



SEA for Sustainable Bioenergy Production

IAIA SEA September 21-23 2011 Prague, Czech Republic



Dr Rocio A Diaz Chavez Centre for Environmental Policy Imperial College London (r.diaz-chavez@imperial.ac.uk)



Overview

- Background
- Feedstocks
- Sustainability considerations in Africa
- Putting the pieces together



Drivers for bioenergy

Developed countries : GHG reduction & Energy security

Developing countries

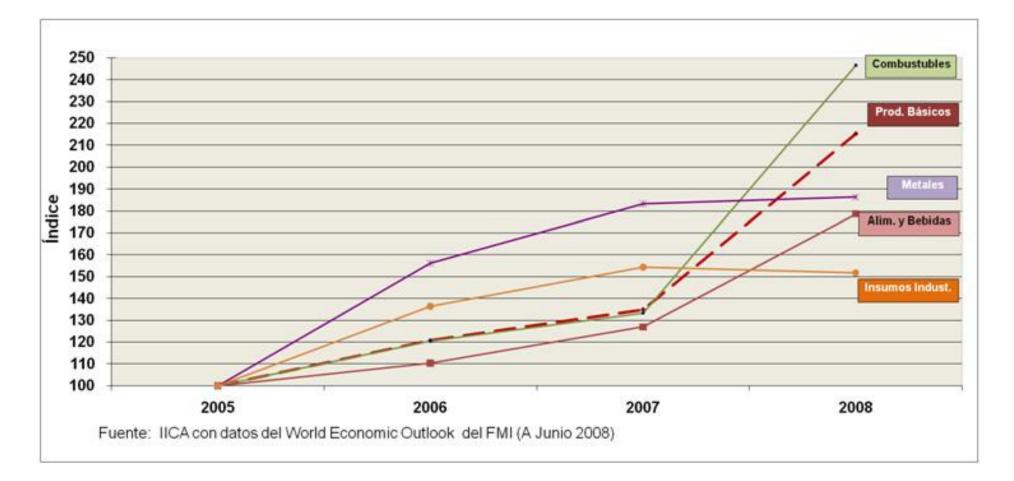
- Energy security
- Rural development
- Market opportunity
- Additional income
- Savings in imports of fossil fuels

- Land use and ownership
- Production systems and feedstocks promoted
- Economies of scale
- Value chains;
- Services and infrastructure needed

Causes of increased prices of food 2008 (IFPRI, 2009)

- 1. Increment between production and demand food products;
- 2. Biofuels production;
- 3. Low investment in agriculture technology and investment;
- 4. Market policies ;
- 5. Low production of crops due to climatic issues;
- 6. High costs of agriculture inputs and transport;
- 7. Population growth

• Price of oil



Main crops for producing "first generation" biofuels

- sugar cane
- sweet sorghum
 - cassava
 - jatropha
 - maize
 - soybean
 - sunflower
 - palm oil





- castor oil
- cotton oil
- peanut oil
- pongamia

Land issues in Africa

- Land tenure (main impacts at local level)
- Land deals :Since 2006, 15m to 20m hectares of farmland in poor countries have been subject to transactions or talks involving foreigners
- ... in deals worth
- \$20 billion-\$30 billion (IFPRI, 2009)
- •Not all of them have resulted in

projects

(Wilson, 2009)

Land grabbing, 2010

Sierra Leone Swiss based Addax Bioenergy obtains 26,000 ha for sugarcane.

Ghana Italian-based Agroils obtains 105,000 ha, UK company Jatropha Africa acquires 120,000 ha, ScanFuel (Norway) cultivates 10,000 hectares and has contracts for ca. 400,000 ha, Galten (Israel) acquires 100,000 ha.

Benin Proposed 300,000 -400,000 ha of wetlands to be converted for oil palm.

Nigeria Land acquisitions by the state using foreign capital and expertise. Over 100,000 ha grabbed.

> Cameroon Cameroon/ French company expanding palm oil plantations including 60year lease on 58,000 ha.

