

# Bioenergy initiatives in Mozambique

## Analysis of policy, potential and reality

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# Country statistics

- Land area: 801,590 million km<sup>2</sup>
- Total population: 20 million
- Arable land: 36 million ha
- Arable land in use: 4-5 million ha
- GDP: Annual growth of 7%
- Contribution agriculture to GDP: 23%
- Agricultural sector: 3.2 million smallholder households (representing 85% of total population) and 400 commercial farmers
- Agricultural extension: 1 per 1.067 households
- Average land per family: 1.4 ha



*Sources: FAO and Worldbank Factsheets*

*Google Earth*

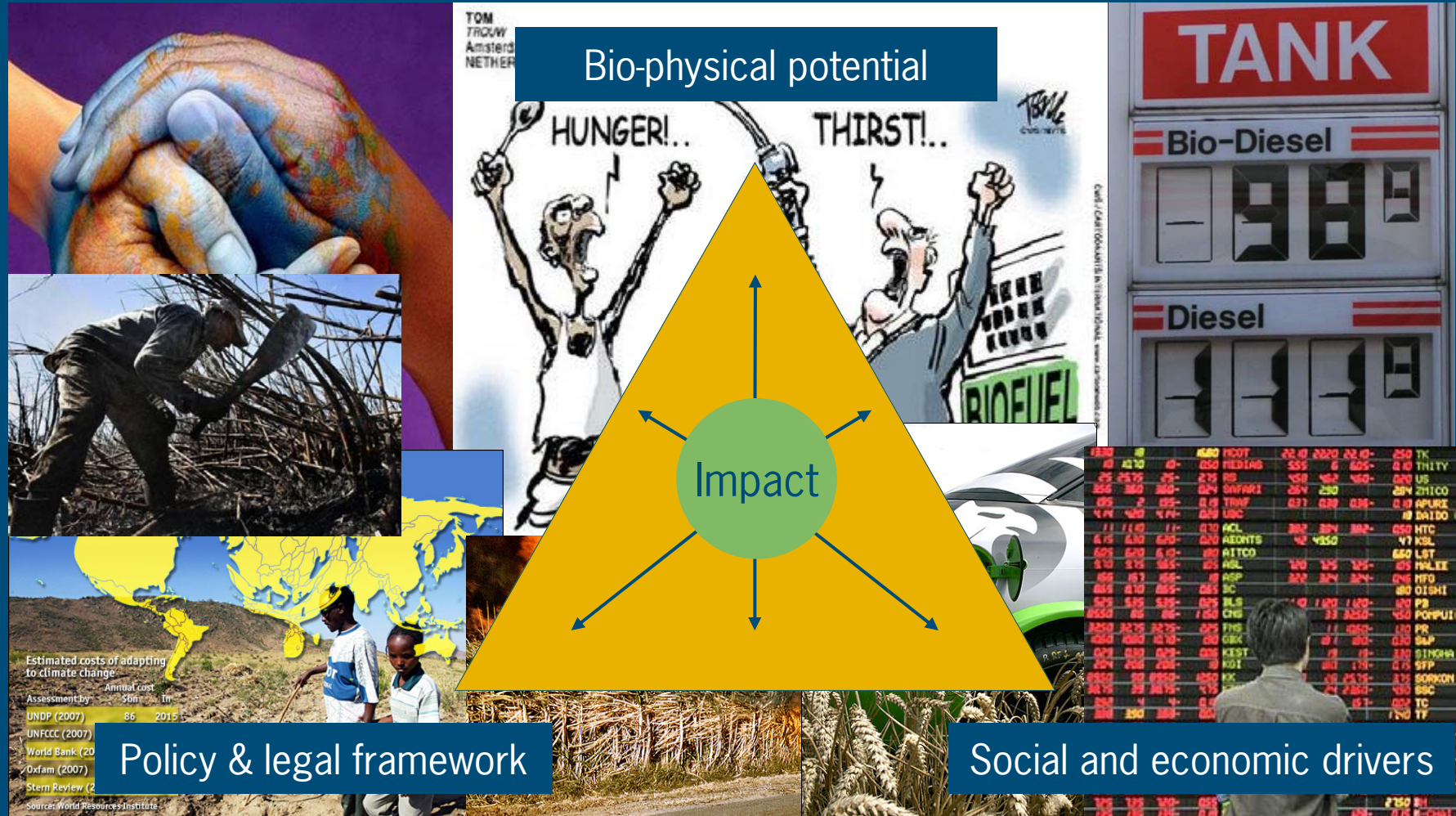
# Mozambique and its 'abundance'

