Will bioenergy development pose a threat to food security in developing countries?

The BEFS Approach

I. Maltsoglou, A. Croppenstedt, D. Dawe, E. Felix and M. Salvatore

Food and Agriculture Organization of the United Nations

Food Security and Environmental Change Conference
Oxford 2-4 April 2008

BIOENERGY AND FOOD SECURITY

Purpose

The context: Peru, Tanzania and Thailand (potentially linked to Cambodia)

- Economic, poverty and food security context
- Energy profile
- Current bioenergy context: potential feedstock, stakeholders, constraints, concerns

The BEFS Approach

- The BEFS Analytical Framework
- Understanding who gains and who looses at the micro level
- Basis for informed policy decisions

Conclusions

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Tanzania

Source: FAO

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Economic, Poverty, Food Security and Energy Context in Tanzania

- **Dependent on agriculture, 45 percent of GDP in 2005**
- **High poverty levels, 44 percent of undernourished 2001-2003**
- **Energy supply mix (IEA, 2004),** 90 percent from biomass, mostly woody imported petroleum and electricity for approximately 7 percent of energy supply some local hydro, gas and coal production
- **Energy use in the country**
  - Energy use per capita in Tanzania is 498 ktoe/capita (versus 703 ktoe/capita in Africa and 1793 ktoe/capita in the World, WDI 2007)
  - 10 percent of households have access to electricity, with 2 percent in rural areas
- **Low level technologies**
- **Low level of electrification**

What is Tanzania thinking of in terms of bioenergy feedstock?

- **Bioethanol**: Sugarcane, Sweet sorghum, Cassava, Sisal
- **Biodiesel**: Jatropha, Palm oil, Sunflower
- **Biogas:** organic and crop residue, woody biomass, sisal, fishing industry wastes
- **Wood fuel:** Indigenous species and eucalyptus

The Bioenergy Task Force

- Ministry of Agriculture, Ministry of Energy, Planning and Economic Empowerment and other related ministries
- Main objective: Bioenergy Policy (Institutional Framework for Sustainable Biofuel Development)

Constraints to private sector investment

Legislation

- No legislation in place for Bioenergy

Land Tenure

- All land owned by state - released to villages, state, individuals

Rural Infrastructure

- Very limited number of roads
- Bioenergy proposals always close to coast or to a railroad

Constraints to poor rural populations

- Extreme poverty and low access to **credit**
- Remoteness and geographic **isolation**
- Rural i**nfrastructure**
- **Gender** considerations – moving from subsistence farming to cash cropping potentially alters (negatively) household food security

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The Peruvian Context

- **Feedstock**
  - Bioethanol: Sugar cane, Sweet sorghum
  - Biodiesel: Palm oil, canola, jatropha
- **Bioenergy Policy**

  E8 (8 % ethanol + 92 % gasoline) in 2010

  B2 (2 % biodiesel + 98 % diesel) in 2009

  B5 (5 % biodiesel + 95 % diesel) in 2011.
- **Constraints and Risks**
  - Water
  - Mainly commercial, little smallholder involvement

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The Thailand Context

- **Feedstock**
  - Bioethanol: Sugarcane and Cassava
  - Biodiesel: Oil Palm
    - Discussions also on Jatropha
- **Bioenergy Policy**
  - From 1 Feb 2008 all diesel B2 and from 2011 all diesel B5
  - Gasohol 91 and 95 with 10% ethanol, price based
- **Constraints and Risks**
  - Validation of impacts on smallholders
  - Food security impacts on neighbouring countries

Learning in Progress

Similarities	Divergences
•Expressed need for direction to develop sound bioenergy policies/strategies •Strong investor interest, stakeholders involved •First steps towards cross-sectoral regulation (Bioenergy task forces)	•Level of development of the Bioenergy sector HIGH ↓ LOW Thailand Peru Tanzania •Biomass feedstock i.e. canola, cassava, sisal, indigenous species
Biomass feedstock i.e. sugar, jatroph, oil palm	National bioenergy development concerns: Peru Tanzania Thailand → water issues land issues regional food security

The BEFS Analytical Framework

- *Country Specific Scenario Selection*
  Definition of the bioenergy scenario

- **Module 1**: *Technical Biomass Potential*
- **Module 2**: *Supply Curves*
- **Module 3**: Economic Potential
- **Module 4**: *Macro-economic analysis*
- **Module 5**: *Food Security Analysis*

BIOENERGY AND FOOD SECURITY

Potential risks

- No involvement of small holders
- Loss in land access
- Impact on environment
- Gender unbalance in wealth redistribution
- Lack of institution coordination

Potential benefits

- Increased employment
- Improved access to energy in rural areas
- Increase in revenue for some groups
- Increased agriculture productivity
- Increased energy security

Next steps

- Gain clearer understanding of different tradeoffs
- Bioenergy policy
- Need for clear investment guidelines
- Safety nets for short run effects
- Potential multipurpose crops
- Invest revenue in infrastructure, to increase agriculture productivity, market development and R&D

Thank you!

For further information

BEFS website

www.fao.org/nr/ben/befs

2nd Technical Consultation Documentation:

ftp://ext-ftp.fao.org/nr/data/nrc