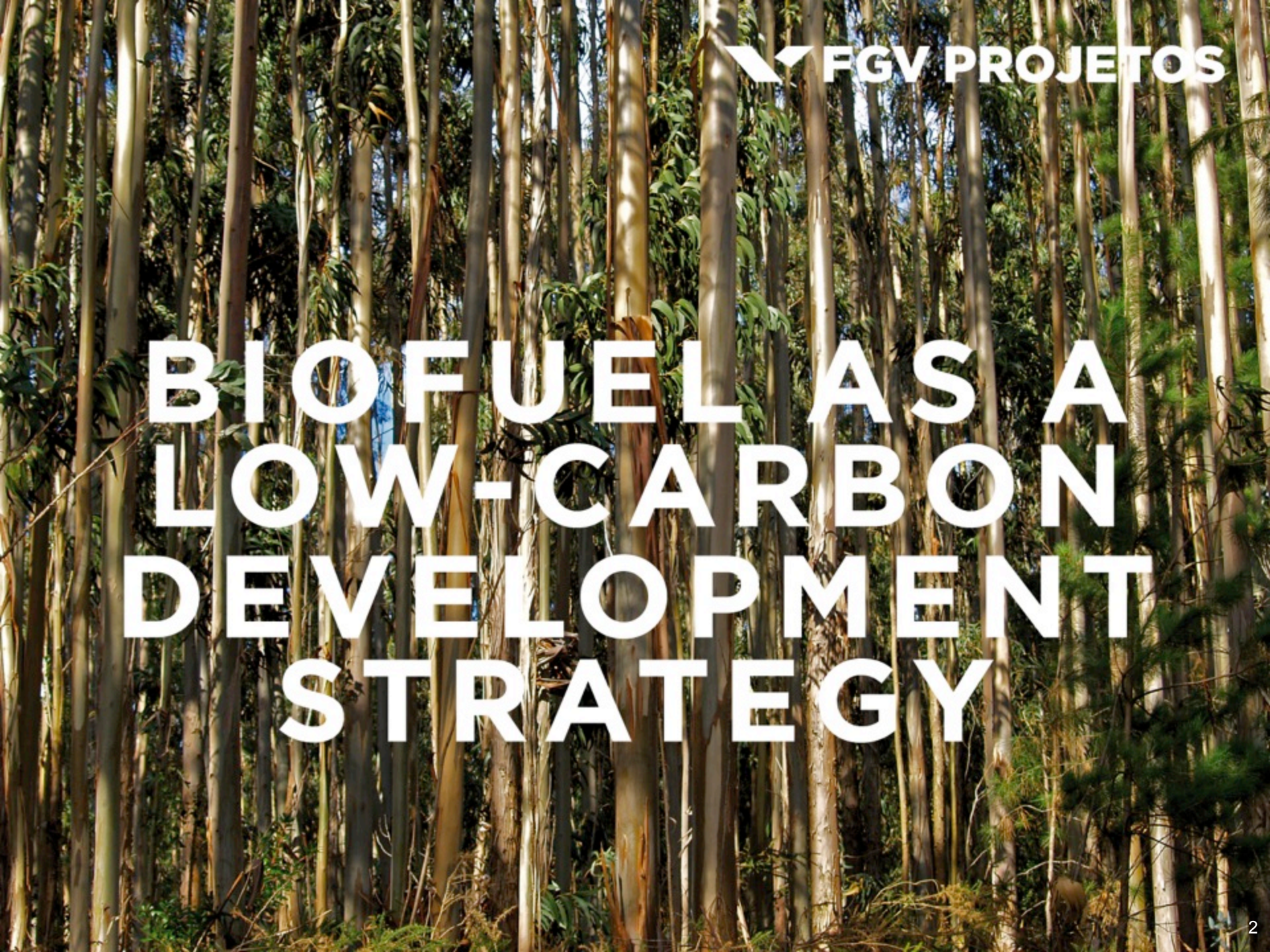
FGV PROJETOS

EMERGING MARKETS FDI STRATEGIES: NEW PATHWAYS TO GREEN GROWTH

FGV, GERMANY

Sept. 15th. 2014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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.

