

Pro-poor Investments in Biofuels: the case of jatropha

Presentation IEA Bioenergy Group

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Opportunities for IEA Bioenergy Group?**

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Jatropha is an oil-bearing tree crop of the tropics



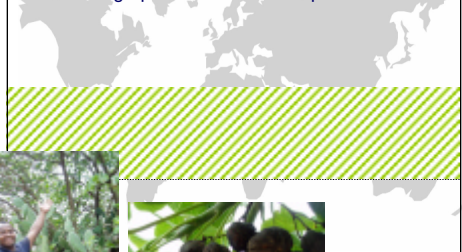
Jatropha as a recently (re-)discovered energy plant

There are high expectations with regard to jatropha

Properties

- Drought-resistant plant (of up to 50 years age)
- Grows on marginal soils which are not suited for food production
- Benefits from high insulation in tropical countries (-> high yields per hectare)
- Not capital intense (generates income in disadvantaged regions)

Jatropha Belt
Main Geographical Areas of Jatropha Curcas



Market development for commercial investments

After 20 years of small-scale community based jatropha projects, commercial investments have started to take place and increase exponentially.

First round (2003/04)

- DaimlerChrysler – TERI
- D1 Oils Plc



Good PR, little success on the ground

Second round (2006/07)

- BP – D1 Oils
- Sunbiofuel Ltd.
- GEM Madagascar
- Indian and Chinese Investors



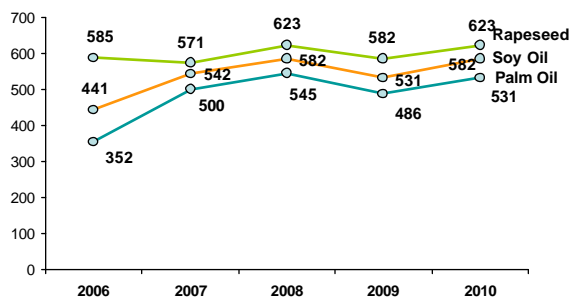
Strategic investments, to be taken seriously

Opportunity

Jatropha is a competitive energy crop

- Low production costs (no need for tax breaks)
- Jatropha oil as substitute for diesel (world market price)
- EU inability to meet demand
- Raising fuel consumption in countries of origin
- Doubts on sustainability of alternative energy crops
- Further revenue lines to be explored (biomass – press cake, carbon credits etc.)

Plant Oil Price Projection 2006-2010 [EUR/t]



Risks

Jatropha has never been used on a commercially scale (beyond local soap production); agronomic research has just started.

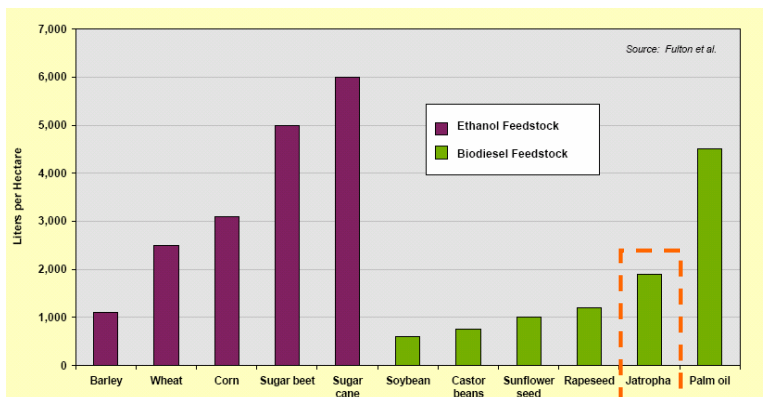
- **Little knowledge on agronomy** of jatropha (yields!)
- **High-risk countries** (politics, legal framework)
- **Socio-economics** (embedding in local context)
- **Labour intense** (harvesting!)
- Sales of jatropha oil: lack of **transport infrastructure**; market has to be developed for **direct sales** of pure plant oil or biodiesel refineries to be developed (with its own risks)

Further impediments to finance jatropha projects:

- **Venture Capital Funds** focus on clean tech, not agriculture where as Loan Funds seek reliable returns, no early stage investments
- **Large-scale projects** lack track record; the targeted scalability often is not feasible; small projects do not meet financial expectations

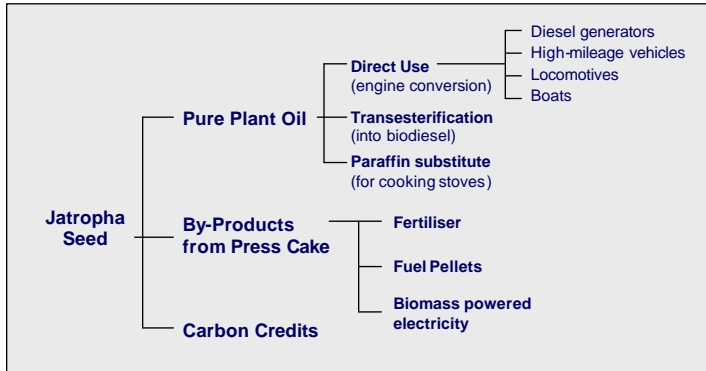
Key questions: Yields and Oil Quality

Under good conditions, jatropha can achieve yields comparable (or higher) than rapeseed, with similar properties.



The Jatropha Value Chain

The direct use of pure plant oil offers a wide range of decentral market opportunities; further opportunities with regard to efficient energy use of jatropha biomass to be developed.



Social Investments in Emerging Markets

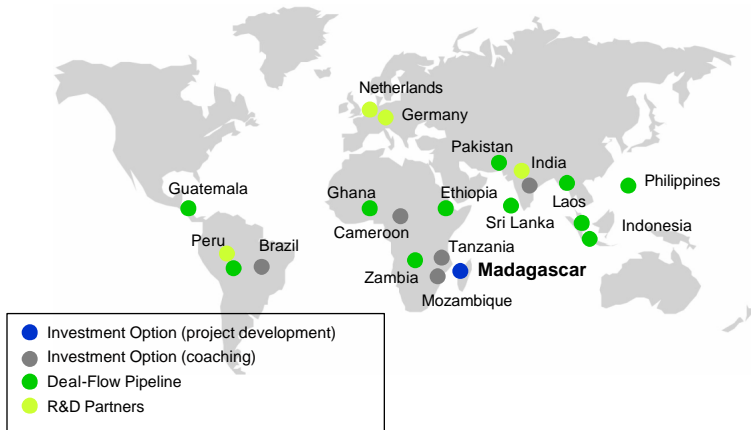
GEXSI assists social entrepreneurs and social purpose businesses in developing countries to move „from aid to market“ by

- Providing technical expertise in business planning and investment structuring
- Locating financing that meets the needs of the enterprise in accordance with its business development stage – arranging for below-market or full-fledged commercial investments
- Facilitating networking, mentorship and exchanges of information and expertise



GEXSI Jatropa Network

We currently work with 10-15 jatropa entrepreneurs worldwide, exchanging know how, brokering finance and initiating joint research activities.



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Example 1: JSL Analavory Biofuels

JSL Analavory Biofuels SARL

- Joint project development Jointly by JSL and GEXSI
- 300 ha pilot (700,000 trees) implemented in 2006
- Social Investment with development and ecological objectives
- Starting point for commercial project development
- Expansion plans 22,500 ha in three locations plus local outgrower schemes

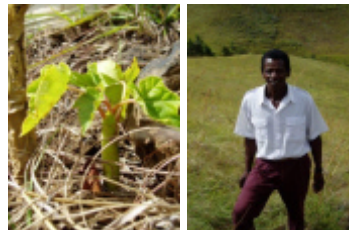
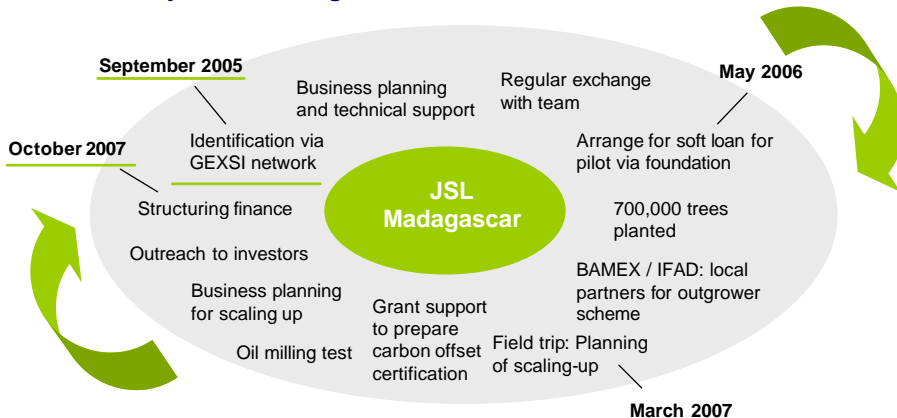


