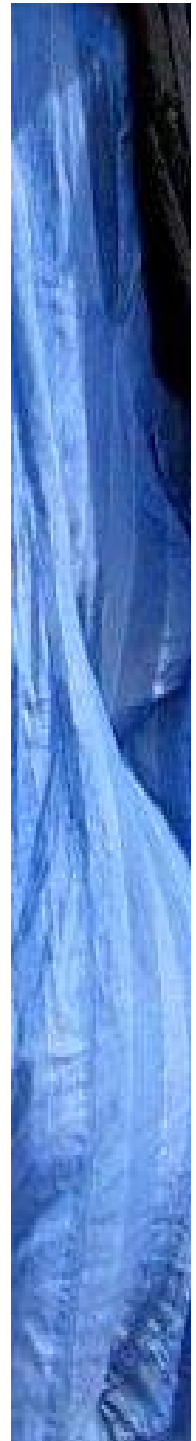


Biofuel Production in Africa – Case Studies

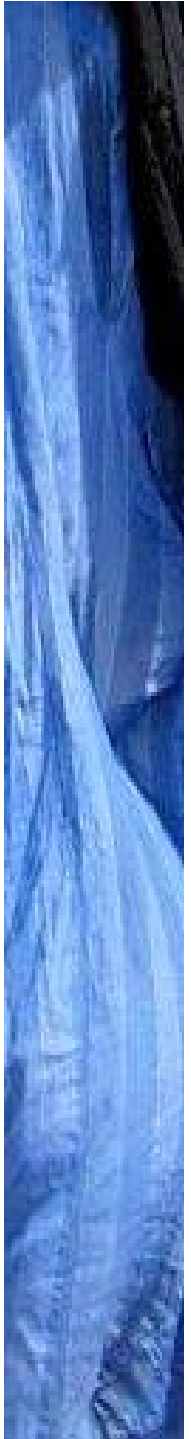
Katharina Zwiauer

Highlights der Bioenergieforschung
Wieselburg, March 31, 2011



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)**

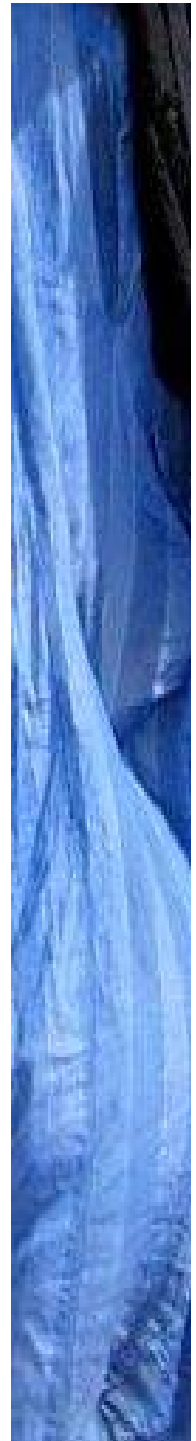
A joint activity of the African Union, the Brazilian Government and UNIDO

- **Regional strategies**

Regional economic communities: ECOWAS, SADC etc.

- **National policies**

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



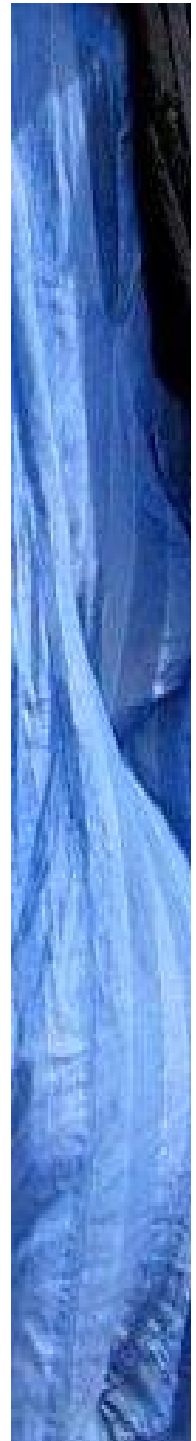
Motives and Key Drivers

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**
- **Increase in demand**
- **Low production costs**
 - **Low labour costs**
 - **Weak environmental standards**



