EMERGING MARKETS FDI STRATEGIES:
NEW PATHWAYS TO GREEN GROWTH

FGV, GERMANY

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BIOFUEL AS A LOW-CARBON DEVELOPMENT STRATEGY
**BIOFUEL PROJECT**

FGV was invited to be the technical advisor of Brazilian government to develop agribusiness feasibility study in the following countries:

- Dominican Republican
- Honduras
- Guatemala
- Haiti
- El Salvador
- Saint Kits and Nevis
- Guinea Conakry
- Liberia
- Senegal
- Guinea Bissau
- Mozambique
- Zambia

12 countries → 60 feasibility studies → 41 Projects pre-approved by local governments.
Technical Cooperation Agreement Between:

- **Brazil-USA** technical cooperation agreement to develop bioenergy in countries in the tropical belt

- Technical cooperation agreement between the European Union and Brazil to conduct a feasibility study to produce biofuel and food in Mozambique

**Results:** 12 countries have received the feasibility studies of bioenergy project development: ethanol, biodiesel, electricity, steam and food projects.

The projects were financed by the following entities:
Biofuels production can induce the development of **low-carbon industries** through its direct and indirect effect in economic activity.

Biofuels are also important as a direct catalyst of **regional development** through the industrial and agricultural processes involved in their production.

FGV’s project for Nacala corridor in Mozambique is a case study on how developing countries can move away from fossil fuel dependence as a strategy for regional **socioeconomic development**.
GLOBAL CONTEXT

FOSSIL FUELS ARE BECOMING LESS AND LESS ATTRACTIVE

- Growing scarcity of cheap surface oil
- Complex technologies are at new frontiers (capital and risk-intensive)
- Environmental impact of techniques like fracking (shale gas)

NEW CONCERNS

- Serious effects of climate change
- Increasing demand of energy from emerging economies
- Risk aversion and environmental concerns will block further expansion of hydro and nuclear power

AS A NOVEL STRATEGY FOCUS, A QUALITATIVE SHIFT CAN BE EXPECTED

- Technological developments and spillovers across agriculture and industry
- Biofuels crops can spread development over a wider region and be more inclusive
- Economic inclusion can pave the way for sociopolitical stability
PROJECT PHASES

Phase I (crop selection)
- STAGE I (maps)
  - Land capability
  - Agroclimate zoning
  - Economy
- STAGE II (crops selection)
  - Potential Crops
  - Possible Projects
- STAGE III (investments)
  - Social aspects
  - Economic aspects
  - Geographic aspects

Phase II (executive project)
- Regulatory benchmarks
- Tax incentives
- Projects recommended
- Infrastructure & logistics
- Technological package
- Marketing
- Production
- Financing
- Supply chain
- Energy supply
- Work organizations
- Investments in infrastructure
- Capex and Opex
- Business model

Phase III (finance project)
- Project finance & financial structure
- Road show
- Funding

Phase IV (implementation)
- Project management

Land Suitability for Biofuel Crops
Production Capability
Recommendation of Investments

Combination of all Brazilian expertise in developing sustainable bioenergy and food projects
RESULTS

**Sugarcane**
- Available area: 6680 ha
- Managed area: 3700 ha
- Production: 28,000,000 L anhydrous ethanol p.a.
- Investment required: U$72 million
- IRR: 22%
- Integrated option: up to 325 solar modules with 1MW capacity

**Cotton**
- Available area: 3,600 ha
- Managed area: 3,600 ha
- Production: fiber – 3060 t/year; oil – 1065 t/year; cake – 4695 t/year
- Investment required: U$7 million
- IRR: 18%
- Option to replicate the project for neighboring and other apt regions

**Eucalyptus and Acacia**
- Area occupied by experiment: 4ha
- Experiment to indicate more efficient spacing and more suitable basic management for commercial production of *E. camaldulensis* and *A. senegal*.

**Sunflower and Soy**
- Available area: 2554 ha
- Managed area: 2554 ha
- Production: oil – 1800 t/year; bran – 3400 t/year
- Investment required: U$5 million
- IRR: 12% (farming), 15% (industry)
- Option of replicating the project for neighboring and other apt regions
Case Study: Mozambique and Nacala Corridor
## PRO SAVANA

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<th>Objetives</th>
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<td>➢ Transfer sustainable agricultural practices and technologies to Mozambican institution</td>
<td>➢ Improve the research capacity of Mozambican institutions (support of Embrapa and Japanese International Research center for Agricultural sciences)</td>
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<td>➢ Framework to public and private investments</td>
<td>➢ Formulation of an agriculture development master plan</td>
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<td>➢ Promote food security</td>
<td>➢ Develop the capacity of National Directorate of Rural Extension to promote links between small farmers and research</td>
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<td>➢ Contribute to global food supply</td>
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ECONOMICS

- Similar biomass.
- Similar challenges.
- Vast business opportunities.

- 23 million people
- 80% lives in rural areas
- 85% out of that employed in small farming
- Low productivity
- Food importer
- 5% arable area cultivated
- Gas and hydro energy
- Strategic localization

Target market:
1° Mozambique
2° Africa
3° Asia (53% of world population)

- Volume production
- Cost production
- Job generation
- Sustainable value chain

Investments:
**Agro Industrial:** Soya bean, Corn, Rice, Cotton, Bean, Sun Flower, Fruits etc.;
**Protein:** Cattle, Chicken, Pork, etc.;
**Infrastructure:** For supporting the Project, e.g.: Port terminal for grains.
Results for agricultural zoning

- SUGARCANE
- PALM
- ELEPHANT GRASS
- COTTON
- SUNFLOWER
- SOYBEAN
- EUCALYPTUS

- CASTOR BEAN
- BEANS
- JATROPHA
- CASSAVA
- RICE
- CORN
- PEANUT
SELECTED PROJECTS

- 7 projects recommended
  - Sugar cane, elephant grass, sunflower, cotton, etc.
- 2,500 direct jobs
- Total investment of USD 1 billion
- Use of + 250,000 ha in several states
- IRR from 15% to 40%

- **Short term** – oil production targeted to increase food supply in order to reduce food deficit
- **Medium term** – part of production will be shifted to biofuel production

Ethanol plants will be designed to produce both sugar and ethanol.
VISION
To improve the life of Nacala Corridor inhabitants through regional and economic inclusive agricultural development

MISSION
To modernize agriculture to increase productivity and diversify production, including biofuels
To create jobs through agricultural investments and establishment of value chains
To promote food security

OBJECTIVES
To create a strategy for a regional development taking the natural environment and socioeconomic aspects into account, seeking a competitive and market-oriented agricultural, rural and regional development
BUSINESS MODEL FOR THE NACALA FUND

Agricultural production cluster with direct involvement of family farmers in the value chain, including production of subsistence

- Family farming
- Available for medium and large farms
- Avoid the slash and burning

Ecological Corridor:
Nacala fund will adopt the concept of ecological corridor in its investments
NACALA CORRIDOR IN NUMBERS

- Number of districts: **21**
- Total area: **107,176 km²** (14 million ha)
- Population: **4,3 million** (20% of Mozambique population)
THANK YOU!

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