



Food Security and Bioenergy developments at the country level:

The BEFS project and Tanzania

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Purpose

- Overview of the Bioenergy and Food Security (BEFS) Project
- The countries with a focus on Tanzania

The Project

- The phases of the project
- The Analytical Framework: modelling framework complemented with qualitative analysis

Tanzania

- BEFS Project Partner
- Economic and Food Security situation
- Current bioenergy context: potential feedstock, stakeholders, constraints, concerns

Conclusions



The Objectives of BEFS

Objective: Mainstreaming food security concerns into national and sub-national assessments of bioenergy potential.

Country driven approach

Three Country Teams: **Peru, Tanzania, Thailand**

The Stages of BEFS

Phase 1: Develop analytical framework and guidance to assess the bioenergy and food security nexus

Phase 2: Assess bioenergy potential and food security implications

Phase 3: Strengthen institutional capacities, exchange knowledge, pilot sustainable and food-secure bioenergy projects and influence policies



The BEFS Analytical Framework

- The Analytical Framework (AF) has been designed, it is in peer review stage and we would welcome comments on it
- The analysis is carried out in 5 modules following the definition of the country specific bioenergy scenarios
- We are starting to test the AF in the countries.



Description of the Analytical Framework

- *Country Specific Scenario Selection*
Definition of the bioenergy scenario
- **Module 1: *Technical Biomass Potential***
Assessment of the technical biomass potential
- **Module 2: *Cost Supply Curves***
Calculation of the biomass production costs



Description of the Analytical Framework (contd.)

- **Module 3: Economic Potential**
Based on outputs obtained from previous steps and comparison with food (COSIMO) and energy markets the economic bioenergy potential is assessed
- **Module 4: *Macro-economic analysis***
National level sector analysis: income, price and employment effects
- **Module 5: *Food Security Analysis***
National and household level food security analysis (labour markets, price transmission, economic cost-benefit analysis, estimation of impacts)



Considerations for BEFS Focus Country?



Four criteria for project partners:

- Energy sector and bioenergy options in the country
- Food security dimensions
- General country characteristics
- Institutional and governance issues

Countries: Peru, Tanzania and Thailand

Learning Progress: Focus Countries-

Scoping missions and country profiles showed:

| Similarities | Divergences |
|---|--|
| <ul style="list-style-type: none"> • Expressed need for direction to develop sound bioenergy policies/strategies • Strong investor interest, stakeholders involved • First steps towards cross-sectoral regulation (Bioenergy task forces) | <ul style="list-style-type: none"> • Level of development of the Bioenergy sector <p>HIGH Thailand  Peru LOW Tanzania</p> <ul style="list-style-type: none"> • Biomass feedstock i.e. canola, cassava, sisal, indigenous species |
| Biomass feedstock i.e. sugar, jatropha, oil palm | National bioenergy development concerns: Peru water issues Tanzania land issues Thailand regional food security  |

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Tanzania



Source: FAO



Tanzania: Some Key Indicators

| Economic Indicator | 2005 |
|---|-------------|
| GDP/Capita (Constant 2000 USD) | 330 |
| GDP/Capita (Constant 2000 Int\$, PPP) | 662 |
| GDP Growth | 7.0 |
| Agriculture Value Added per worker (Constant 2000 USD) | 303 |
| Agriculture Share | 44.5 |
| Percent of rural population | 75.8 |

Source: WDI 2007, UNDP

Food Security and Poverty in Tanzania

| Key Indicators | Year of Reference | Variable |
|--|-------------------|----------|
| Population (millions) | 2001-2003 | 36.3 |
| Percent of undernourished | 2001-2003 | 44 |
| Dietary energy supply (kcal/person/day) | 2000-2004 | 1960 |
| Self-sufficiency ratio for cereals | 2004 | 85 |
| Poverty gap at 1 USD a day (PPP), Percent | 2000 | 20.7 |
| Poverty gap at 2 USD a day (PPP), Percent | 2000 | 49.3 |
| Adult literacy rate, female (age 15 and older) | 2005 | 62.2 |
| HIV Prevalence (% age 15-49) | 2005 | 6.5 |

Source: FAOSTAT 2006, SOFI 2006, WDI 2007, UNDP; * calculated



Energy Profile of Tanzania

- **Current energy supply mix (IEA, 2004)**
 - More than 90 percent of national energy supply comes from biomass, mostly woody
 - Petroleum and electricity are imported and make up for approximately 7 percent of energy supply
 - Some local hydro, gas and coal production, 1 percent

- **Current 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)
 - Based on the household budget survey of 2001, 10 percent of households have access to electricity, this swivels down to 1 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



Who is currently involved?