- “Mozambique has unexploited natural resources and abundant labor...”
- “Water resources, in the form of multiple rivers, are also abundant and underexploited”
- “Only 9% is of the arable land is under cultivation, abundant labor and water are available to produce bio-fuels without threatening food security...”





# Objective



# Bioenergy developments in Africa

- Promising prospects for bioenergy production in Africa
- Land, water and labour
- Competitive production
- Wave of private investors
- High uncertainty (Jatropha)
- Sustainability debate
- Financial crisis



Source: Google Earth

# Mozambique responds

- The consequences for African countries:
  - Ethical issues: EU imposes criteria on Africa
  - “Unnecessarily restrictive” and “illegal and discriminating” development countries access to world market
- Mozambican governments not against sustainable development
- Sustainability principles that fit the Mozambican reality
- Approved Biofuel Policy March, 2009

*Source: BusinessGreen, 2008*





# Policy

The government decided to embark upon the promotion of biofuels production to:

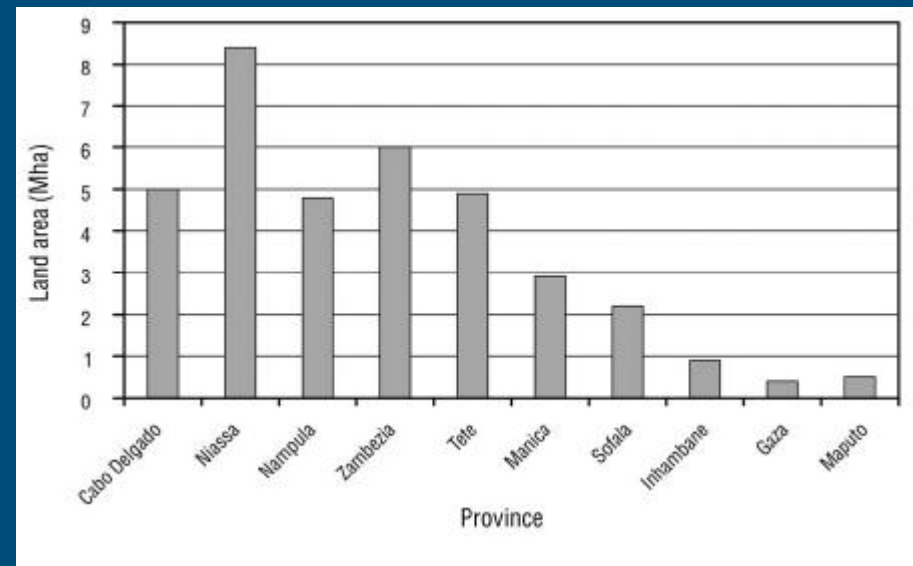
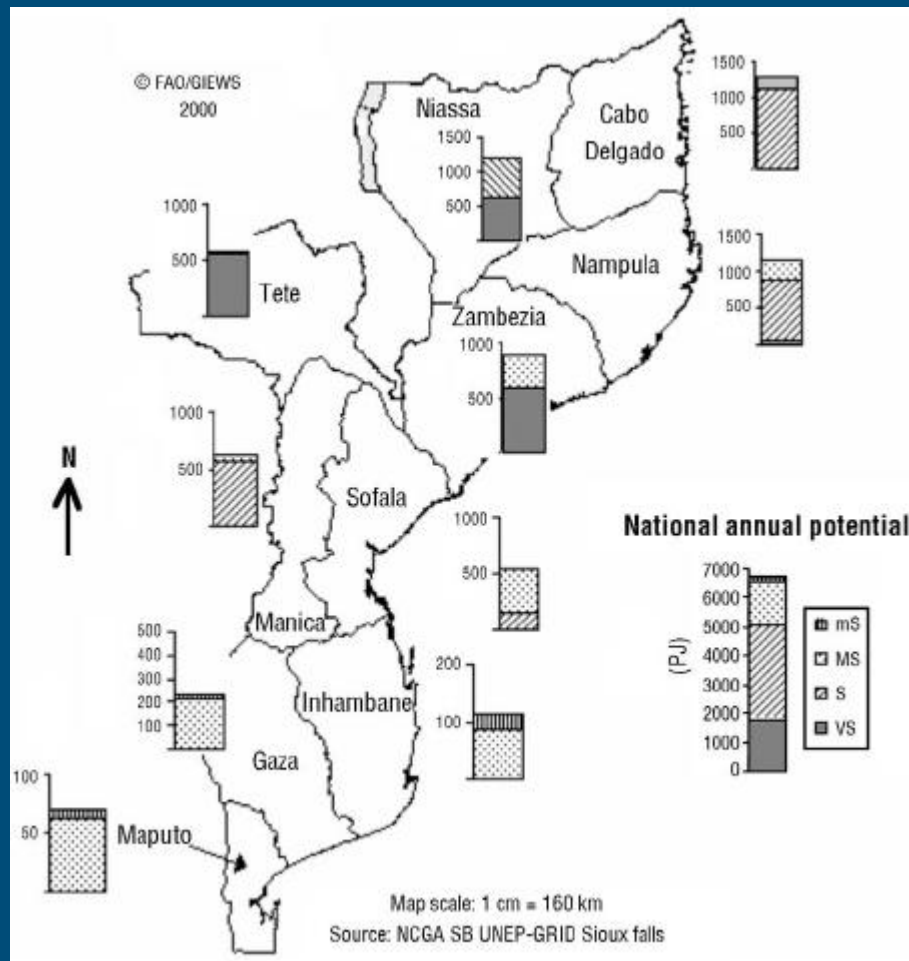
1. Respond to **National Poverty Alleviation Agenda**, especially in rural areas
2. Provide a **response to high, unpredictable and volatile oil prices** on the world markets



