use and Biodiversity



Cultivating bioenergy:
no displacement, more
organic C in soils, ...

**Risk for biodiversity
if not properly mapped**

**Displacing current
land-use with biomass**

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Which Standards?

Standard	Scope	Regional Adjustment	Time Horizon
Clarification of land ownership	regional/local	no	short-to-medium term
Avoiding negative impacts from bioenergy-driven changes in land use	global	no	short term
Priority for food supply and food security	regional/local	yes	medium-to-long term
No additional negative biodiversity impacts	regional/local	yes	medium-to-long term
Minimization of greenhouse gas emissions	global	no	short term
Minimization of soil erosion and degradation	regional/local	yes	short-to-medium term
Minimization of water use and avoidance of water contamination	regional/local	yes	short-to-medium term
Improvement of labor conditions and worker rights	regional/local	no	short term
Ensuring a share of proceeds	regional/local	no	short term
Avoiding human health impacts	regional/local	no	medium-to-long term

Source: OEKO (2006) study for WWF

Land use/biodiversity and GHG reduction can be based on global conventions → WTO compatible

- EU Renewable Energy Sources (RES) + Fuel Quality (FQ) Directive proposals establish **mandatory** sustainability requirements for all biofuels, including imports
- Minimum GHG reduction, incl. CO₂ from **direct** land-use change; indirect effects under debate
- Protection of natural habitats; no “relevant” reduction of biological/ecosystem diversity
- Social issues: mandatory monitoring (and reporting?)

- Global Bioenergy Partnership (GBEP) – G8 +5:
 - Task Forces on GHG (US-lead) + on Sustainability (UK/BR-lead)
- FAO:
 - BEFS (food security) + BIAS (GHG + biodiversity, soil + water)
 - HLC follow-up
- USA: inter-agency group on sustainability assurance system (DA, DOE, EPA, State Dep.)
- Round Table on Sustainable Biofuels (RSB)
- IEA Bioenergy Task 40; IPCC Special Report on RE
- CBD-COP9 follow-up



Agricultural biodiversity: Biofuels and Biodiversity

1. *Agrees* that biofuel production and use should be sustainable in relation to biological diversity;
2. *Recognizes* the need to promote the positive and minimize the negative impacts of biofuel production and its use on biodiversity and the livelihoods of indigenous and local communities;
3. *Urges* Parties and *invites* other Governments, in consultation with relevant organizations and stakeholders, including, indigenous and local communities, to:
 - (a) Promote the sustainable production and use of biofuels with a view to promote benefits and minimize risks to the conservation and sustainable use of biodiversity;
 - (b) Promote the positive and minimize the negative impacts on biodiversity that would affect socio-economic conditions and food and energy security resulting from the production and use of biofuels;
 - (c) Develop and apply **sound policy frameworks** for the sustainable production and use of biofuels, acknowledging different national conditions, and taking into account their **full life cycle** as compared to other fuel types, that contribute to the conservation and sustainable use of biodiversity, making use of relevant tools and guidance as appropriate,

Source: UNEP/CBD/COP/9/L.35, 30 May 2008



Agricultural biodiversity: Biofuels and Biodiversity

11. *Calls upon* Parties, other Governments, the research community, and invites other relevant organizations to continue to **investigate and monitor** the positive and negative impacts of the production and use of biofuels on biodiversity and related socio-economic aspects, including those related to indigenous and local communities, and *requests* the Executive Secretary to further **compile this evidence** and to make it available through the clearing-house mechanism of the Convention and other appropriate means (...);

12. *Requests* the Executive Secretary to **convene regional workshops** on the sustainable production and use of biofuels, subject to the availability of financial resources, aiming at considering ways and means to promote the positive and minimize the negative impacts of the production and use of biofuels on biodiversity (...)

13. *Requests* the SBSTTA to consider the reports of the regional workshops, the compilation of submissions referred to in paras 5 and 11 and **to recommend, for consideration by COP-10 ways and means** to promote the positive and minimize the negative impacts of the production and use of biofuels on biodiversity

Source: UNEP/CBD/COP/9/L.35, 30 May 2008

DECLARATION OF THE HIGH-LEVEL CONFERENCE ON WORLD FOOD SECURITY: THE CHALLENGES OF CLIMATE CHANGE AND BIOENERGY

7 (f) It is essential to address the challenges and opportunities posed by biofuels, in view of the world's food security, energy and sustainable development needs.

We are convinced that in-depth studies are necessary to ensure that production and use of biofuels is sustainable in accordance with the three pillars of sustainable development and takes into account the need to achieve and maintain global food security.

We are further convinced of the desirability of exchanging experiences on biofuels technologies, norms and regulations.