- **Government:** Ministry of Agriculture, Ministry of Energy, and other related sections
- **University and research**
- **Companies** - Sunbiofuels, Diligent, Infenergy, Kitimondo plantations, SEKAB, British Petroleum and others
- **UN** organizations and NGOs



Who are the major stakeholders?

- **Rural** populations, smallholders, outgrowers
- less efficient smaller scale
- **Private sector investors** – capital to invest
and larger scale
- Plantation model could worsen social and economic
exclusion, however.....
- Dependent upon contractual arrangements,
structure and adherence to policy/mandates



Constraints to private sector investment

Legislation

- No legislation in place for Bioenergy
- National Bioenergy Task Force

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

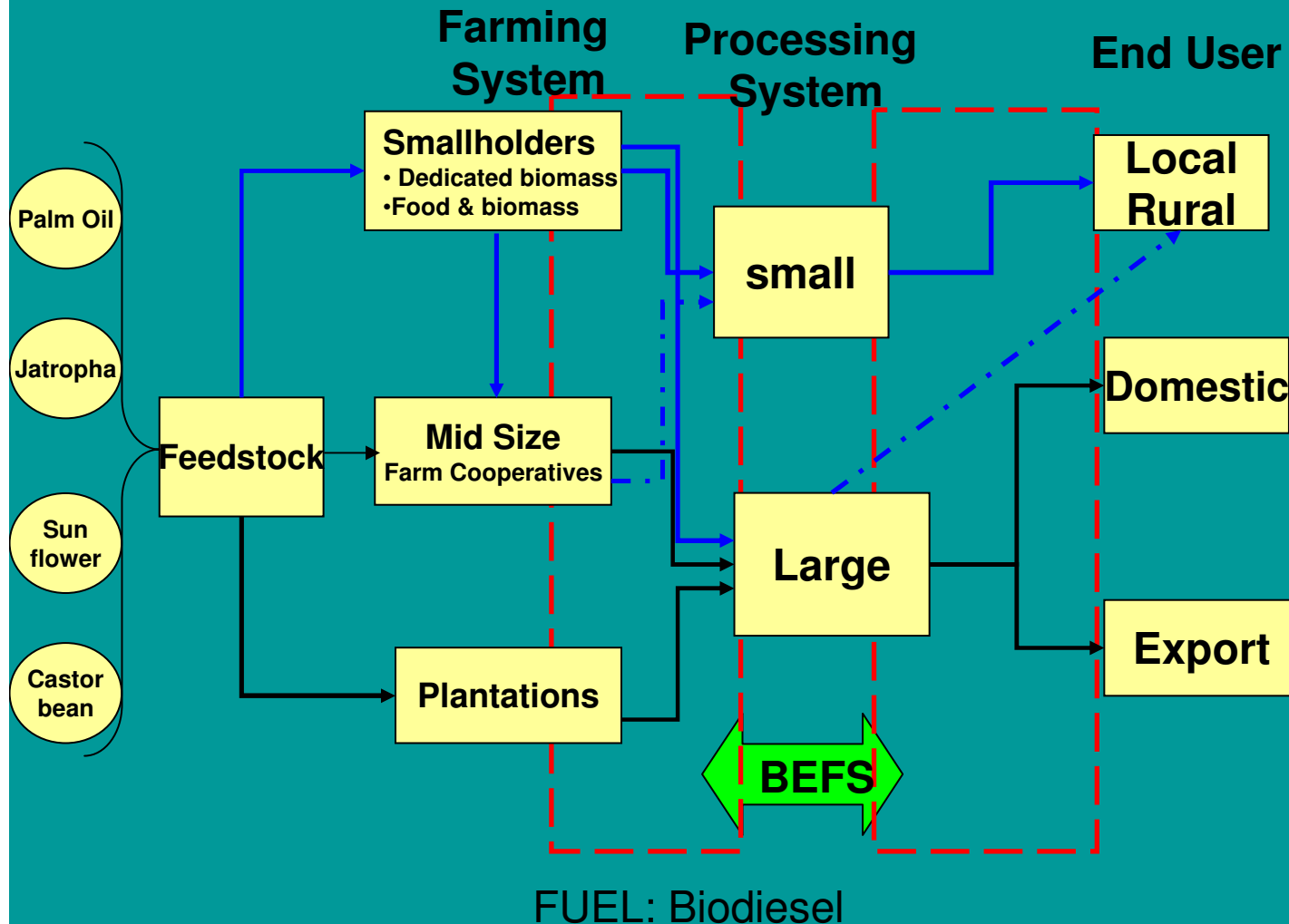


Constraints to poor rural populations

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

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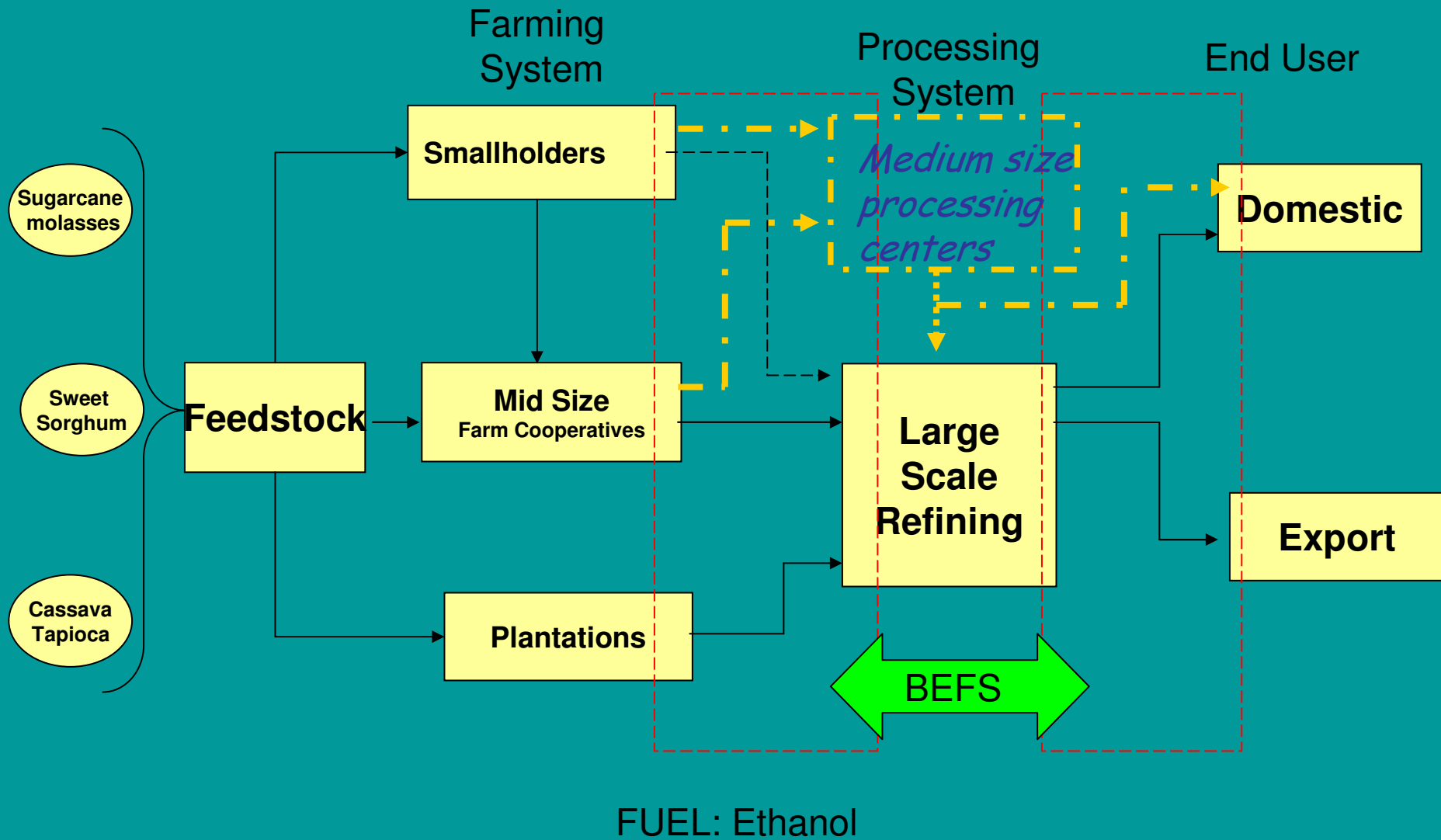
Production Schemes: Smallholders to Benefit?



