Attracting Investment

Investment Trends and Perspectives on Jatropha

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Euro-Latin Capital
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EURO-LATIN CAPITAL

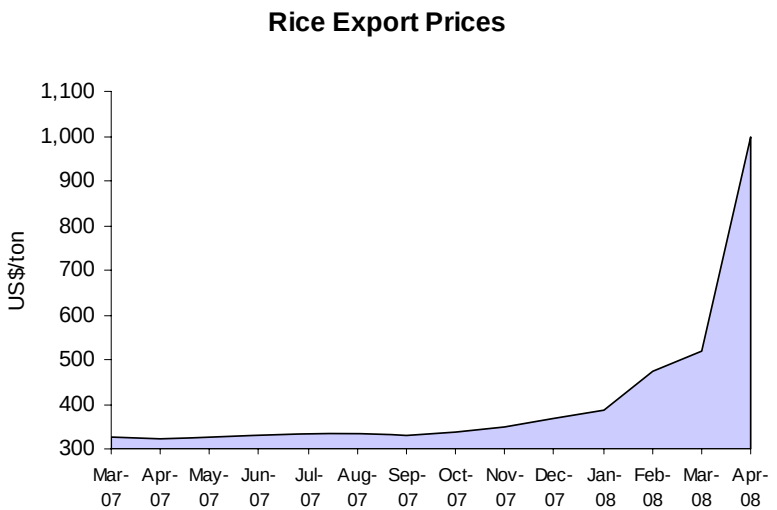
Today's agenda

- **Risk Appetite for Biofuels**
- **Investment Trends and perspective on jatropha**
- **Selection Criteria and characteristics of successful operation**

It's bad !

- **Financial, Economic, Mortgage and Housing crisis**

- **Food Crisis**



The culprit: Biofuels is an easy target – reality different

Food inflation

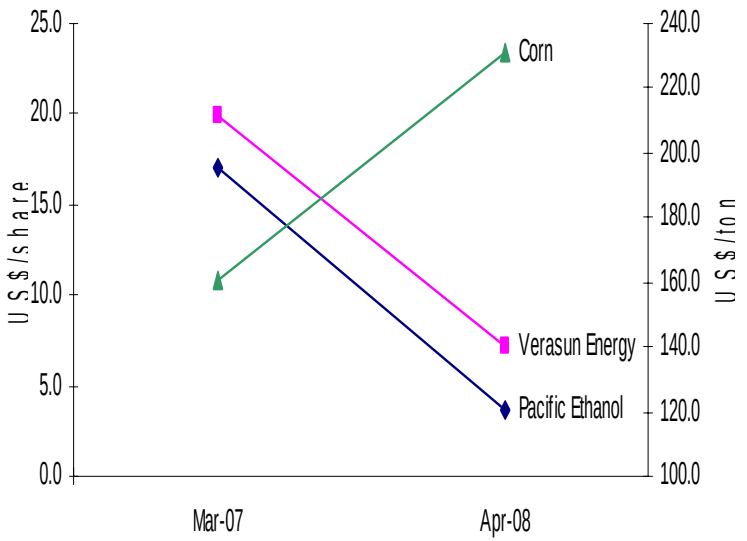
- Reasons for food price inflation;
  - High oil price impact food production costs (energy, fertilizers)
  - Strong increase in food demand, esp. China and India
  - Weather/crop-failures, i.e. climate change itself
  - US Dollar weakness, etc.
- Biofuels represent <1% of the global available arable land
- Very small % of biomass used for biofuels, e.g.
  - 18-20% of Soybean biomass is oil, so,
  - If biofuels share of global soybean oil is 10%;
  - <2 % of Soybean biomass used for biodiesel
- Reality for corn and rape worse, but grossly exaggerated

"The tail wagging the dog?"