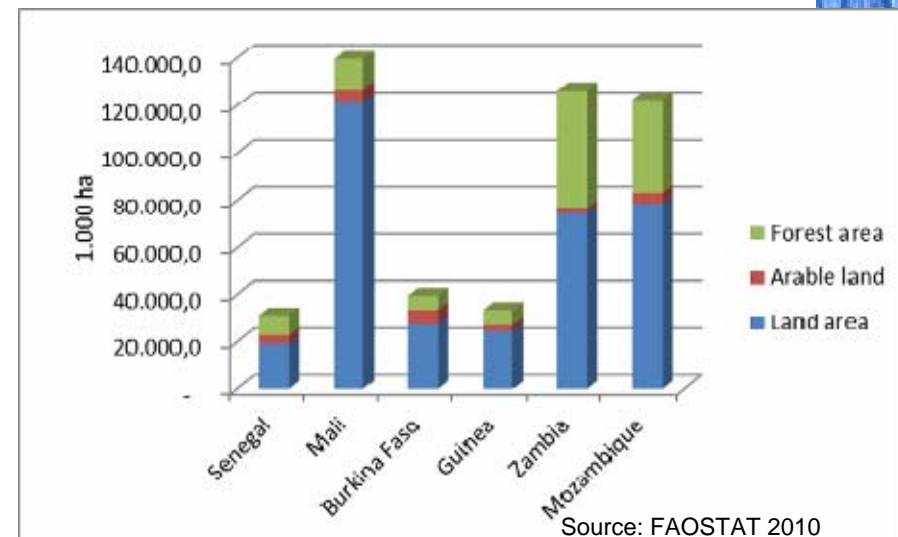
Senegal: Geography and Land Area



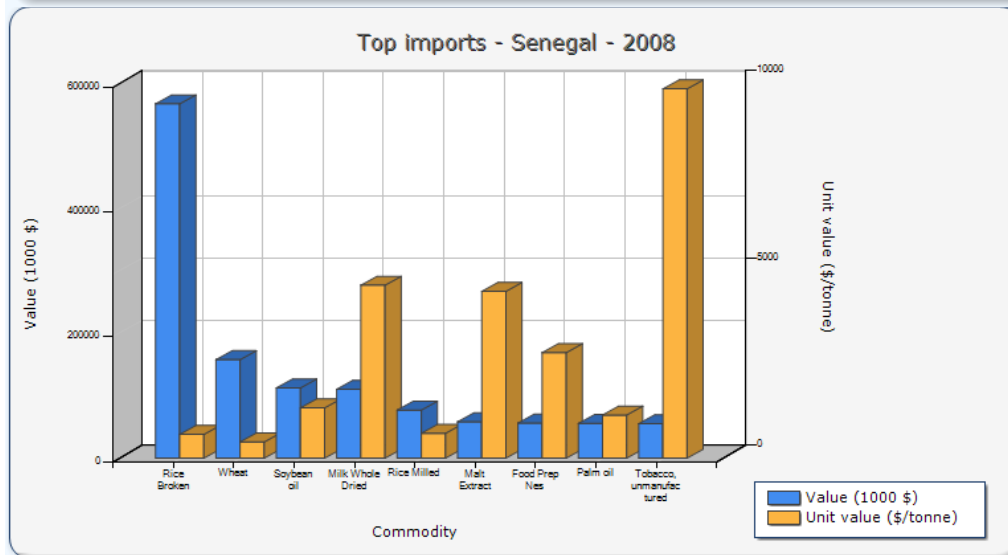
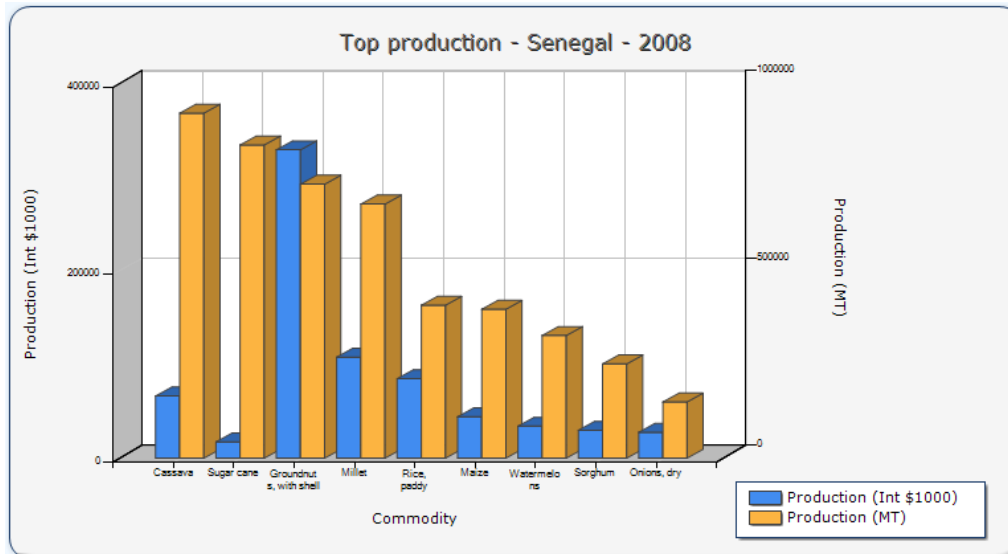
Geography and climate

