

Biofuels Production in Africa – Case Studies

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Overview

- **Africa's Biofuels Strategy**
- **Motives and Key Drivers**
- **Senegal:**
 - **Overview**
 - **Case Studies**
 - **Opportunities and Risks**
- **Conclusions**

“Africa’s Biofuels Strategy”

- **The “Green Opec”**

Pan-African Non-Petroleum Producers Association was formed in 2006 to promote the biofuel sector in Africa (15 member states) and to become biofuel exporters

- **Addis Ababa Declaration (2007)**

A joint activity of the African Union, UNIDO and the Brazilian Government

- **The African Bio-fuel and Renewable Energy Fund (ABREF)**

- **Regional strategies**

Regional economic communities: ECOWAS, SADC etc.

- **National policies**

Co-operation with transnational industries, south–south and triangular co-operation on technology transfer

Motives and Key Drivers

African Countries

- **International trade**
- **Reduction of energy dependencies** – improvement of energy security
- **Stimulation of economies**
- **Encouragement of foreign investment**

Investors

- **Potential for biofuels production**
 - **Land availability**
 - **Low land acquisition costs**
 - **High biomass potential**
 - **Favorable climatic conditions**
- **Low production costs**
- **Increase in demand**
 - **Low labour costs**
 - **Weak environmental regulations**

Senegal: Geography and Land Area



Source: IRD

**Land area and arable land area
in different African countries**

Geography and climate

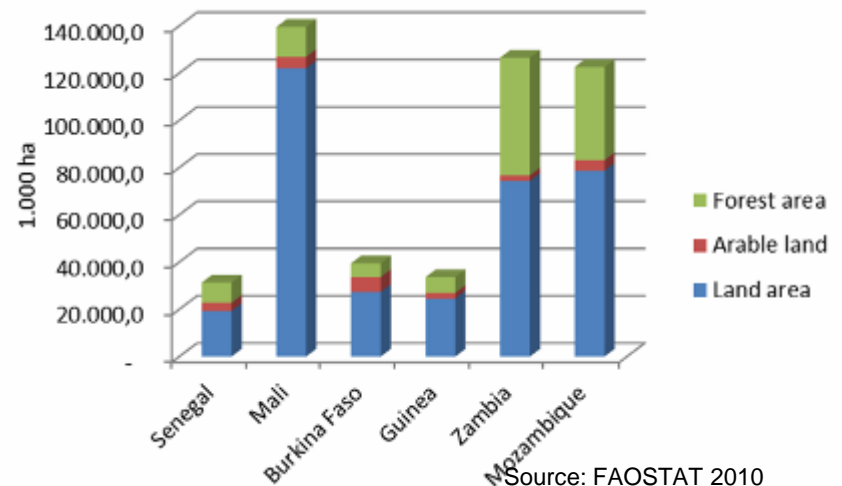
Dry and humid seasons

Average precipitation:

northern part: 250 mm/y

south: 1200mm/y

Rainfall is characterised by high
variability



Senegal: Food Supply

Food production

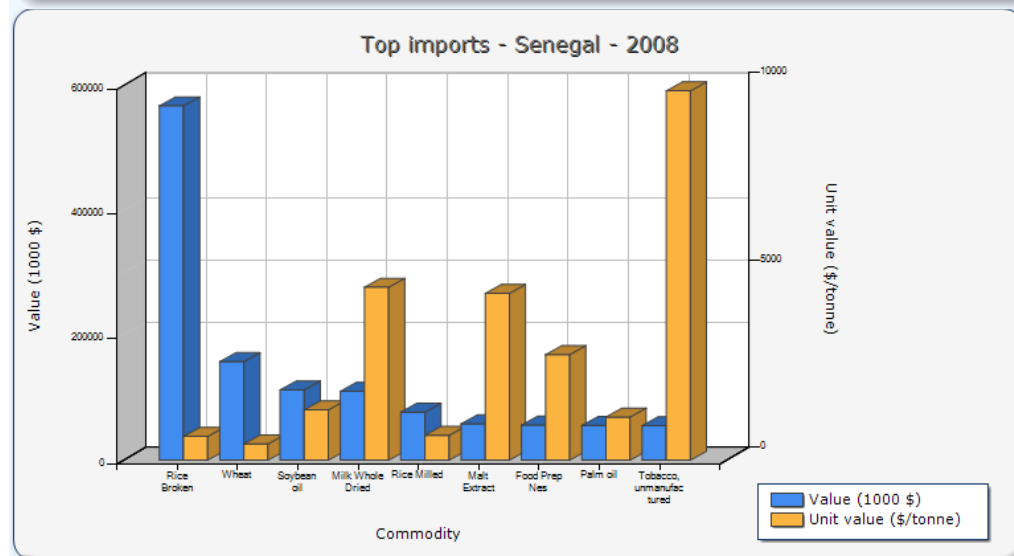
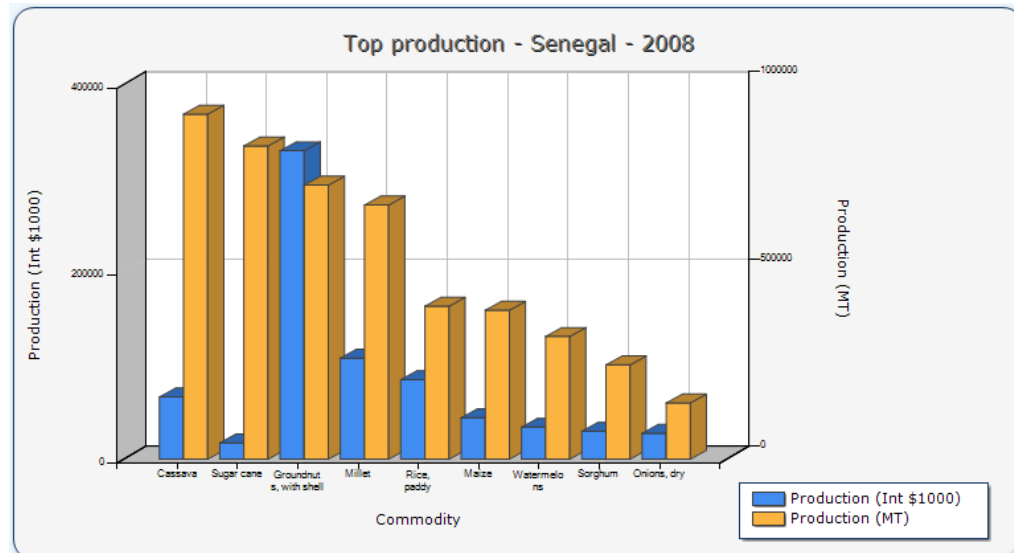
*Programm GOANA:
„La Grande Offensive“*