We call upon relevant intergovernmental organizations, including FAO, within their mandates and areas of expertise, with the involvement of national governments, partnerships, the private sector, and civil society, to foster a coherent, effective and results-oriented international dialogue on biofuels in the context of food security and sustainable development needs.



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HIGH-LEVEL CONFERENCE ON WORLD FOOD SECURITY: THE CHALLENGES OF CLIMATE CHANGE AND BIOENERGY

Rome, 3 -5 June 2008

BIOENERGY, FOOD SECURITY AND SUSTAINABILITY – TOWARDS AN INTERNATIONAL FRAMEWORK

FAO (2008) Background document for the HLC

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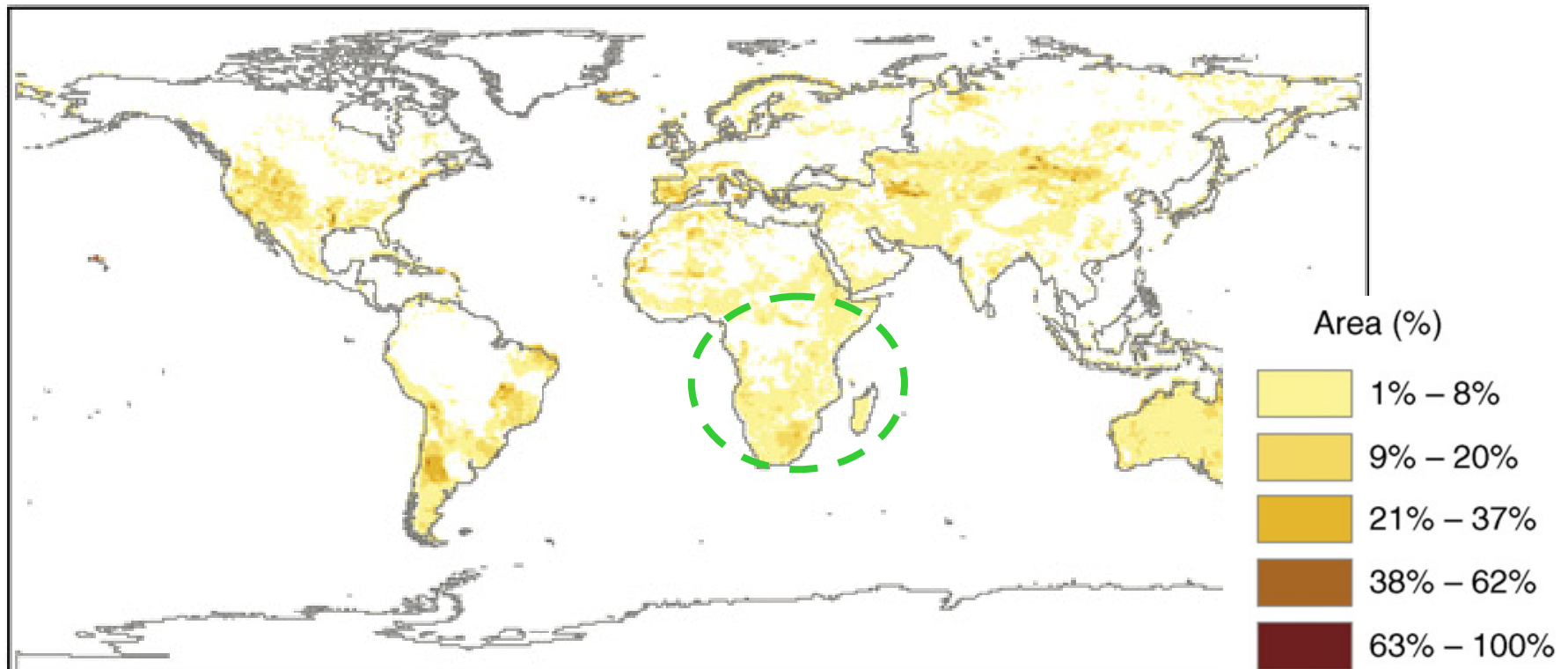
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Abandoned Land

Estimation of abandoned land (crops and pasture) based on time series from 1700-2000

→ Global abandoned land area of 386 Mha ($\pm 50\%$)

→ Potential bioenergy production of 27 EJ (about 5% of today's global primary consumption)