Source: IRD

Land area and arable land area in different African countries



Senegal: Food Supply



Food production

Programm GOANA:

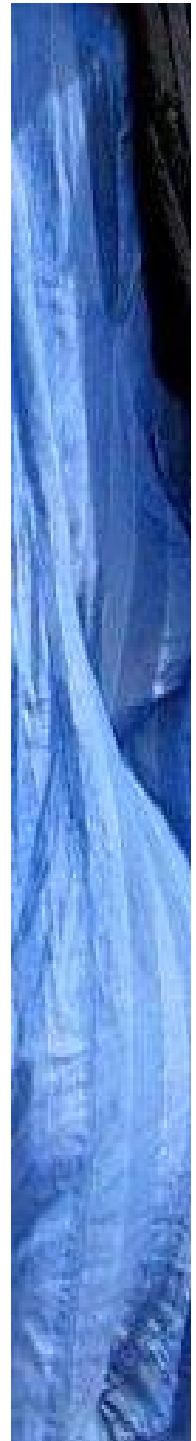
„La Grande

Offensive“

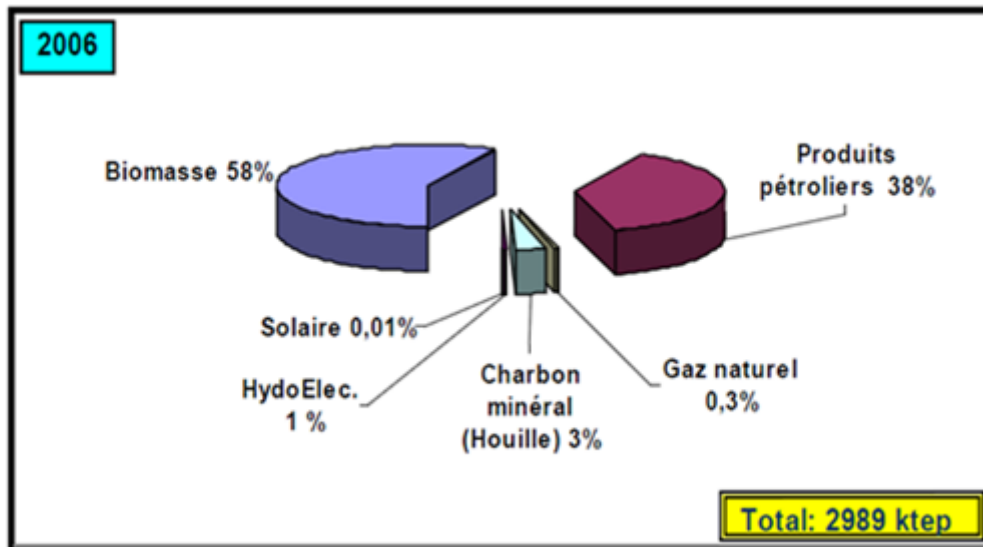
Target: Self-sufficiency by 2015

Imports of food

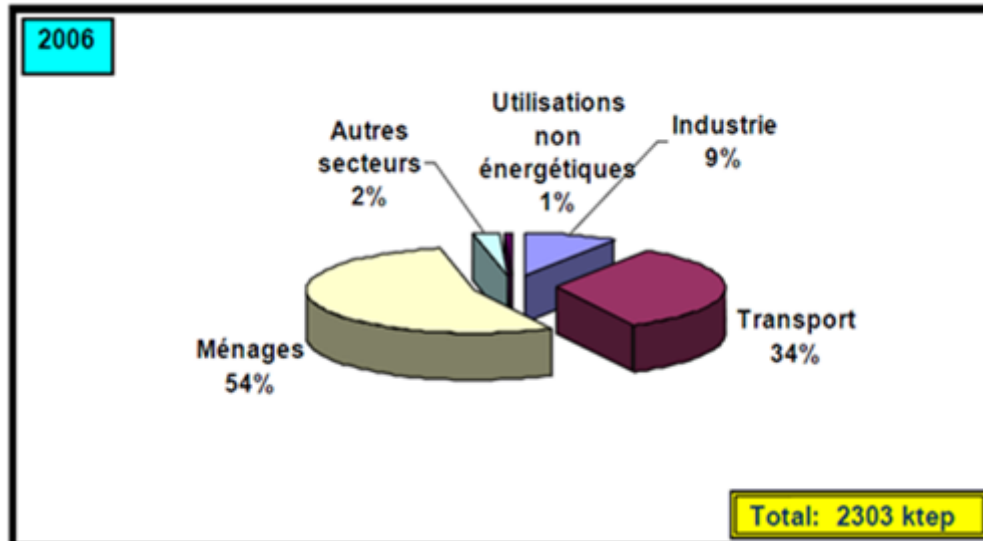
Source: FAOSTAT 2010



Senegal: National Energy System



Energy supply per energy type



Energy consumption per sector

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



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Case Study 1

Compagnie Sucrière Sénégalaise (CSS) 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 Impacts:

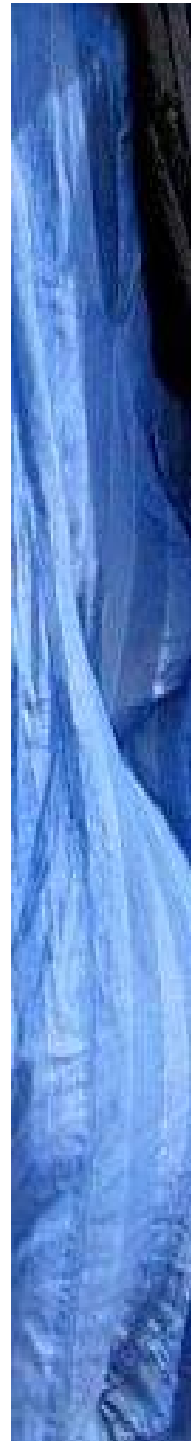
Generation of jobs

- 3000 permanent employees
- 4000 seasonal workers

Negative Impacts:

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