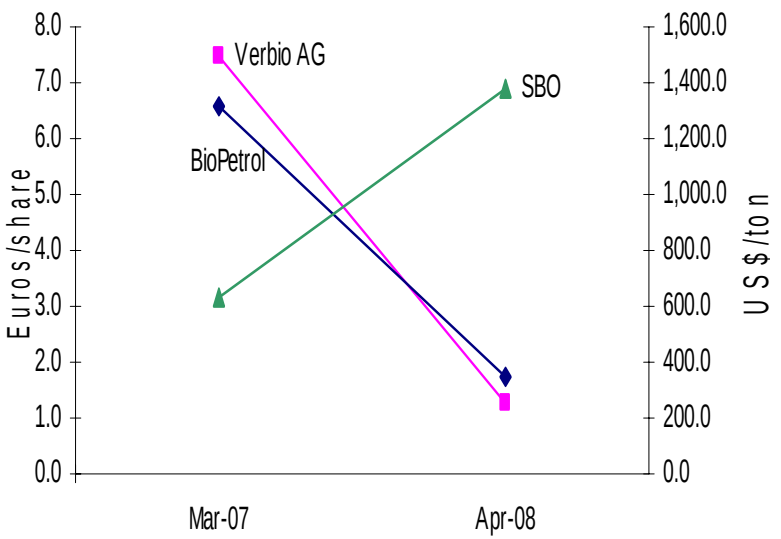
Biofuels feedstock crisis

But the food price inflation did provoke a biofuels crisis…

Comparison between Corn and corn-based Ethanol stocks prices



Comparison between SBO and Biodiesel stocks prices



… because we are using the wrong feedstocks

Poor practices compromised industry perception

12-18 months ago

- **Biofuels – "saving the planet" (UN)**
  - **reduce CO2 emissions**
  - **reduce energy dependence on hostile regimes**
  - **providing rural jobs**
  - **huge IRR expectations**

1+ year later

- **Biofuels – "crime to humanity" (UN)**
  - **people die of hunger**
  - **pay more taxes (biofuel subsidies)**
  - **plants close down**
  - **accused of polluting more than oil we replace**

"The wheels came off!"

How to deal with this reality ⇒ Sustainability focus

Good or bad news for jatropha?

- YES – the oil does not compete with food
- NO – if it competes with grains for land
- CHALLENGE: get meal to provide food

"The world is dying of hunger – and we want to plant… poison" ?

The totality needs to be good

- Maximize use of all the biomass
- Generate crops between rows
- Inter-cropping & silviculture
- Optimize food-value of by-products

… to preserve the support for jatropha

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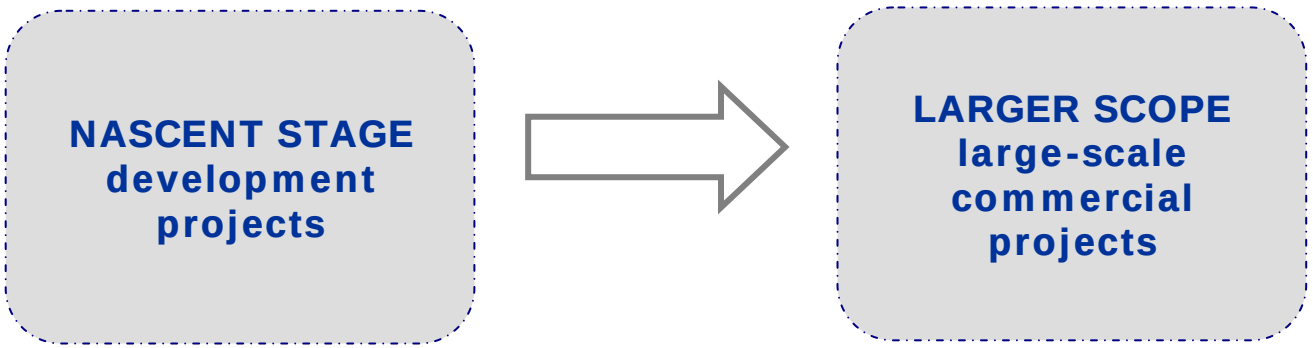
Favorable dynamics for jatropha

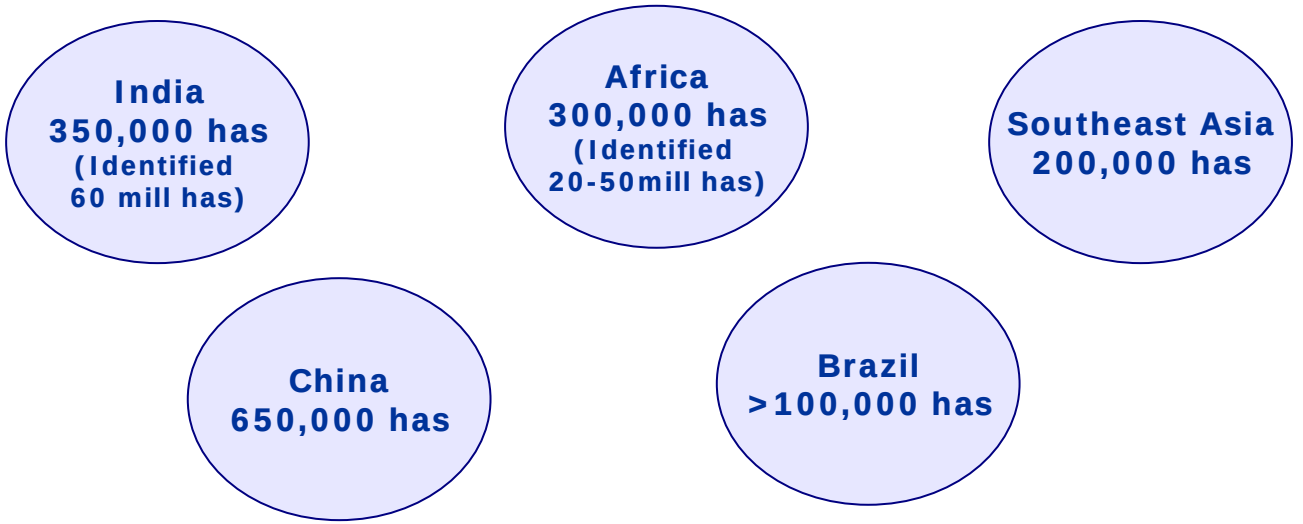
- **Non-food biofuel feedstocks on marginal land have sustainability advantages…**
  …. but must be balanced with limited use of water and fertilizer
- **Opportunities in the production of lower cost and alternative or high-yield feedstock**
  …. but must meet sustainability criteria..
- **Expansion of commercial-scale jatropha production from India into Africa, Southeast Asia and Latin America**
- **Participation by governments and energy majors in the cultivation and production of jatropha**
- **Jatropha-based projects are being developed as dual purpose entities-**
  - **for government programs, and**
  - **for addressing rising global biofuels demand**

