BEFS
Bioenergy and Food Security Projects

FAO BEFS ASEAN Project Inception Meeting

Session 3

Monitoring Impacts of Bioenergy on Food Security at National and Regional Levels

FAO Regional Office for Asia and the Pacific

Meeting Roadmap

Introduction

BEFS Project

Monitoring & Mainstreaming

Close

Session 1
Welcome and introduction

Session 2
BEFS ASEAN project overview and objectives

Session 3
Monitoring impacts of bioenergy on food security

Session overview

1. Definitions
2. Etc
3. Title
   Interactive session

Topics for discussion

Session objectives

Corresponding meeting objective:

Specific session objectives:

1

2

3

Our goals

Food security: definition

"*Food security* exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life".

(World Food Summit, 1996, Action Plan)

Food security: dimensions

- **Availability**: availability of sufficient quantities of food of appropriate quality
- **Access**: access by individuals to adequate resources for acquiring appropriate foods for a nutritious diet
- **Utilization**: utilization of food (through adequate diet, clean water, sanitation and health care) to reach a status of nutritional well-being where all physiological needs are met
- **Stability**: availability of and access to adequate food at all times

Bioenergy and food security: links

- Bioenergy development can lead to both positive and negative environmental and socio-economic impacts
- These impacts can affect the four dimensions of food security

Main environmental dimensions that may be affected by bioenergy development

- Biodiversity
- Climate change mitigation
- Agrobiodiversity
- Water availability and quality
- Soil quality

Main socio-economic dimensions that may be affected by bioenergy development

- Access to land
- Employment, wages and labour conditions
- Income generation and inclusion of smallholders
- Local food security
- Community development
- Energy security and local access to energy
- Gender equity

Factors determining the impacts of bioenergy development

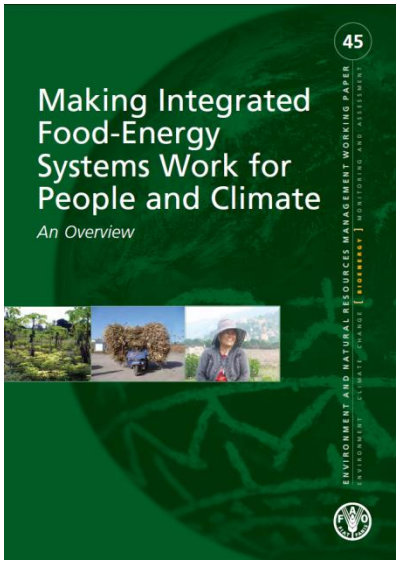
- Local environmental and socio-economic conditions and interaction with other sectors/activities
- the regional, national and local policy environment
- the types of feedstocks, processing technologies and biofuels
- the scale and ownership of production
- the types of business models along the bioenergy supply chain
- the way production (especially feedstock production) is managed

GPs to mitigate env. risks and enhance benefits: Sustainable agricultural management approaches

- Conservation Agriculture
- The Ecosystem Approach and Sustainable Crop Production Intensification
- Organic Agriculture

GPs to mitigate env. risks and enhance benefits: Integrated agricultural and forestry management systems

