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Sustainability of Bioenergy

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- Context
- Opportunities & Risks
- Tools for Sustainability

Context

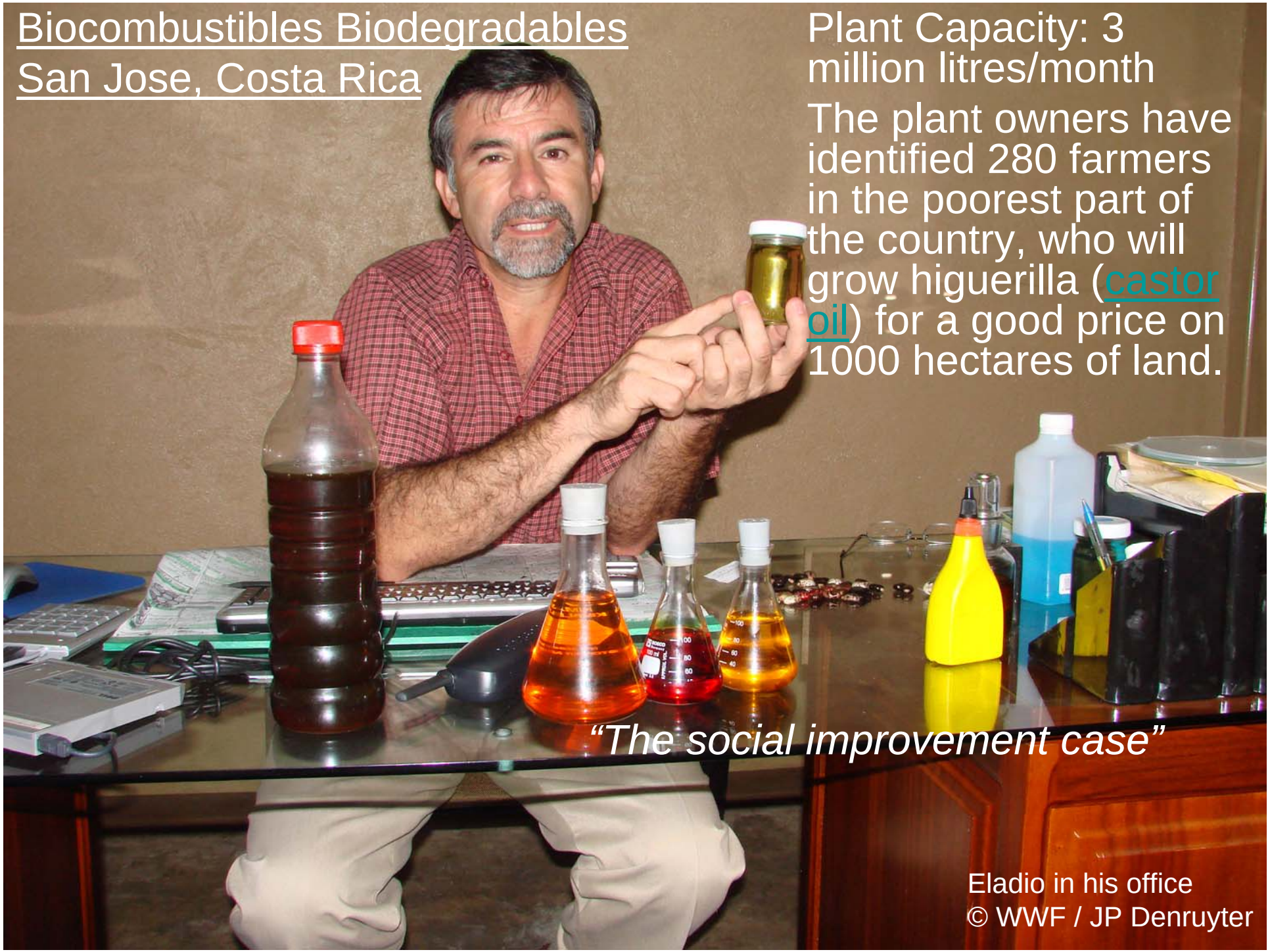
- Bioenergy, biomass, biofuels?
- Various drivers for bioenergy
- Fast growth: Bioenergy targets in > 50 countries worldwide
- Several discussions back alive
  - Agriculture Subsidies, Tariffs, Free Trade Agreements...
  - Expansion of “Sensitive” Commodities (palm oil, soy...)
- Globally around 46 EJ of bioenergy (IEA, 2006)
- Traditional solid biomass (fuelwood, dung, charcoal, straw...): 35 EJ and over ½ of global wood consumption!