CONTEXT

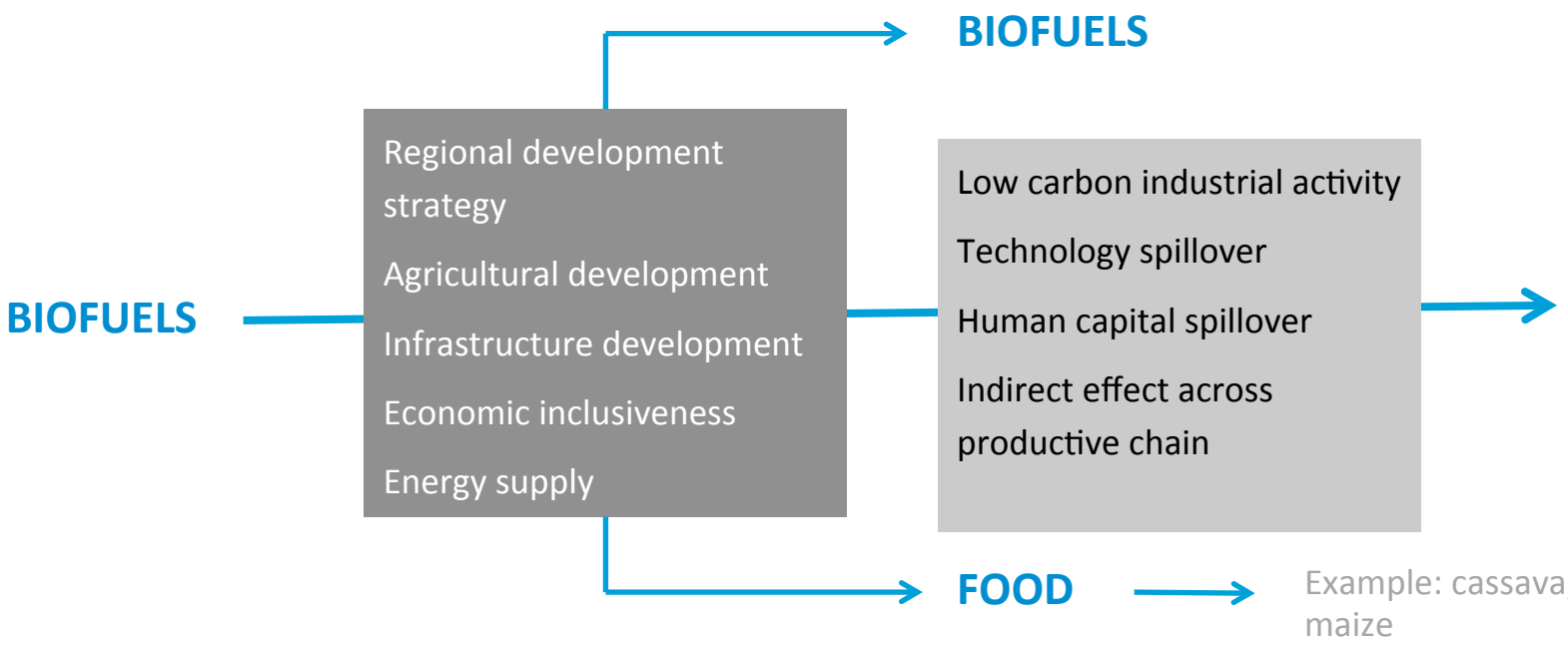
Technical Cooperation Agreement Between:

- **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:

GLOBAL CONTEXT



- 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

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FOSSIL FUELS ARE BECOMING LESS AND LESS ATRACTIVE

- 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

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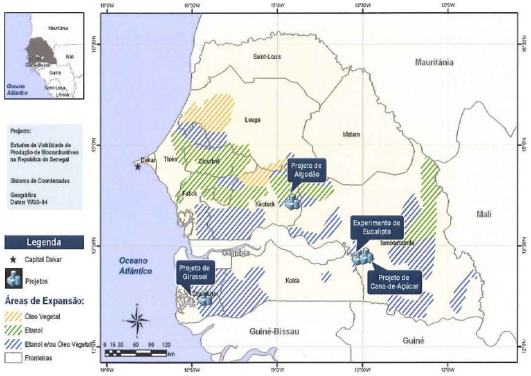
	Phase I (crop selection)	Phase II (executive project)	Phase III (finance project)	Phase IV (implementation)
Land Suitability for Biofuel Crops	STAGE I (maps) Land capability Agroclimate zoning Economy	*Regulatory benchmarks* *Tax incentives* *Projects recommended* *Infrastructure & logistics* *Technological package* *Marketing* *Production* *Financing* *Supply chain* *Energy supply* *Work organizations* *Investments in infrastructure* *Capex and Opex* *Business model*	*Project finance & financial structure* *Road show* *Funding*	*Project management*
Production Capability	*STAGE II (crops Selection)* *Potential Crops* *Possible Projects*			
Recommendation of Investments	*STAGE III (investments)* *Social aspects* *Economic aspects* *Geographic aspects*			

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

ECONOMICS

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- 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.

PHASE I

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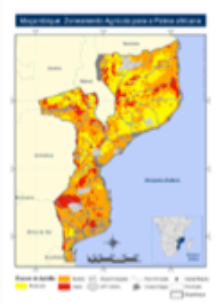
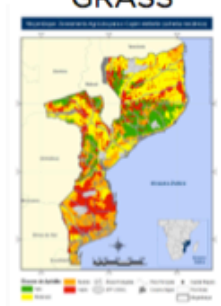
Results for agricultural zoning

SUGARCANE

PALM



ELEPHANT GRASS



COTTON

SUNFLOWER

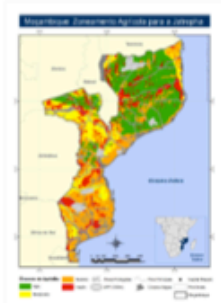
SOYBEAN

EUCALYPTUS

CASTOR BEAN

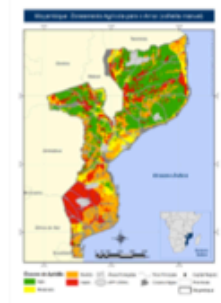
BEANS

JATROPHA



CASSAVA

RICE



CORN

PEANUT

SELECTED PROJECTS

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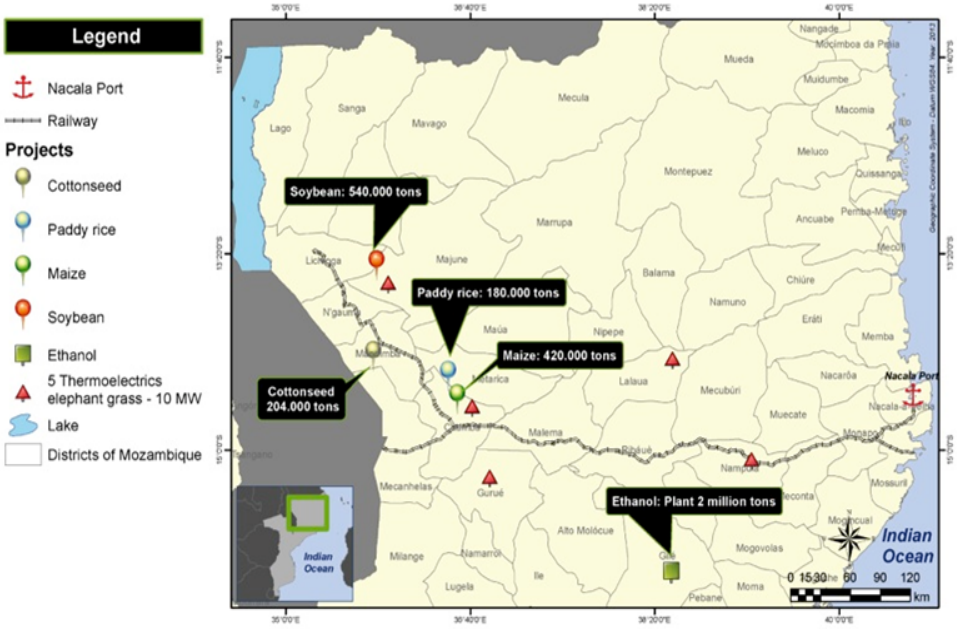
- **7 projects recommended**

  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.