Strong support for jatropha plantations

- For economic development
- To alleviate concerns among larger biodiesel consumers worldwide related to:
  - Elevated feedstock cost
  - Security of feedstock supply
  - Food vs. fuel debate



World Planted Area – Current plans



Huge growth in jatropha plantations, but;

- ***How much oil is actually being produced? Where?***
- ***At what total cost?***
- ***Can the by-products provide sufficient revenues?***
- ***Who can actually supply and at what price?***

Source: Thai jatropha

The future and growth prospects

Jatropha will play significant role as biofuel feedstock if;

- **Planting is done in a sustainable manner with minimal resource use (land, water, fertilizer)**
- **Harvest problems are solved, e.g. cost & toxicity issues**
- **By-products are utilized for animal feed to keep oil costs competitive**
- **Projects are actually built and proven at a reasonable cost**
- **Logistics and transportation issues are resolved**
- **Sufficient scale can be achieved**

Sustainable projects will attract capital

Biofuels investments will be channeled

1) Upstream
2) To sustainable feedstock sources
3) To second generation projects

If you meet common-sense objectives:

1) Don't use prime agricultural land for fuel crops that compete with food
2) Secure supply of low-cost feedstock from sustainable sources
3) Maximize life-cycle Co2 reductions
4) Pursue transport efficiency in feedstock sourcing and product delivery

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Key selection criteria

Critical

LOGISTICS

- Location
- Distance to crush plant, biodiesel plant and market for oil and meal
- Rail, road and shipping infrastructure

PRODUCTIVITY / EFFICIENCY

- Soil fertility
- Water access, irrigation
- Species selection / seed availability
- Crush-and harvest technology
- Intercropping and silviculture
- Carbon credits prospects

LAND SECURITY

- Legal and permit status
- Long term lease and rent contracts
- Political and social dynamics / support

SUSTAINABILITY AND SOCIAL ISSUES

Key selection criteria

- First consideration in looking at possible plantations
  - Access to water rights - feasibility for irrigation
  - Permit requirements
  - Studies necessary to undertake planting
- Cost of land / rent, yield expectations and location / logistics
- Species selection
  - Seed Availability
  - Fertilization
  - Control of disease and pests
- Intercropping and silviculture
  - Secondary crops effects
- Land status relative to earning carbon credits for tree planting
- Harvest plan, cost and feasibility of mechanization
  - Value of labor in the region
  - Geographic contours of the land
  - Type of equipment
- Crush technology and cost

Must optimize usage of biomass

Fruit Casings	**Can be shredded in the fields as mulch or alternatively used as biomass for electricity or other biofuel production**
Seed Covers	**High calorific value. Source of energy to produce steam or as biomass for electric plants**
Meal	**Organic fertilizer, but this has low value. High protein content; if detoxified can be used for aquaculture or animal feed**
Oil	**Produce fuel locally or export to large biodiesel producers (logistics key)**

Identify markets for the entire biomass

Investors want to see maximized returns and minimized waste

OPTIMIZATION IS CRITICAL TO ECONOMIC SUSTAINABILITY

Conclusions

- **Jatropha can be the "future biofuels feedstock" (Goldman Sachs)**

- **The main challenges are**
  - **a) logistics,**
  - **b) optimum usage of biomass and land area**
  - **c) achieve scale and sustainable, long term profitability**
  - **d) anticipate propaganda war and prepare answers/solutions**

- **Lacking proven economic track record and rocky road to success**

- **Talk is cheap → execute and deliver!**
  - **Investors need answers as to when you will produce, how much oil and at what all-in-cost**

⇒ **OVERCOMING THESE CHALLENGES IS ESSENTIAL TO ACHIEVE GOOD RETURNS**

⇒ **PROJECTS THAT DO WILL ATTRACT CAPITAL**