Land cleared for soy, around Brazilia
© WWF / László Máthé

Positive impacts include

- GHG savings
- Contribution to employment & renewable energy strategies
- Rural Development
- Replacing inefficient biomass with modern biomass

Fish Waste Biodiesel in Honduras
© WWF / JP Denruyter


Biocombustibles Biodegradables
San Jose, Costa Rica
Plant Capacity: 3 million litres/month
The plant owners have identified 280 farmers in the poorest part of the country, who will grow higuerilla (castor oil) for a good price on 1000 hectares of land.
"The social improvement case"
Eladio in his office
© WWF / JP Denruyter

- Chop down invasive Amorpha in Tisza floodplains
- Use for green power production in AES power plant
- Replanting native floodplain forest species

men chopping down Amorpha in the Tisza floodplains
© WWF / Csaba Vaszko

“The waste products case”

Rural Development: Mali
Folkecenter



These are the latest images from MFC's Jatropha plantations north of Bamako. The plants are just 2 years old but already well established and ready to give the first significant harvest of seeds, which is great news for the local population with whom we have been working. No significant maintenance has been performed on the plants, nor have any harmful pesticides or fertilisers. The soil on which the Jatropha was planted was very sandy in some places as can be seen from the pictures above.

"The small-holders case"





Palcasa, biogas in Honduras

“Another waste products case”

Negative Impacts include

Increased bioenergy use = Intensification of agriculture and forestry on current used arable land AND expansion on new land

This can lead to various impacts such as

- Increased water use up to non renewable levels – e.g. Thirsty crops in South-Africa.
- Degradation of HCV areas – e.g. Deforestation due to oil palm plantations in Indonesia; soy expansion in Brazilian Cerrado
- Displacement of food, people...

NGO perspectives: risks vs opportunities: *Do benefits outweigh the risks?*
Illustration of complexity: the palm oil case





Palm oil

- Increase in demand independently of biodiesel developments
- Added pressure by increase in biodiesel demand: RISK
- Degraded land is available (e.g. deforested areas for timber) but companies prefer to develop oil palm in forested land, to sell the timber first (many times without exploiting the land for oil palm)
- Increased efficiency in plantations is possible (currently ~4 tons oil/ha)
- How do we ensure that palm is grown on idle land, in an efficient way?

Palm fruits in Honduras
© WWF / JP Denruyter





Some Sustainable Ideas

- Use waste products before starting dedicated plantations
- Choose the most adapted option: biogas, biomass for heat and power, biofuels for transport?
- Use at least part of the production locally/regionally
- Ensure benefits for local communities
- Land-use planning! Don’t convert forests or other high conservation value areas; ensure food supply
- Better Management Practices/Farm Management Systems





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Sustainability Assurance

- Standards & Certification to ensure maximisation of positive impacts and minimisation of negative impacts
  - Use multi-stakeholder processes
  - Focus on key global impacts
  - Agree minimum standards
  - By means of better practices

Environment

Greenhouse gas emissions
Water use
Water pollution
Biodiversity loss
Toxicity
Soil degradation and loss





Existing tools

- Protected areas, environmental & social legislation, land use planning...
- Voluntary Commodity Initiatives such as FSC, RSPO, RTRS & Basel Criteria, BSI... are established or under development
  - principles and criteria
  - only a certain % of the market will comply
  - GHG calculation not required, as the initiatives were not developed for bioenergy

http://www.rspo.org
http://www.fsc.org
http://www.responsiblesoy.org
http://www.bettersugarcane.org/

Good start but not sufficient to ensure a sustainable development of bioenergy: we need a system that is suitable for bioenergy.