Source: Field et al. 2007

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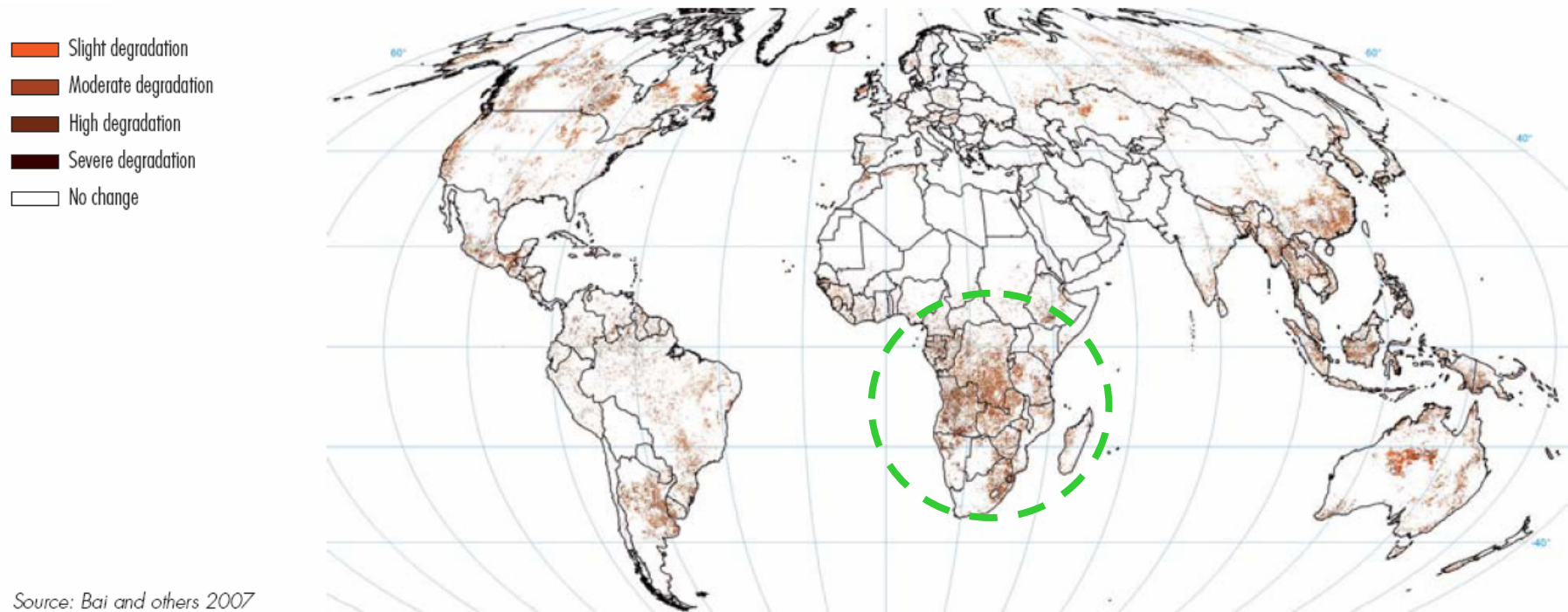
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Degraded Land Mapping

FAO's Land Degradation Assessment in Drylands (LADA):

Identification of “black spots” of land degradation by trends analysis

Global land degradation using biomass production and rain-use efficiency trends between 1981–2003



Source: Bai and others 2007

Bottom-up: Identify “unused” land

- Regional identification and quantification of land cover and land use in partner countries (BR, CN, IN, TZ, ZA)
- Information on applicable plants/cultivation schemes for biomass on degraded lands for typical model cases
- Verification of global data sets
- Research partners:
 - Africa - University of Zulu-Nataal (ZA); FAO BEFS and BIAS in Tanzania) → others (MZ, SADC)?
 - Asia (TERI India, GTZ-/CIM projects in India and China)
 - Latin America (e.g., CENBIO/EMPREPA in Brazil)

- **HNV/HCV criteria + indicators for degraded land mapping → Joint Workshop June 30- July 1, 2008 at UNEP, Paris**
- **Pilot project(s) on mapping and screening → FAO-BIAS (Tanzania); German project with partners for “bottom-up” work**
- **Consider social issues and (local) stakeholder involvement (CURES, RSB...)**
- **Develop monitoring schemes (remote sensing via satellites)**

Conclusions

- Few developing countries deal with life-cycle GHG emissions, biodiversity + social issues (BR, MZ...)
- Need to **actively support** countries in dealing with sustainability standards + certification; role FAO, UNEP, GBEP Task Force + donors
- Social issues (land rights, food security...) need **more attention** + mandatory reporting!
- African countries should become **active in global dialogue** and **prepare national** implementation
- Benefit from examples e.g., in Brazil („Social Biodiesel“) ?

More Information

Sustainability Standards for Bioenergy



Sustainable Bioenergy Cropping Systems for the Mediterranean



2006

EUR

How much bioenergy can Europe produce without harming the environment?

EEA Report | No 7/2006



European Environment Agency 

www.oeko.de/service/bio

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