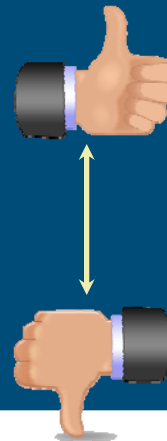
*Source: Salvador Namburete during PABO-meeting, March 2009*

*National Biofuel Strategy, 2009*

# Potential



Distribution of land suitable for rain-fed agriculture



**But what does reality  
show us?**

Regional biomass annual production potential in Mozambique (2015)

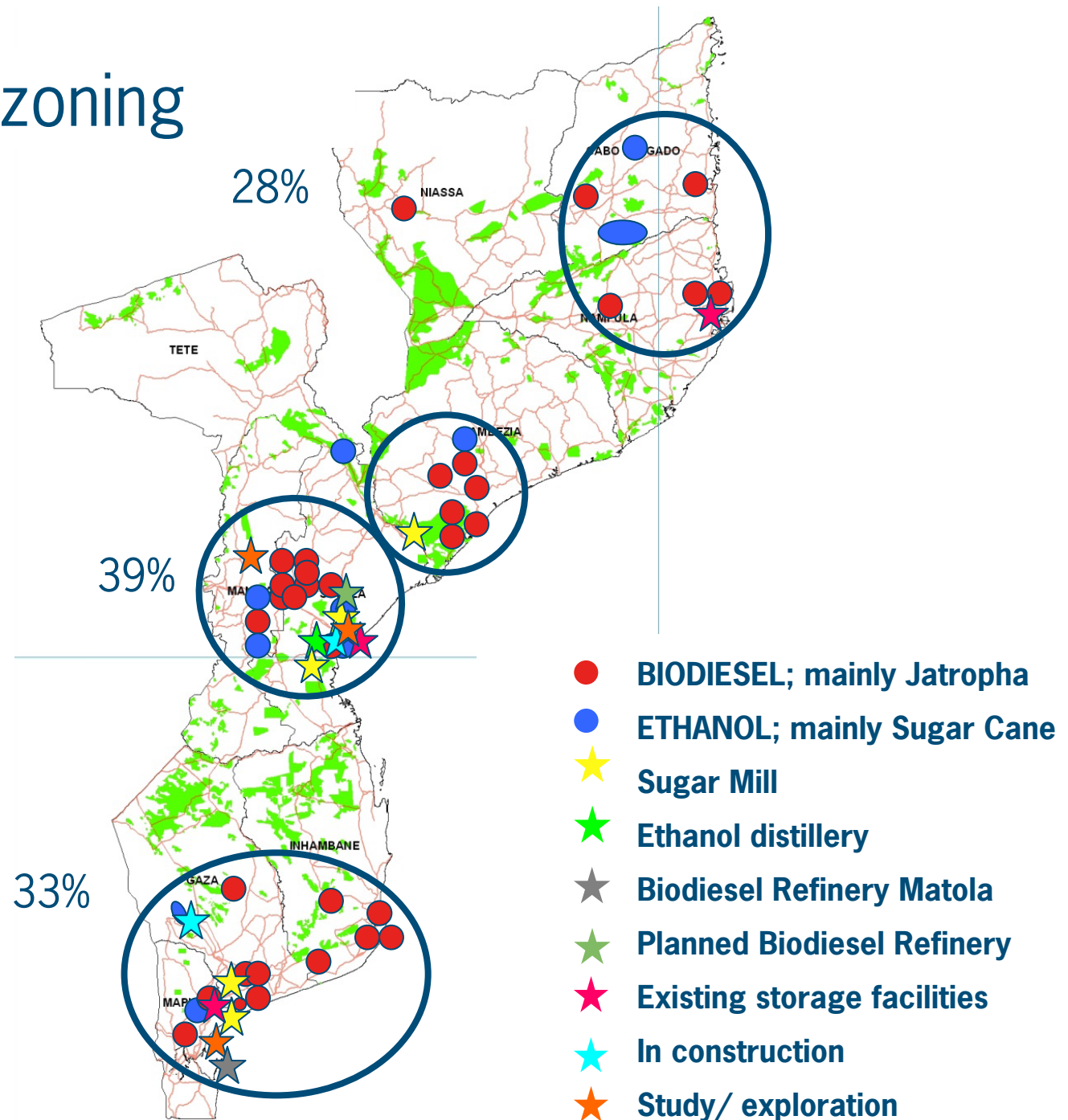
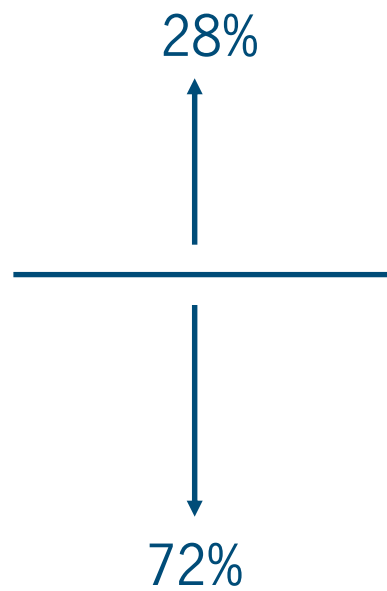
Source: Batidzirai et al., 2006