New developments for Bioenergy

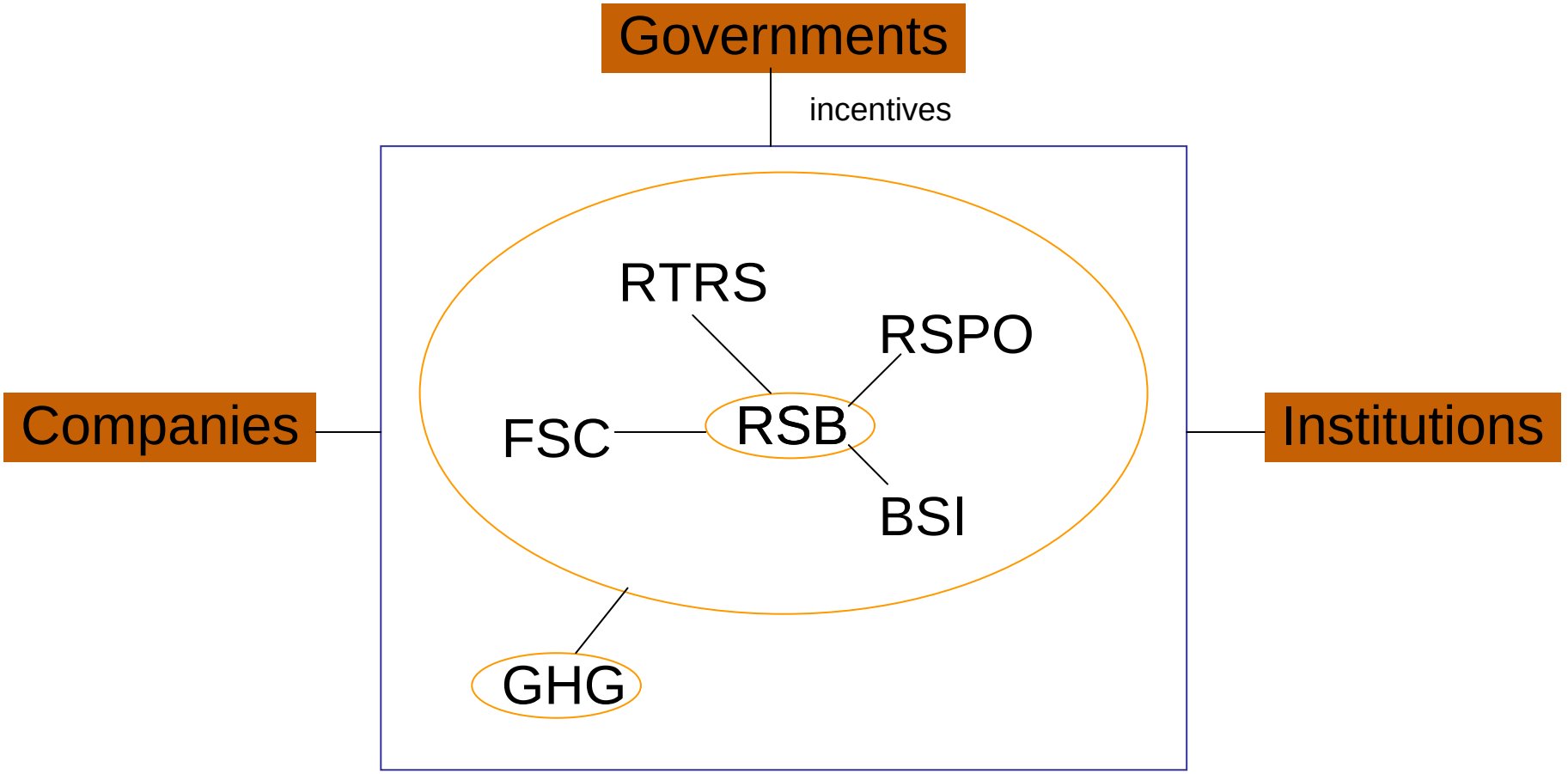
- Sustainability schemes under dvlpmt in European Union for local production and for imports! : “meta-standard” system + GHG calculation
  - Lists important issues on environmental and social level
  - Benchmark of existing standards
  - Certification by recognised existing standards is accepted
  - EU Incentives only for certified biofuels
- “Roundtable on Sustainable Biofuels” (RSB) is preparing a global standard for biofuels
  - Mainly inspired by existing standards
  - All stakeholders are welcome to participate in the process
  - Draft standard by July 2008

http://www.bioenergywiki.net/index.php/Roundtable_on_Sustainable_Biofuels





International Meta-Standard Strategy








Limits to Standards & Certification

- Displacement (indirect effects) & Idle Land
  - Certification doesn't necessarily prevent deforestation
  - How can we ensure that plantations are developed on "idle land"?
- Maximum capacity for sustainable production?
- How far can smallholders participate in this market? Need for tools such as group certification





In Africa...

- Small scale community based projects for local use: great!
- Large scale production: need for sustainability standards
  - In order to obtain incentives on the EU market, African countries will need to comply with some sustainability criteria.
  - Need for bottom up Farm Management Systems, specific to local crops and circumstances: can be linked to global initiatives such as RSB
  - Careful assessment of benefits of large scale bioenergy plantations for country and local communities: standards will help to protect local communities & the environment.





Thank you!

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Rabbit & Jatropha in Guatemala