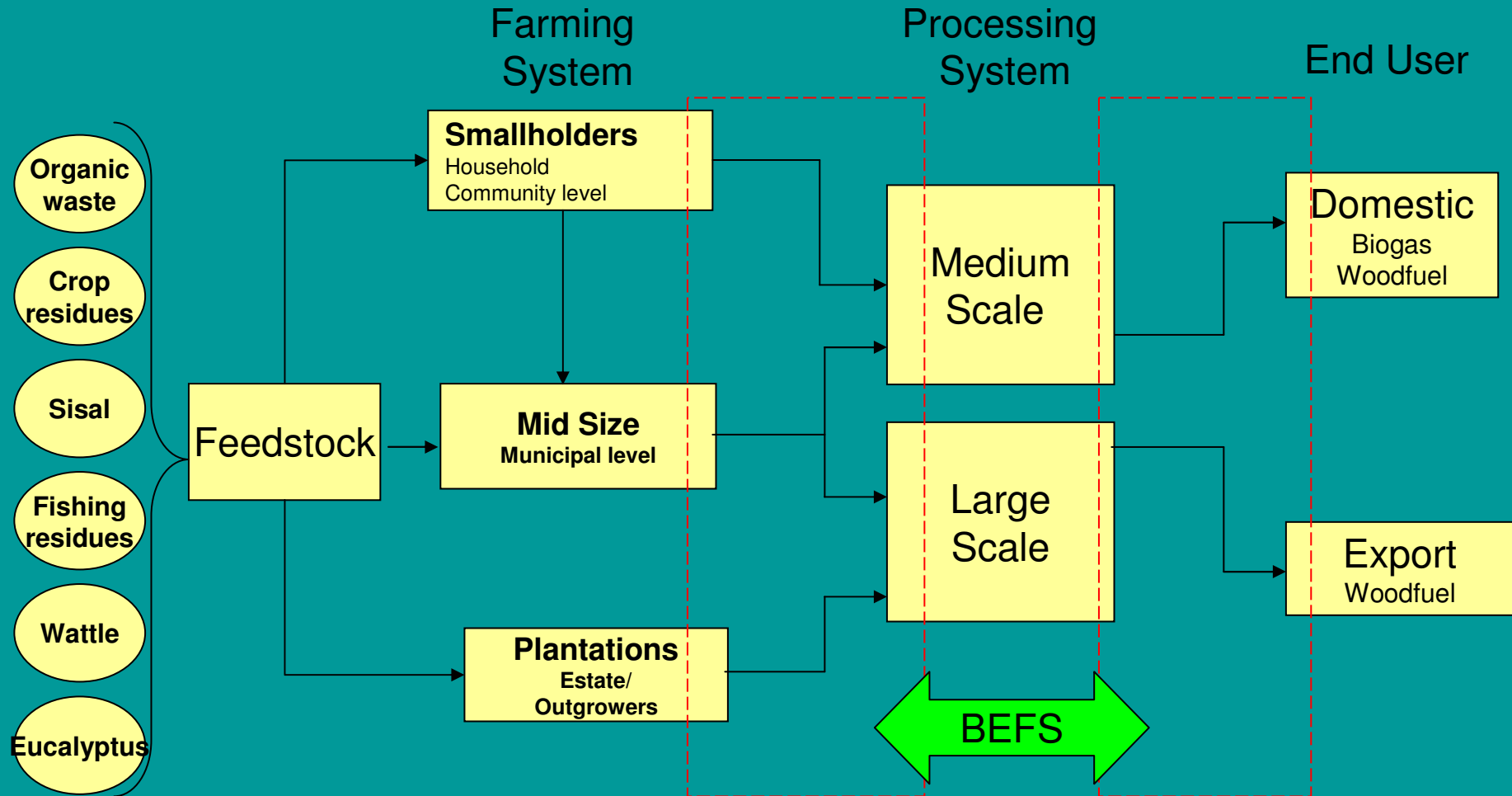
Set up production schemes that help:

- rural/smallholders generate income in a sustainable manner
- encouraging investments in bioenergy for the production of fuel for local use
- creating rural employment through establishing agro-processing

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FUEL: BIOGAS AND WOODFUEL

Next Steps

- Work in close connection with teams in countries, stakeholders and governments
- Currently starting to test the analytical framework with country specific data and use feedback from the tests back into the framework
- Closely support countries on identified weak areas, e.g. Investment blueprint in Tanzania and water issues in Peru
- Enable countries to interact and build on other country experiences
- Investigate real potential of “multiple-use crops” and new crops
- Investigate agriculture policies and trade barriers
- Expansion to other countries, in light of a regional approach



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- **Housed in FAO's Natural Resources, Climate Change & Bioenergy Division**
- **Team at FAO Headquarters**
 - Andreas von Brandt**, Project Coordinator
 - Erika Felix**, Technical Advisor
 - Irini Maltsoylou**, Bioenergy and Food Security Economist
 - Mirella Salvatore**, Data and Knowledge Management



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>