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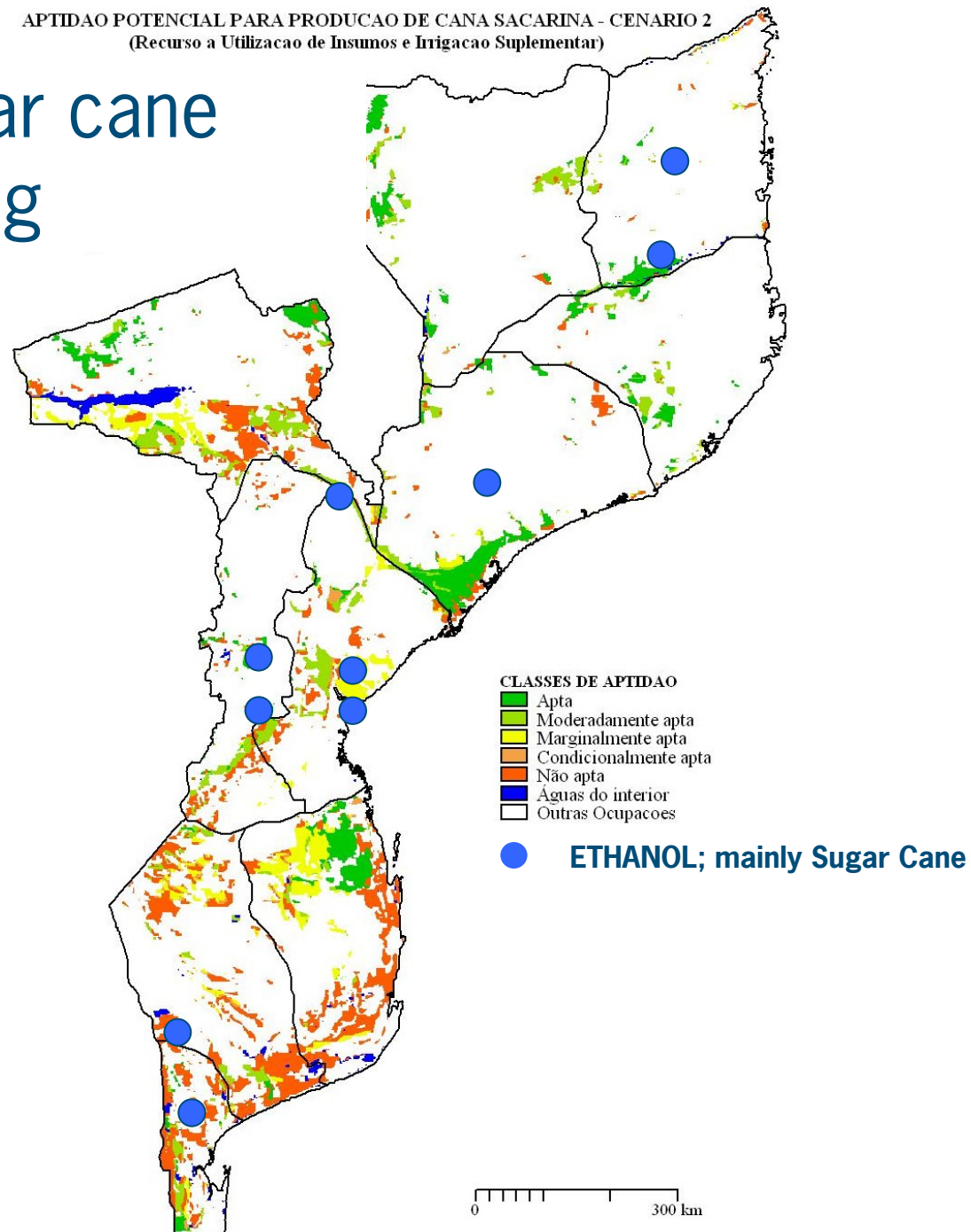