Chart: Analavory 300 ha pilot – 2 month old plant, local plantation manager, hilly landscape endangered by soil erosion

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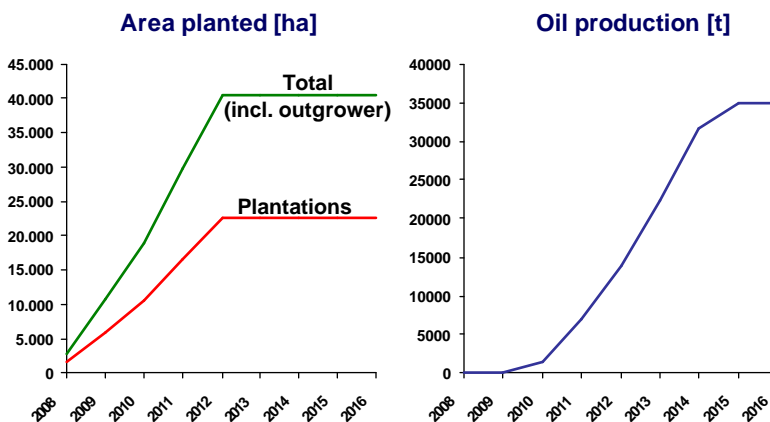
GEXSI: Building a strong framework for investments

Biofuel Project JSL Madagascar: Transition from aid to market



Targeted production: 35.000 t by the year 2015

JSL plans to market 40% of the total production overseas (Europe), the remaining 60% on the domestic market (Madagascar)



Example 2: safiAnzania - Tanzania

Generating additional income for smallholder farmers by partnering with Tanzania's largest smallholder farmer association.

- Target group: 50,000 smallholders; project has started with 2,000 families
- 1,000 Jatropha trees per family, to be planted on marginal soils (e.g. as hedges)
- Advanced purchase agreement
- Additional revenue for farmers
- Processing and distribution by safiAnzania (e.g. to fuel cooking stoves in Dar-es-Salaam)



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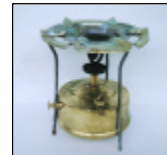
Investing for maximum development impact

Production



Distribution

- Substitution of Charcoal stoves
- No residuals (indoor health)
- Protection of forests



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Recommendation 1: Research

IEA Bioenergy Group: Opportunity to further explore the potential of jatropha by initiating or supporting research:

- **Jatropha Learning Network:** Monitor field trials, strengthen links to international research centers (high yielding/resistant seeds, organizational models, cultivation methods etc.)
- **Diversification:** Assess potential and suitable use of alternative energy crops: drought resistant, tree crops (Croton megalocarpus, pongamia etc.)
- **Energy production:** Identify most suitable options for efficient energy production (oil, press cake)
- **Integrated local energy systems:** Replicable pilots to fight energy poverty

Recommendation 2: Policy-Making

IEA Bioenergy Group: Opportunity to enhance pro-poor commercial investments in jatropha

- **Join the Multi-Stakeholder Process** on sustainable Jatropha which has been initiated by BioX in September 2007 (under the auspices of the Dutch government)
- Support initiatives which address **philanthropic investors** in financing pro-poor jatropha projects (e.g. philanthropy circles, foundations, development banks)
- Advise governments on suitable bioenergy **policy framework** in the developing world (e.g. tax schemes, biofuel standards etc.)



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