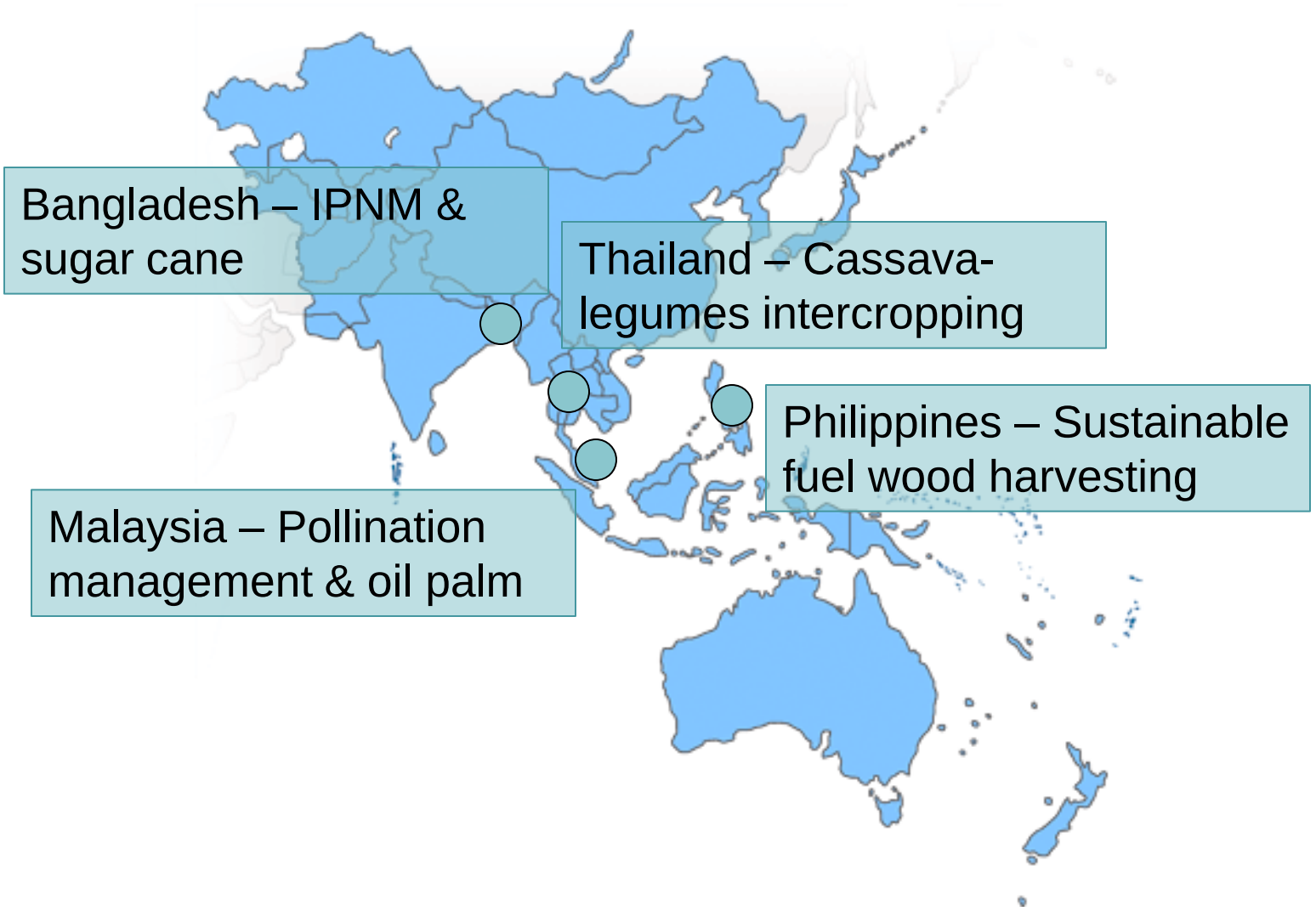
- Multiple Cropping Systems and Crop Rotation
- Agroforestry
- Integrated Food-Energy Systems (IFES)



GPs to mitigate env. risks and enhance benefits: Sustainable field-level agriculture and forestry practices

- Alternatives To Slash-and-Burn
- Community-Based Forest Management (CBFM)
- Conservation And Sustainable Use of Plant Genetic Resources and Seeds
- Forest Buffer Zone
- Integrated Pest Management (IPM)
- Integrated Plant Nutrient Management (IPNM)
- No- or Minimum Tillage
- Pollination Management
- Precision Agriculture
- Rainwater Harvesting and Management
- Rehabilitation of Degraded Lands
- Soil Cover
- Sustainable Forest Harvest
- Sustainable Irrigation
- Wild Biodiversity Management at Farm Level