Angola 500,000 ha of land designated for agrofuels. Angolian, Brazilian, Spanish and South African companies. Congo Chinese company requests 1 million ha. Italian energy corporation ENI plans paim oil plantation of 70,000 ha. (Ta

Jatropha. UK-based Sun Biofuels operates 5,000 ha, Acazis AG (German) leases 56,000 ha with concessions for another 200,000 ha.

Ethiopia 700,000 ha earmarked for sugar cane, 23 million ha suitable for

Kenya Japanese, Belgian and Canadian companies plan to up to 500,000 ha.

Tanzania 1,000 rice farmers forced off their land to make way for sugarcane.

Mozambique Investors aim for 4.8 million ha. Over 183,000ha currently allocated to jatropha. Companies: UK, Italy, Germany, Portugal, Canada and Ukraine.

(Tatedo).

Swaziland UK based D1 Oils suspends expansion of Jatropha despite promotion by rockstar Bob Geldof.

Lack of investment in agriculture in Africa

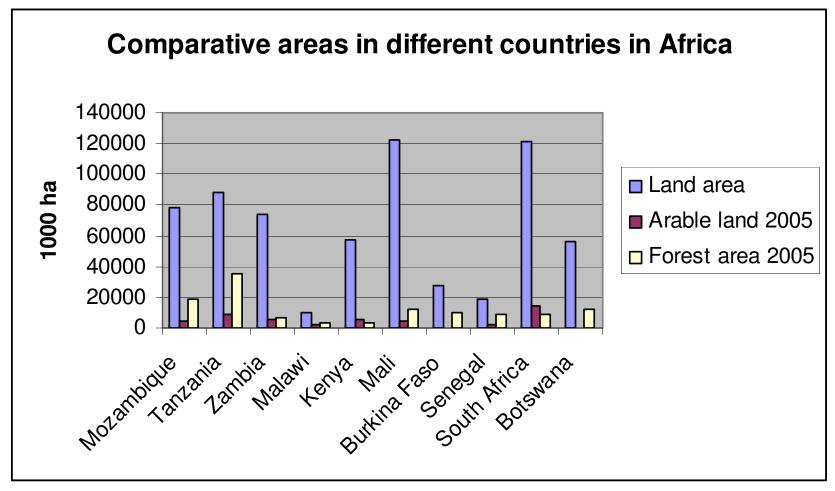
<u>1980s</u>: 17% of ODA 30% of World Bank lending

Mid 2000s: 4% of ODA 7% of World Bank lending

(Wilson, 2009)