Source: CSS



Case Study 2

Dangote Group

Senegal River Valley

- Cultivation area: 40.000 ha
- Sugar cane

“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

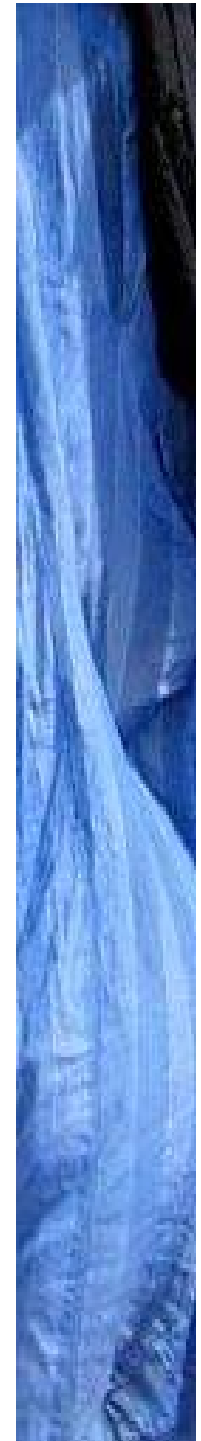
Potential negative impacts:

- High water consumption
- Damage of *Acacia* forests
- Competition for food production
- Loss of land and water rights for Fulani people and local small scale farmers

Dangote Invests \$1 Billion in Senegal
| 29 views
admin | Mar 02, 2011 | 0 comments



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Case Study 3

Tozzi Group (Italy)

Region: Tambacounda

- Jatropha plantation
- Cultivation area: 50.000 ha

Potential negative impacts:

- Damage of natural and `classified forests`
 - Destruction of bamboo habitats
- Loss of land tenure rights, transition to contract farming