**Target: Self-
sufficiency by 2015**

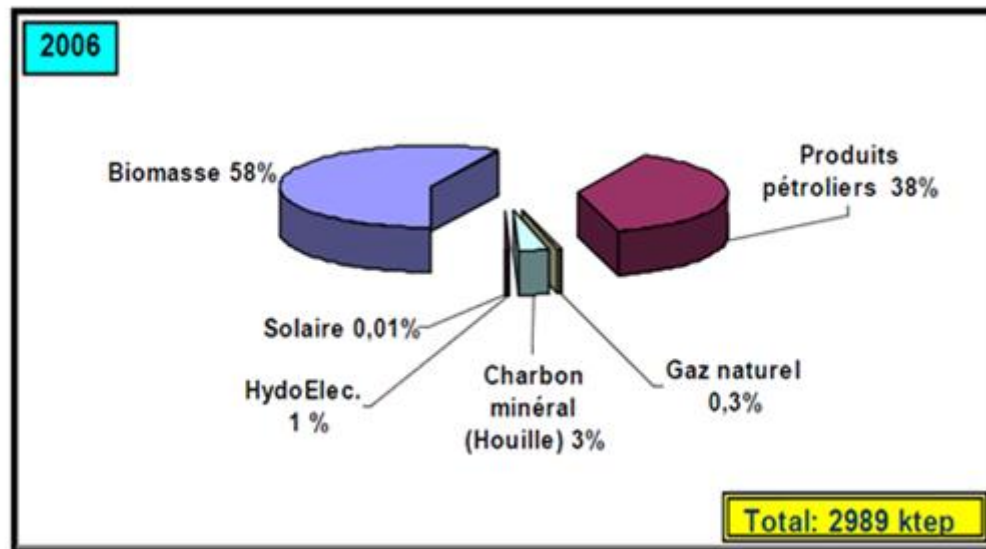
Imports of food

Nearly 70 per cent
of domestic rice
consumption
depends on imports

Source: FAOSTAT 2010,

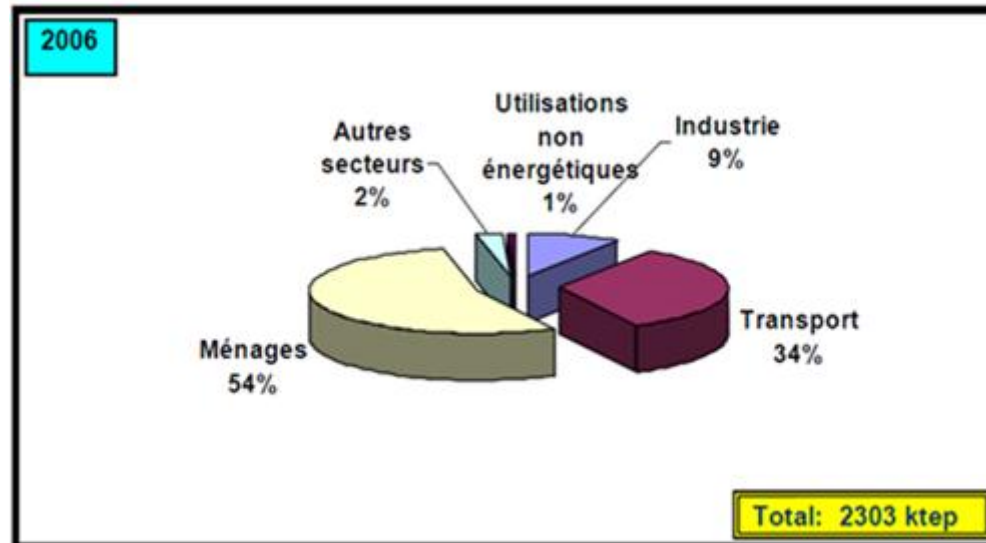


Senegal: Energy System



Energy supply per energy type

Biomass is used primarily for cooking



Energy consumption per sector

Households consume 54 percent of the energy (firewood and charcoal) produced in the country

Source: FAO, SIE-Senegal 2007

Targets for Biofuel Production

Senegal's national policy objective: self-sufficiency

Biodiesel - "Jatropha program":

- Target: 321.000 ha by 2012; 1000 ha / rural community
 - Up to the end of 2010 ~3000 ha had been planted
- Production goal: 1.190 million litres of refined oil

Ethanol (sugar cane):

- 10 to 12 million litres/year



Case Study 1

Compagnie Sucrière Sénégalaise

Region: Senegal River Valley

- Cultivation area: 8.700 ha
- Sugar cane: 1 mio t/y
- Sugar: 100.000 t/y
- Ethanol: 60.000 l/d



Positive Impact:

Generation of jobs:
3000 permanent employees
4000 seasonal workers

Negative Impacts:

- High water pollution
 - Hazard for drinking water safety (Lac de Guier)
 - Hazard for wildlife (birds)
- Air Pollution

Source: CSS

Case Study 2

Dangote Industries

Region: Senegal River Valley

- Cultivation area: 40.000 ha
- Sugar cane: sugar,
- Products: sugar, molasses for ethanol production

“The investment makes Dangote the biggest wholly African investor ever in the Francophone country.

The Senegalese government has allocated Dangote Industries about 40,000 hectares of land .”

Source: bonsucro

Positive Impact:

- Generation of Jobs
- Improvement of energy supply

Potential negative impacts:

- Over consumption of water!
- Competition for food production
- Loss of land and water rights for Fulani people and local smallholders
- Marginalization of subsistence farmers

Dangote Invests \$1 Billion in Senegal
| 29 views
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Case Study 3

Tozzi Group (Italy)

Region: Tambacounda

- **Jatropha plantation**
- **Cultivation area: 50.000 ha**



Natural forests in Senegal:

1960: 11 million ha

2010: 8.3 million ha

Potential positive impacts:

- **Diversification of agriculture**
- **Improvement of energy supply**

Potential negative impacts:

- **Damage of natural and `classified forests`**
- **Loss of land tenure rights**
- **Switch to contract farming**
- **Switch from staple food to energy plant production**
- **Marginalization of subsistence farmers**

Senegal: Opportunities and Risks

Opportunities

- Creation of jobs
- Stimulation of agriculture
- Diversification of agricultural production
- Improvement of local energy supply
- Local value creation
- Improvement of the trade balance

Risks

- Damage to ecosystems and biodiversity loss
- Unsecurity in food supply
- Over consumption of water and water pollution
- Loss of land use rights:
 - Marginalization of subsistence farmers and pastoralists
 - Increase in landlessness
 - Migration

Conclusions

Key to development:

- **“Cooperation- farming“: Integration of small scale farmers and ‘landless’ semi-pastoralists into medium-sized and large scale projects**

Preconditions are:

- **Legal acceptance of water rights, land and land use rights (including informal land rights)**
- **Subsidization of smallholders and local agricultural cooperatives – access to credits**
- **Agricultural training for small holders and contract farmers**
- **Technology and knowledge transfer**
- **Long-term and reliable cooperations between agro-industries and farmers**

Conclusions

Requirements for sustainable biofuels:

- Development and implementation of legal provisions and policies by African governments with regard to
 - large scale land allocations – land rights
 - labour conditions and contractual arrangements between smallholders and private companies
 - use of natural resources
 - etc

Thank you!

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