NACALA

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VISION

To improve the life of Nacala Corridor inhabitants through **regional and economic inclusive agricultural development**

MISSION

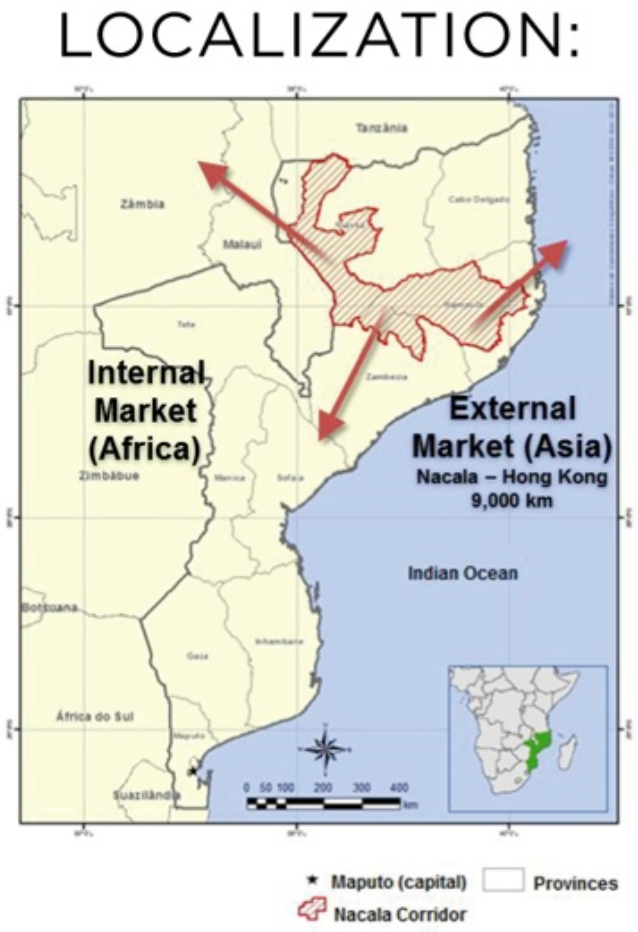
To **modernize agriculture** to increase productivity and diversify production, including biofuels

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



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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

High concentration of small farmers

Strip of land along the highway

Ecological Corridor:

Nacala fund will adopt the concept of ecological corridor in its investments

NACALA

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AGRICULTURAL DEVELOPMENT OF NACALA CORRIDOR

Development of agrobusiness

- Promote agroindustrial clusters
- Promote private investment
- Promote cooperation between governments

Increase production in agriculture

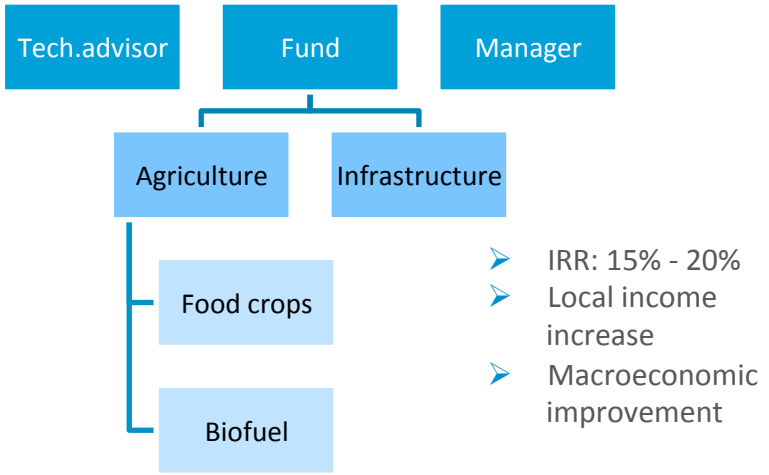
- Partnership between small / medium farmers and agrobusiness
- Improve farmers organizations
- Technical education

Sustainability of natural resources

- Induce new technology and practices

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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