The Bioenergy and Food Security (BEFS) project

Mirella Salvatore
Bioenergy and Food Security Project
The Bioenergy and Food Security Project

**BEFS** is a decision-making support tool funded by the Ministry of Agriculture of the German Government.

- Develop analytical framework and guidance to assess the bioenergy and food security nexus
- Implement the methodology in the country based on country specific data
- Strengthen country capacity, exchange knowledge, feed into policy development and standard setting
BEFS Objectives

• **Provides an information platform** - BEFS produces various sets of raw data and in-depth analysis on bioenergy development.

• **Informs judgements to aid decision making and guide action** - BEFS assists decision makers solve problems, plan ahead and make informed judgements regarding policy.

• **Strengthens relationships and builds capacity** - BEFS brings together people and organisations within and outside government in an exchange of information and ideas.
What BEFS assesses and how

Bioenergy

Food availability and Food access

Food security

Assessment on where and how much is the feedstock production; how such production is achievable

Techno-economic feasibility analysis of bioenergy production to evaluate the best technical configuration

Assessment of potential competition food-feedstock production; if feedstock production happens in food insecurity hot spots

Evaluate the food accessibility looking at the agriculture outlook; if it could be improved generating employment; how HHs farmers can be impacted by food price variation
BEFS Analytical Framework

- **Agriculture Outlook**
  - Natural Resources
  - Bioenergy Sector’s Economic Competitiveness
  - National Economy & Consumer Prices

- GHG, Energy Balance & Climate Change
- Management Policies
BEFS Partners Countries
Peru, Tanzania and Thailand
Why did we choose these countries?

- Country request
- Geographical reason
- Development of bioenergy
- Food security and poverty status
- Environmental concerns
Who are these countries for BEFS?

- Tanzania: No BE policy, No BE development, External Investors interest, High food insecurity, 40% protected areas and no land title
- Peru: commitment to BE, Low BE development, Export market, pockets of food insecurity, three ecosystems, water and forest issues
- Thailand: AEDP, High BE development, Domestic use (energy security), Low food insecurity, Climate change discussion
Agricultural Outlook

- Partial equilibrium model to evaluate the impact of bioenergy development (internal and external) on the agricultural sector (Aglink-COSIMO modelling)
- Forecasts of 10 years of the ag. sector
- Tanzania: testing scenarios
- Peru: baseline including the mandates
- Thailand: evaluating the response of the agricultural market under the AEDP
Natural resources: where, how much, how

• Land and potential production of bioenergy crops (zoning, agricultural assessment and planning)

• Forest and agricultural residues (supply/demand)

• Water –availability, limitation, implication of the production of bioenergy crops
Land Suitability Assessment (Zoning)

- Identify the most suitable areas for the production of the bioenergy crops and the production
- Highlight potential conflicts in these areas
- Test alternative agriculture management systems

Tanzania: 5 crops, 2 production systems
Peru: 4 crops, actual production system
Thailand: 3 crops, actual production system and soil management suggestions for increase productivity
WISDOM & WEAP

• WISDOM: Evaluate the supply and demand of forestry and agricultural residues to analyze the potential availability of biomass

• WEAP: Evaluate the water resource availability and the water stress due to specific production

These elements were tested in Peru
Techno-economic competitiveness and Life-cycle analysis

• Evaluate if the bioenergy production is competitive
• It is related to the processing side of the supply chain

Tanzania: scenarios of potential implementation
Peru: evaluation of the sugar-based sector
Thailand: evaluation of multiple configurations for bioethanol and biodiesel production. Life-cycle analysis to analyze GHG emissions
Economy-wide effects

- Computable General Equilibrium model (CGE) looking at the overall economy (SAM) adding information on the bioenergy sector
- What are the effects of this new sectors on the overall economy in terms of economic growth, employment, poverty reduction

Fully implemented in Tanzania and Peru.
Thailand made assumptions on modifications of the agricultural sector due to the bioenergy development
Household level vulnerability analysis

- Evaluate the accessibility dimension of food security: it is looking to main food crops
- Looking at the net position of the farmer (net consumer/producer) analyze the impact of crop price variation on different segment of the population.

Fully implemented in Peru, partially in Tanzania and a descriptive analysis was carried out in Thailand.
In conclusion ....

BEFS offers an exploration into the extent to which the bioenergy development may be feasible in a *sustainable way* and asks/considers whether there can be a double dividend effect. That is,

1) a real long-term alternative to fossil fuels, and
2) promoting rural development in order to boost overall growth through improved incomes in the agricultural and rural sector.
Thank you!

www.fao.org/bioenergy/foodsecurity/befs