Examples of good environmental practices in Asia



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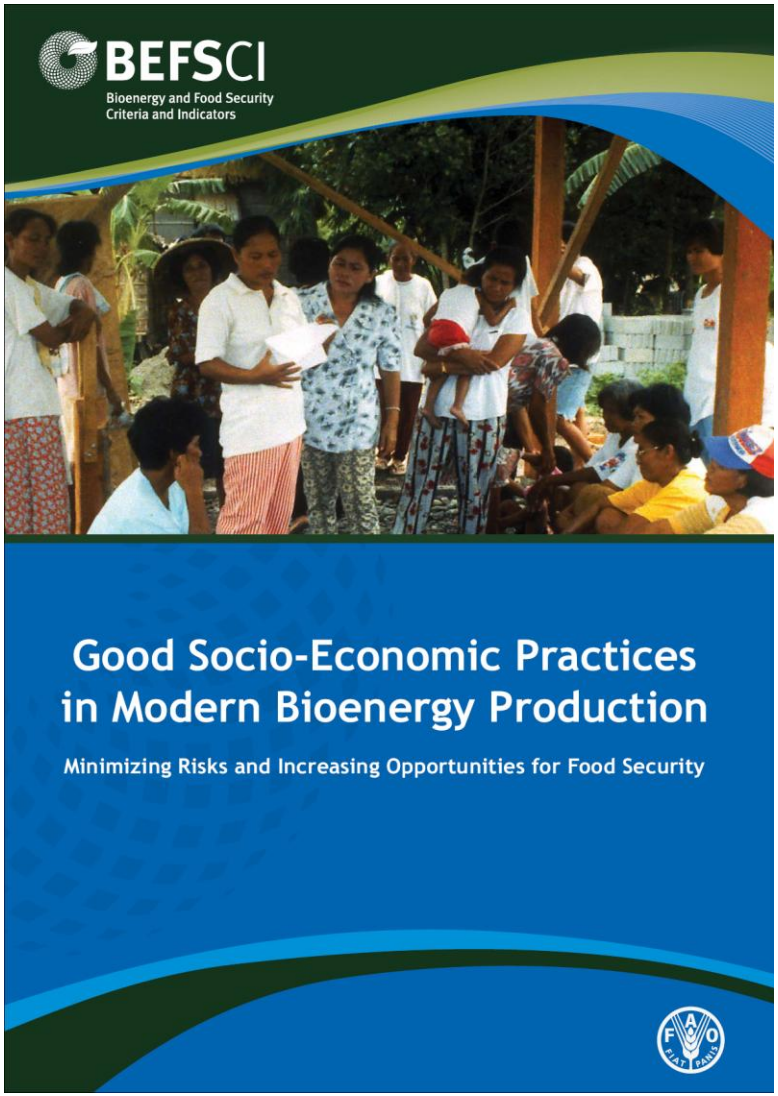
Based on input from 16 operators in 3 continents:



Web-based compilation:
http://www.fao.org/bioenergy/foodsecurity/befsci/gpenv/se/

Examples of good socio-economic practices implemented by operators

Food Security:

- **Integrated food and energy systems**
- **Subsistence plots**
- **Provision of improved agricultural inputs and/or equipment**
- **Training on good agricultural practices**
- **Provision of food**
- **Improved cookstoves**

Access to Land:

- **Consultation**
- **Mapping of customary rights**
- **Fair compensation to landowners/users**
- **Conflict resolution mechanisms**
- **Inclusion of smallholders**

Examples of good socio-economic practices from Asia….

Good practices: success factors

- **Good practices** can play a key role in **mitigating risks** and **enhancing benefits** of bioenergy development

- <u>But no 'silver bullet' solutions</u>:

  - The *relevance* and *viability* of each good practice depend on the characteristics of production system and of the area where production takes place

  - The *effectiveness* of each good practice depends on local biophysical, socio-economic and cultural factors, and on the quality of local governance and institutions

Good practices: implementation challenges

- Implementing good practices can be a ‘win-win’ solution in some cases
- But there are *barriers* (economic + non-economic) to the implementation of certain good practices in certain contexts
- Therefore, adequate *policy instruments* and *incentives* are required for the scale-up of good environmental and socio-economic practices

Policy instruments for good practices in bioenergy

- Mandates with sustainability requirements
- National Standards for Certification
- Financial incentives:
  - Direct payments
  - Tax credits
  - Payments for Environmental Services (PES)
  - Grants
- Capacity building

From risk prevention and management to impact assessment

- Modern bioenergy development can create both risks and opportunities for food security
- In order to ensure that modern bioenergy development is sustainable and that it fosters rural development and food security, it is essential to:

  → **prevent and manage risks**

  → **assess**, both *ex-ante* and *ex-post*, **impacts** at **national** and **operator levels**

Assessing the impacts of bioenergy on food security at national and operator levels

National level:

- Internationally agreed **GBEP/BEFS indicator** on the effects of bioenergy use and domestic production on the price and supply of a national food basket

Operator Level:

- **BEFS Operator Level Food Security Assessment Tool**

GBEP/BEFS indicator: steps

- Step 1: Determine the relevant **food basket(s)** and its **components** (i.e. main staple crops)
- Step 2: Assess the **links** between **bioenergy** use and domestic production and changes in the supply and/or prices of relevant components of **food basket(s)**
- Assessment of the resulting net **welfare impacts** at national, regional and household levels

Step 2:
3 tiers with increasingly accurate/complex approaches

- Tier I: Preliminary indication
- Tier II: Causal descriptive assessment
- Tier III: Quantitative assessment

Step 2, tier I: Preliminary indication

Preliminary indication of **changes in the price and/or supply of the food basket(s)** and/or of its components in the context of bioenergy developments resulting from collecting data on price and supply

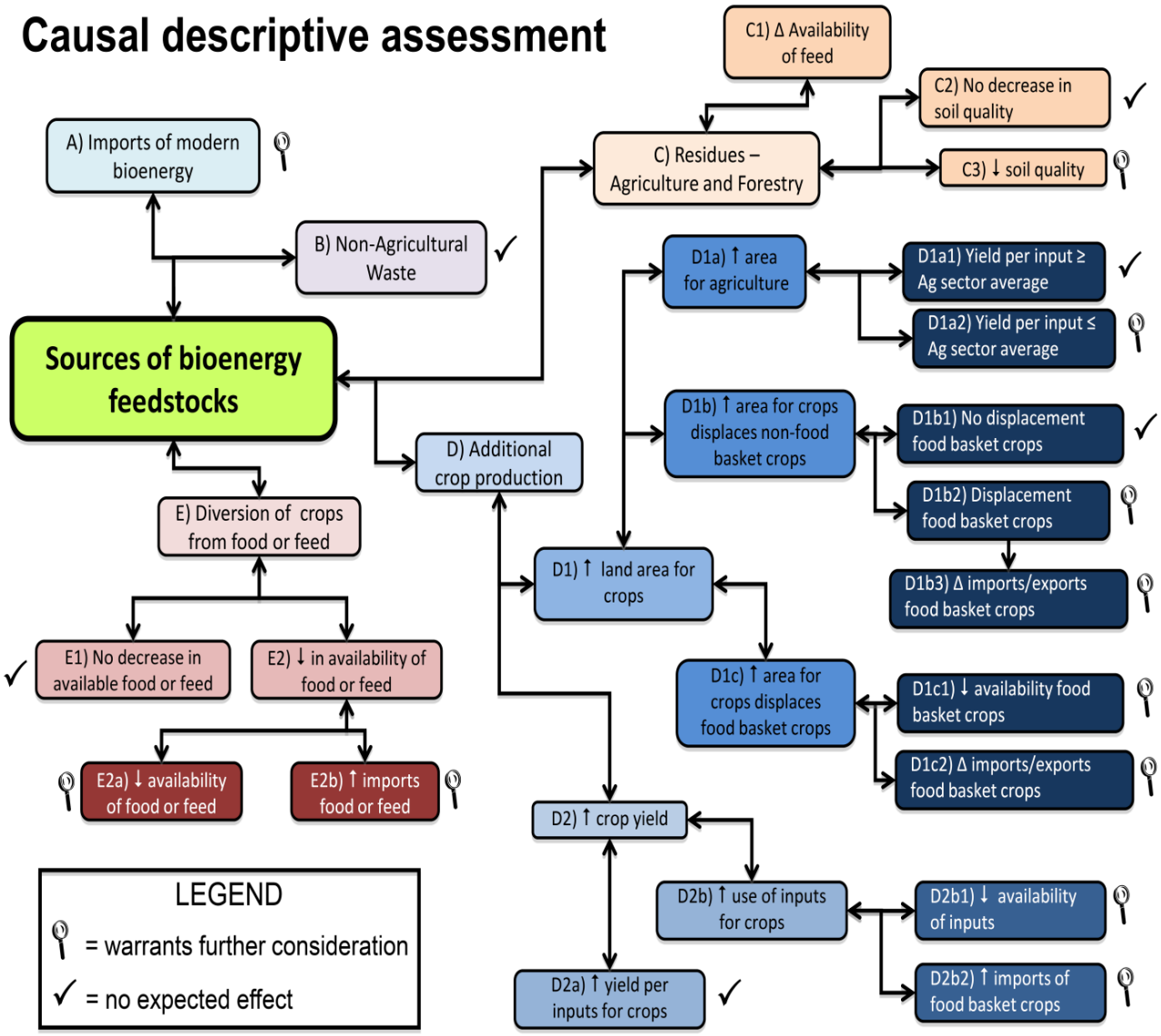
- QUESTIONS ADDRESSED:
  - Has bioenergy production and/or use increased?
  - If so, has there been at the same time a decrease in the supply and/or an increase in the price of food basket items?