Kathy Sierra, World Bank, Oct 2009

Land availability

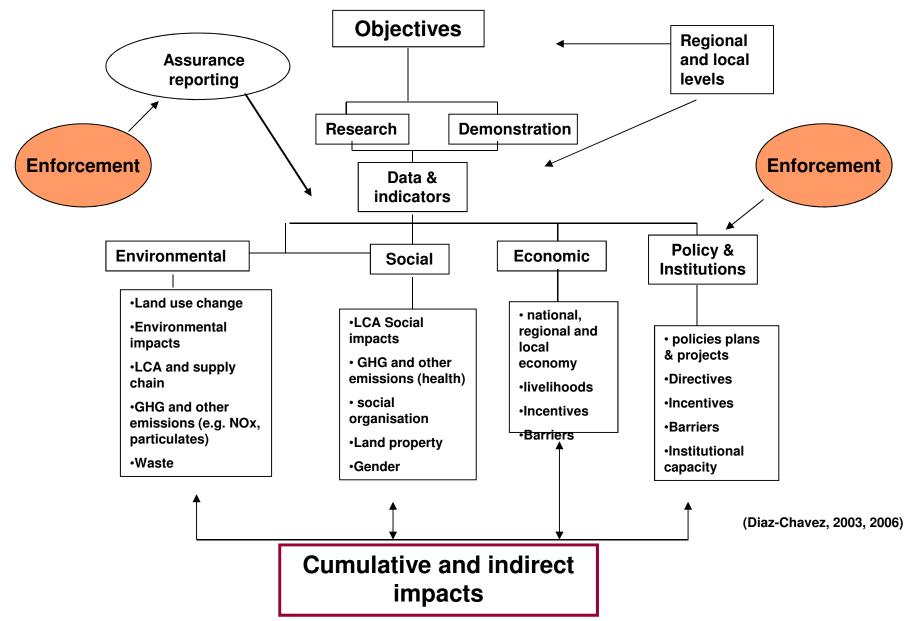


(FAOSTAT, 2009)

RED

- Renewable Energy Directive on the promotion of energy from renewable sources (2009/28/EC) sets targets to reduce GHG emissions by 20%, to establish a 20% share for renewable energy, and to improve energy efficiency by 20%, to be achieved by 2020 (20-20-20).
- set out in Article 17 (2) to (5), soil, water and air protection, the restoration of degraded land, the avoidance of excessive water consumption relevant information"
- GHG emissions, biodiversity, carbon stocks, soil, air, water, restoration of degraded land, land rights, and labour conditions (ILO) not affect food security conservation areas

FRAMEWORK



Some initiatives on standards

- Renewable Transport Fuel Obligation (UK) (2006)
- Cramer Report (2006) now NT8081
- Roundtable on Sustainable Palm Oil (RSPO)
- Roundtable on Responsible Soy (RTRS)
- Roundtable on Sustainable Biofuels (RSB)
- Global Bioenergy Partnership (GBEP)
- CEN, ISO
- Others no standards: GBEP

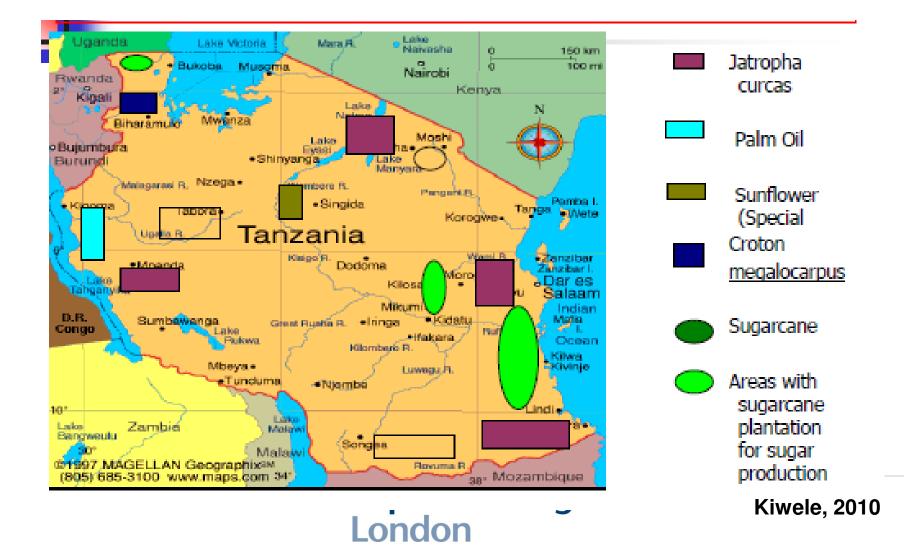
FARA report

- To look for evidences of food to bioenergy conversion (if any) or early indications of this in the future.
- 2. To review the role of policies and institutions bioenergy development
- 3. To identify stakeholders for bionergy production and their role in this activity.