# Reality and zoning



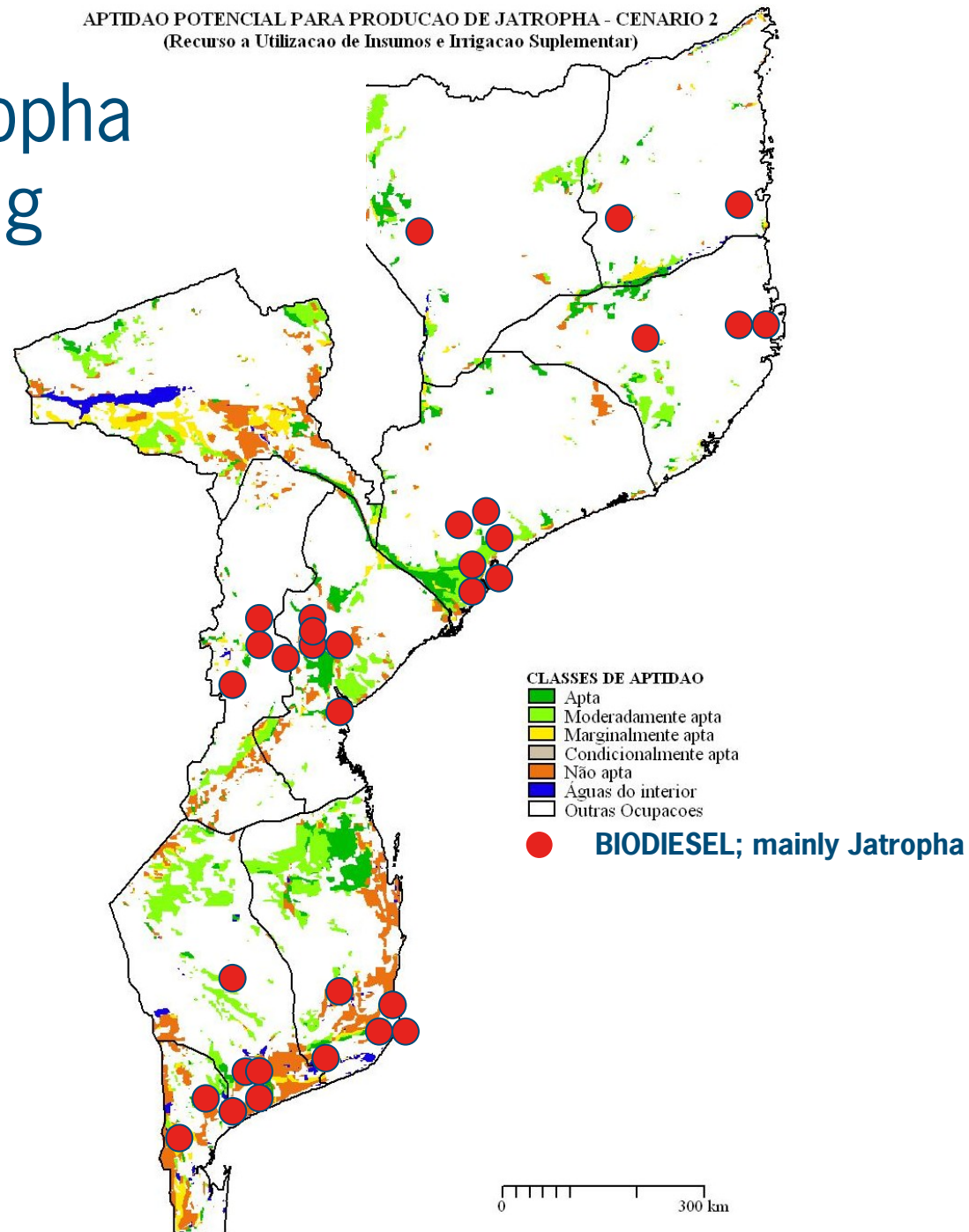
Zoneamento Agrario do Pais  
Scale: 1:1.000.000

# Reality: Sugar cane versus zoning



APTIDAO POTENCIAL PARA PRODUCAO DE JATROPHA - CENARIO 2  
(Recurso a Utilizacao de Insumos e Irrigacao Suplementar)

# Reality: Jatropha versus zoning

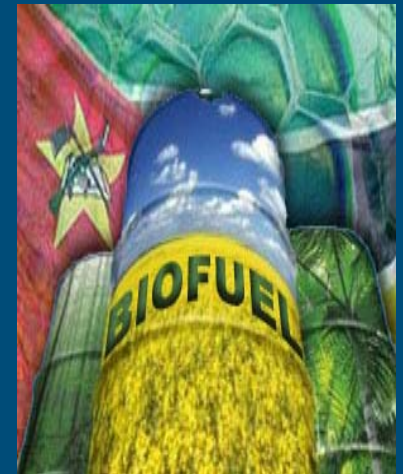


*Zoneamento Agrario do Pais*  
*Scale: 1:1.000.000*



# Analysis of impact

- Heterogeneity of biofuel projects
- Current bioenergy initiatives situated around existing good infrastructure
- Zoning and biophysical potential are not (yet) decisive drivers
- In the current situation the government's objectives are unlikely to be achieved:
  - Investors do not focus on rural areas
  - Commercial projects prefer premium markets in EU, rather than supplying domestic or local markets