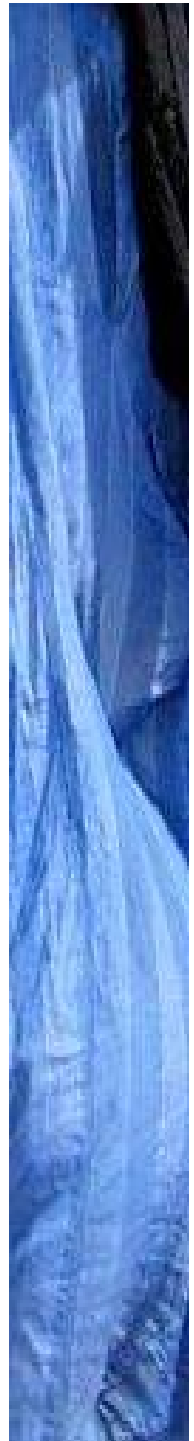
Natural forests in Senegal:

1960: 11 million ha

2010: 8.3 million ha

Carbon stock in living forest

biomass (mio t): 340



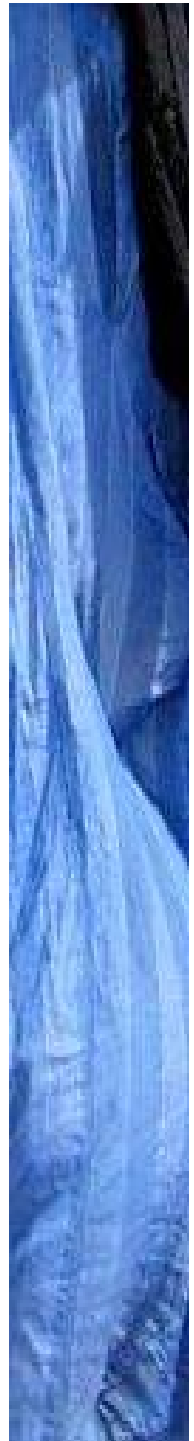
Opportunities and Risks

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

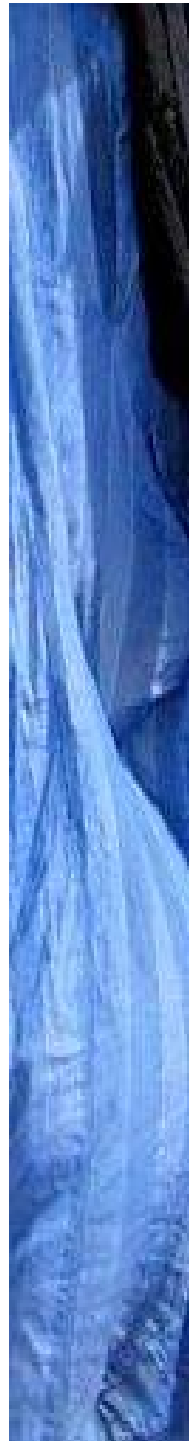
- Damage to ecosystems and biodiversity loss
- Unsecurity in food supply
- High water consumption and water pollution
- Loss of land use rights:
 - Marginalization of subsistence farmers and pastoralists
 - Increase in landlessness
 - Migration



Conclusions

Key to development:

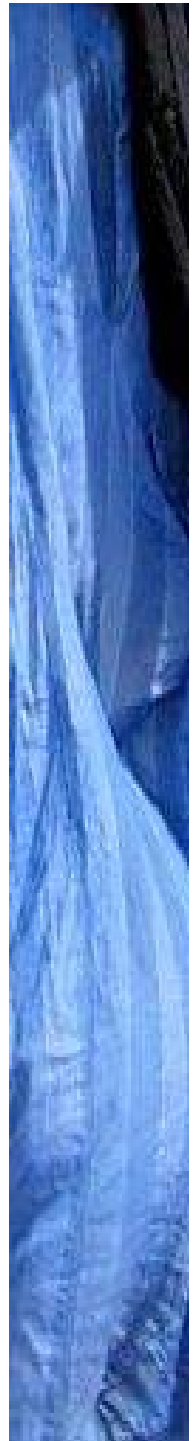
- **Integration of small scale farmers and “landless” semi-pastoralists into medium-sized and large scale projects**
 - **Legal acceptance of water rights, land and land use rights (including informal land rights)**
 - **Subsidization of small scale farmers and local agricultural cooperatives – access to credits**
 - **Long-term and reliable cooperations between agro-industries and farmers**



Conclusions

Requirements for sustainable biomass production:

- **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 in general and water in particular**
 - **etc.**



Thank you!

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Thanks to my cooperation
partners ENDA and
Mr. Amadou G. Ba and his son

Katharina Zwiauwer