West Africa: Senegal and Mali East Africa: Kenya and Tanzania Southern Africa: Mozambique and Zambia Review of Ghana

Areas under biofuel development in Tanzania

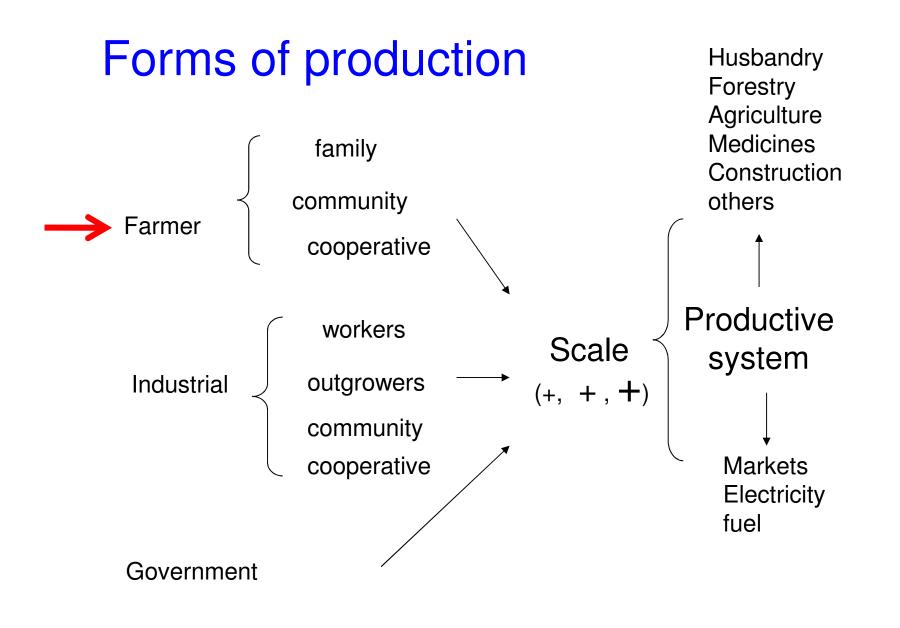


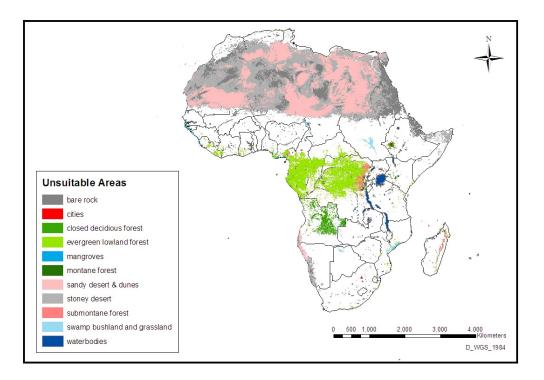
Mapping stakeholders

| National authorities, regulations | Regional/Local authorities, regulations | |
|---|---|--|
| Stakeholders productive level small scale regulations, including NGOs, farmers, outgrowers | Stakeholders Industry level, Local producers, including NGOs, farmers hired | Key: Direct links () Indirect links () Needed links (|

Policies and institutions

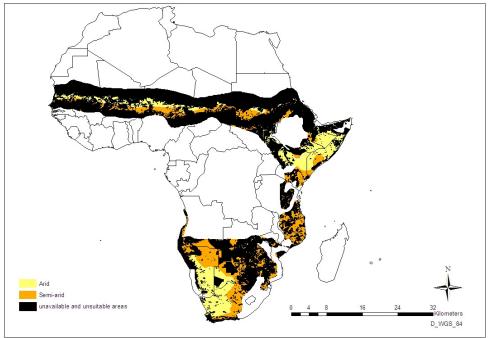
- Regional efforts for policy in Southern Africa through SADC with Probec the *Programme for Basic Energy and Conservation* (ProBEC) with GTZ
- ECOWAS, ECCAS, COMESA
- International aid organisations collaborating with different countries in Africa (GTZ in Mozambique, SIDA Swedish Agency in Tanzania, CIRAD - Centre de Coopération Internationale en Recherche Agronomique pour le Dévelopment- in Burkina Faso)
- South African Biofuel Association
- The Biofuels Association of Zambia
- Energy Strategy Botswana





