



***NL AGENCY***  
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***Upscaling smallholder based  
sustainable biofuel development  
in West Africa***

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# *Summary of the presentation*

1. Corporate structure and strategy
2. Inclusive business model
3. Food Security
4. Energy Security
5. Environmental Security
6. R&D partners
7. Upscaling
8. Lessons learned

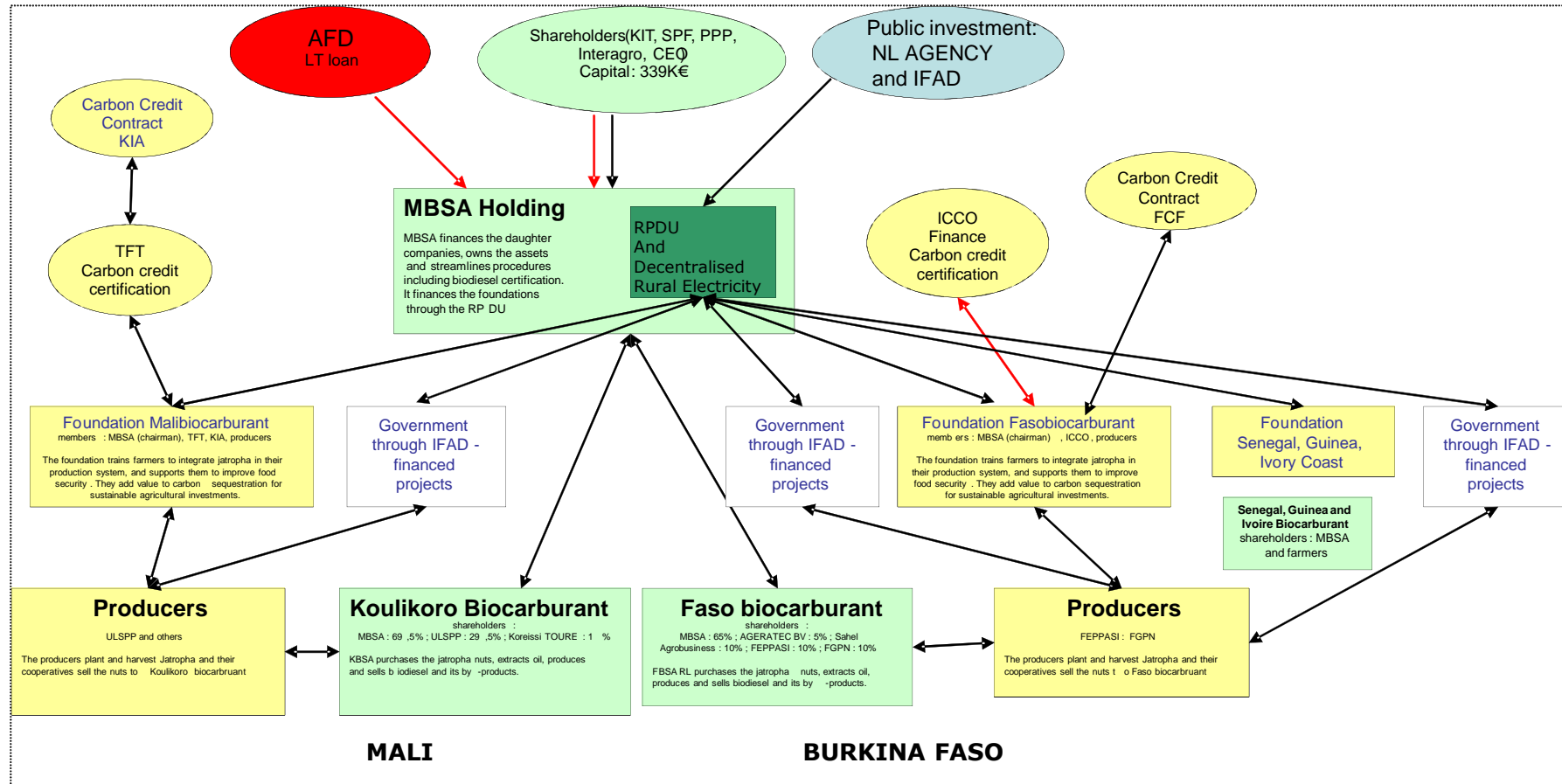
Biodiesel production  
Factory, Mali





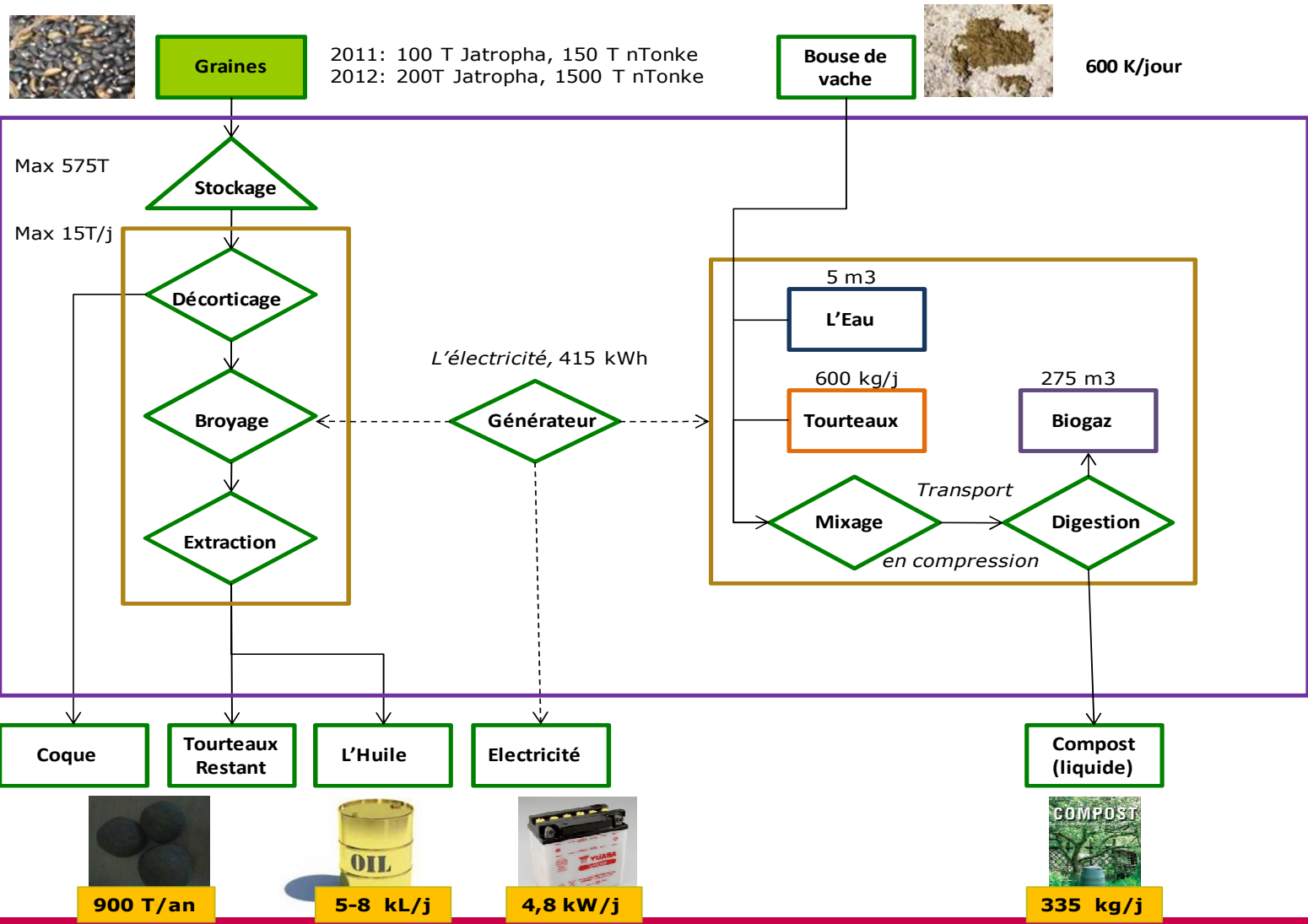
# Corporate structure

## Institutional framework of MBSA





# Corporate strategy





# *Inclusive Business - voice*

## **Producer's participation in decision making**

- Smallholders have a representation/vote in the board of directors of the daughter companies;
- Smallholders organised in a farmer union are 20% shareholders of Koulikoro Biocarburant SA and small holders in Burkina Faso are 30% shareholder in Faso Biocarburant SARL;
- Smallholders have a representation/vote in the general assembly of Mali and Faso Biocarburant Foundation.



# *Inclusive business: risk assessment and sharing*

## **Producer's risks**

- Smallholders invest in Jatropha intercropping and they run an agro-ecological risk (bushfire and diseases) that reduce yield of Jatropha shrubs;
- They may lose their investment in MBSA, which is financed through pro poor carbon offset;

## **Company's risk**

- Side selling of Jatropha nuts leading to lack of raw material
- Biodiesel production risks
- Low international oil prices (<US\$ 50/barrel)