# Biophysical drivers

## ■ Reality:

- Assumed abundance of land, water and labor does not respect the complexity of farming in Africa
- Uncertainty about the impact of biomass cultivation (pests and viruses especially with Jatropha) and land-use change

## ■ We need to:

- Respect tangible constraints that limit biophysical potential such as labor availability, extension services, suitable farming systems and infrastructure, absence of draught power, access to (drinking) water, HIV-AIDS, food-shortage, malnutrition, etc.



# Policy and legal drivers

## ■ Reality:

- Who is 'steering the drivers' (conflicts of scale)
- Controversy between standardization/ generalization and the heterogeneity of bioenergy projects in the Mozambican reality

## ■ We need:

- Diversified (policy) strategies that respect the diversity of bioenergy-initiatives, opportunities and their dynamics in Africa
- Create space in policy processes to integrate new insights and research findings





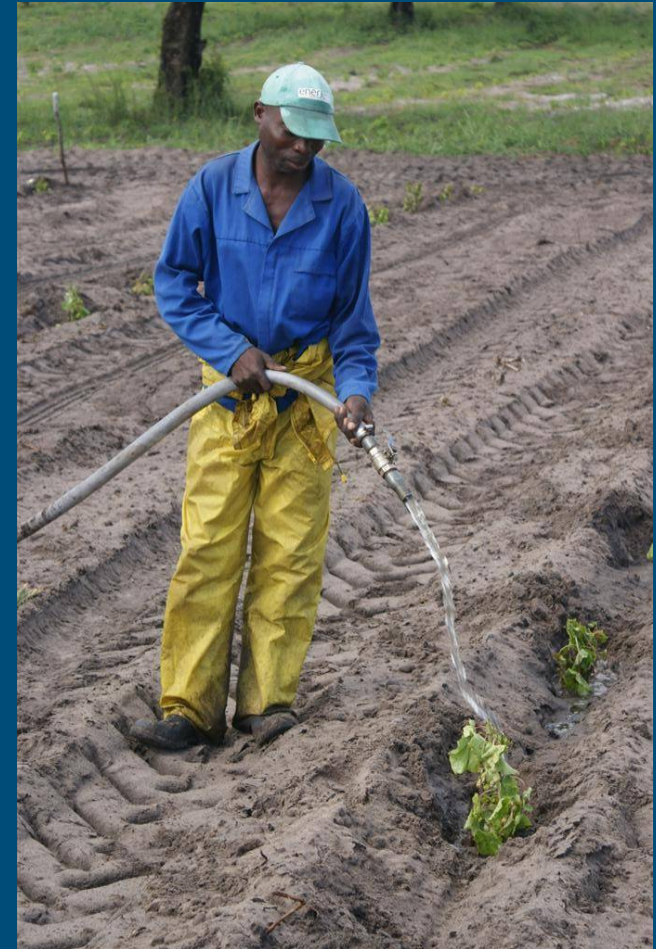
# Social and economic drivers

## ■ Reality:

- Economic sustainability and competitiveness are dominant drivers in emerging markets
- Uncertainty about the direct and (especially) indirect social side-effects (e.g. household cash flows, child labor)

## ■ We need:

- Incentives to bridge objectives
- Transparent learning projects and PPP to better understand social impact



# Conclusions

- The existing bioenergy landscape in Mozambique is the outcome of interactions between biophysical, political & legal, social and economical drivers
- Bioenergy potential must be studied holistically
- Sustainable bioenergy production is about fine-tuning different drivers towards optimizing impact. This should be approached as an adaptive negotiation process, rather than a fixed goal.



# Thanks for your attention

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