COMPETE

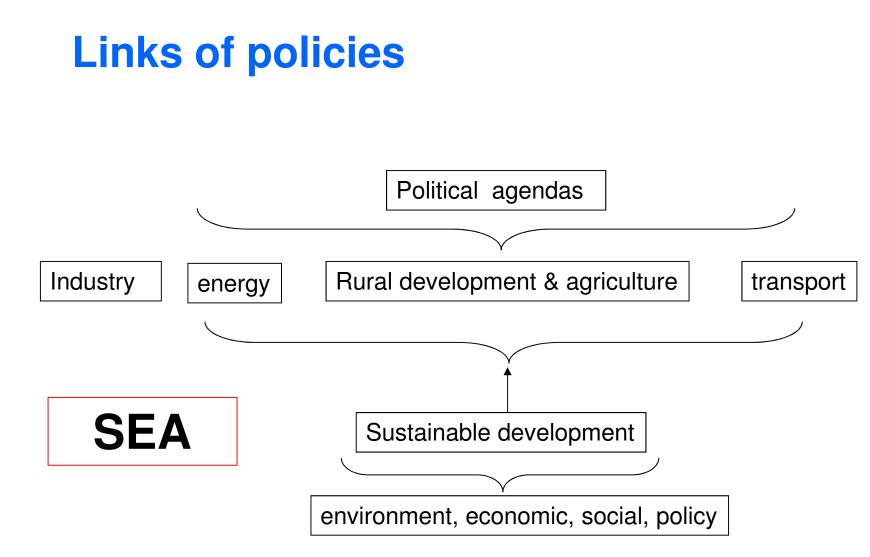
Land covers unsuitable for bioenergy crops in Africa



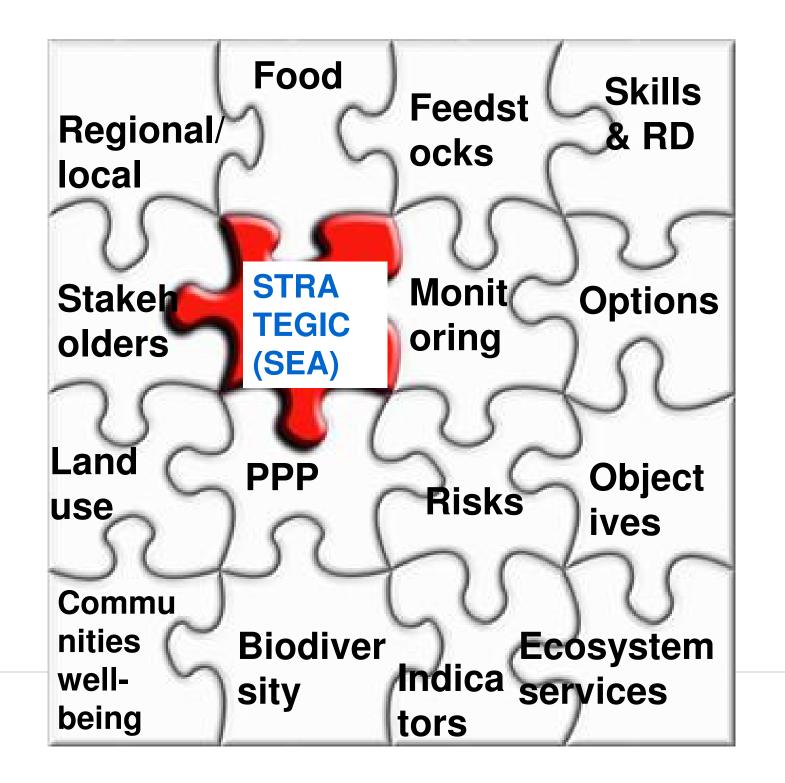
Areas that are unsuitable and /or unavailable for bioenergy crops in sub-Sahara's arid and semi-arid regions

(Watson, 2010)

College



(Diaz-Chavez, 2006)



Integrating elements

- Individual isolated studies based on sustainability assessment
- SEA elements:
 - triggers, objectives,
 - driver forces
 - stakeholders,
 - data
 - individual plans
- Example of Tanzania

----> SEA