## *Inclusive business: producers' rewards*

### **Producers' interests**

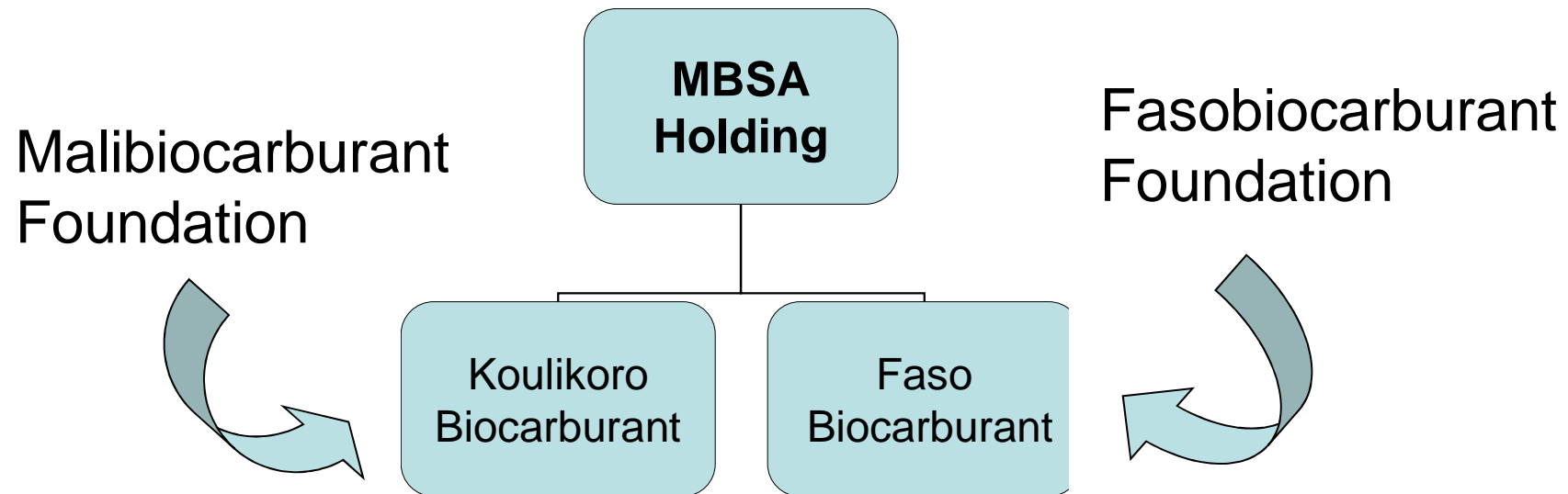
- Direct benefit: sale of jatropha nuts: USD 125/ha or about USD 3,0/day
- Indirect benefit: Smallholders earn dividends as 20% shareholders in production facilities
- Carbon credit benefit: MBSA-KIA-TFT invest more than **USD 2,000,000** in farmer's unions;
- Increase yields of associated food crops (Maïs, sorgho...) with 20% about 5 years after intercropping of Jatropha;
- Access to organic fertilizer.

### **Farmers' participation**

5.000 in Mali and 8.000 in Burkina Faso



# *Sustainable financing of producers training – pro poor carbon credits*







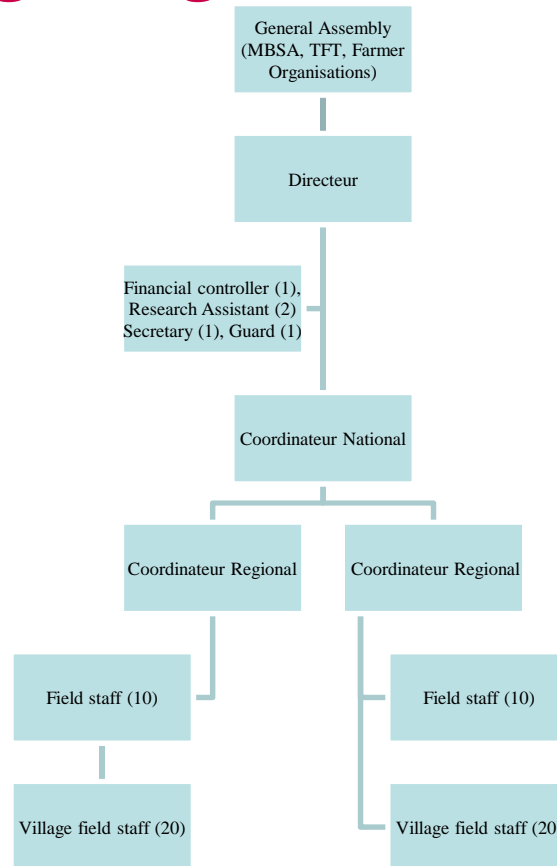
# *Support smallholder farmers through foundations*

## **Value chain approach**

- Intensify and diversify agricultural production systems (improved varieties, crop rotation, water harvesting techniques, fertility management,...);
- Assist farmers to prepare documents and negotiate credit for agricultural inputs;
- Improve access to markets by supporting cooperatives to contract the sale of surplus cereals;
- Add value to pro poor carbon credits;
- Acquire knowledge and stimulate innovation by organizing farmers around farmer field schools for learning by doing experiments (horticulture and cereals);
- Linking farmers to research organizations, agricultural credit banks, seed and input suppliers, markets,...

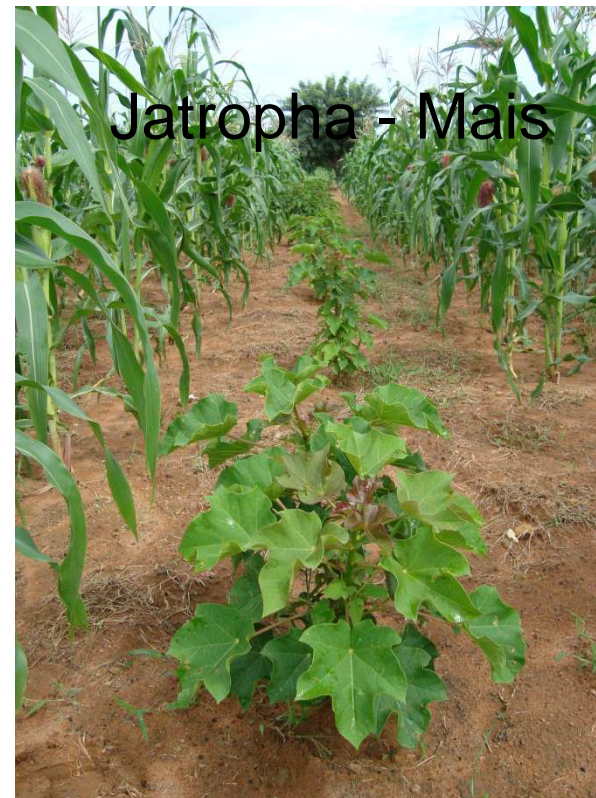


# *Example of Mali biocarburant Foundation organigram*





# *Food security (FS)*





# *Energy security (ES) - Biodiesel*





# *E.S. – Biogas / Electricity*

## **Towards a biobased economy**

- Innovative multi-feedstock oil extraction; opening up opportunities to use besides jatropha hundreds of unvalorised oil-seeds
- Presscake of oil-extraction used to produce biogas; doubling biogas-production
- With biogas electricity is generated for the factory and local communities
- The output of the digesters is used as compost
- Next step: no waste! Use of shells in biomasse-oven (heat, green charcoal).... To be continued



# *E.S. – Biogas / Electricity*



Digesterbag



Gas injected in diesel- engine



Pressing seeds +  
Battery charging



# *E.S. – Biogas / Electricity*



Crushed nuts



Innovative Oil-extraction



# *E.S. – Biogas / Electricity*

## **Main results project:**

### Energy

- 575,819 kW annual energy production with biogas
- Over 28,000 people gain access to energy

### Economy

- Rural economy stimulated; decentralized oil-extraction sites installed with capacity of 22T a day
- Five multi-functional platforms equipped with biogas-system, 20-50% fuel-reduction
- Manure becomes valuable and compost becomes available at local level

### Climate

- Sustainable agriculture and climate change mitigation





# *FS and ES– Sweet sorghum: more food, feed and fuel*





# *Environmental security*

- Reduce CO2 emissions by planting jatropha trees and produce biodiesel;
- Biodiesel is a cleaner fuel
- Carbon credit reducing climatic change;
- Reduce soil erosion and improve water infiltration;
- Water harvesting techniques





# R&D partners



ANADEB



NL Agency  
Ministry of Economic Affairs



ICRISAT



IFAD  
INTERNATIONAL  
FUND FOR  
AGRICULTURAL  
DEVELOPMENT



FOREST & LANDSCAPE



Partner to  
enterprising people





## *Upscaling and replicability*

**Expansion** to Senegal, Ivory Coast and Guinea

**Poverty alleviation:** at maturity in 2019 purchase USD 2,000,000 in jatropha nuts per country;

**Employment:** 140 FTE and about 10,000 producers per country;

**Environment:** more than 10,000,000 jatropha plants that fix carbone as well as 4 million litres of biodiesel per country generating a total value of about USD 2,700,000 per country;

**Food security:** increased production of food crops and farmers' revenues



## *Lessons learned*

1. Governance structure and transparent leadership of farmer organisations needs to be well organised;
2. Public private partnership are needed to set up the inclusive business model;
3. Organise biodiesel legislation: quality standards, biodiesel mix, licenses, and tax exemptions;
4. It all depends on oil prices and value addition of co-products;
5. Think big in terms of large numbers of smallholder farmers!