Step 2, tier II:
Causal descriptive assessment

Causal descriptive assessment of the **role of bioenergy** (in the context of other factors) in the observed **changes in price and/or supply**

- QUESTIONS ADDRESSED:
  - Which is the origin of bioenergy feedstocks? Additional crop production, diversion of crops (e.g. from food/feed markets), residues from agriculture, forestry and fisheries, and/or non-agricultural waste?
  - In light of this, what is the probability that bioenergy led to a downward pressure on supply and un upward pressure on prices of food basket items?

Step 2, tier II



Step 2, tier III: Quantitative assessment

"Quantitative assessment" using approaches such as time-series techniques and Computable General Equilibrium (CGE) or Partial Equilibrium (PE) modelling

- QUESTIONS ADDRESSED:
    - Which share of the observed supply decrease and/or price increase was due to bioenergy?

Assessing net impacts on national, regional and household welfare levels

- Household level: **net benefit ratio** (i.e. BEFS household level analysis)

- National level: **terms-of-trade effect** - effect of a change in the international price of a commodity on the value of a country's exports and imports as a percent of GDP

- QUESTIONS ADDRESSED:
    - How was national welfare affected by the commodity price change? Is the country a net exported or a net importer of this commodity?
    - Which were the welfare impacts at household level? Which households were most affected?

Assessing the impacts of bioenergy on food security at operator level

The **BEFS Operator Level Food Security Assessment Tool** can be used to assess how an existing or planned agricultural operation with a bioenergy component may affect food security

BEFS Operator Level Food Tool: scope

The tool consists of three parts:

1. **Change in the supply** of food (crops and livestock) to the domestic market

2. **Resource availability and efficiency** of use (land, water and fertilizers)

3. **Physical displacement, change in access to resources, compensation and income generation**

BEFS Operator Level Tool: indicators and scoring system

- Each part includes **indicators** addressing key environmental and socio-economic aspects relevant for food security

- For each indicator, specific **benchmarks**, **thresholds** and a **scoring system** are provided:

- **Potential Benefit for Food Security**
- **No Significant Influence on Food Security**
- **Potential Risk to Food Security**

www.fao.org/bioenergy/foodsecurity/befsci/operator-tool

Responding to the impacts of bioenergy on food security

- Identify and assess drivers of these impacts (e.g. through BEFS Compilation of Tools and Methodologies)
- Verify the extent to which relevant good environmental and socio-economic practices have been implemented by producers
- Verify if proper policy instruments are in place to require or promote the implementation of these good practices
- Based on the above, revise bioenergy policy (if necessary)

Concluding remarks

- Modern bioenergy development can create both risks and opportunities for food security

- In order to ensure that modern bioenergy development is sustainable and that it fosters rural development and food security, it is essential to:

  → **prevent and manage risks**

  → **assess**, both *ex-ante* and *ex-post*, **impacts** at **national** and **operator levels**, and **respond** to them

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Bioenergy and Food Security Projects

Interactive Session

Interactive Session

Instructions:

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Interactive Session

Points for discussion:

1

THANK YOU!

http://www.fao.org/bioenergy/foodsecurity/befs

PLEASE DO NOT HESITATE TO CONTACT US:

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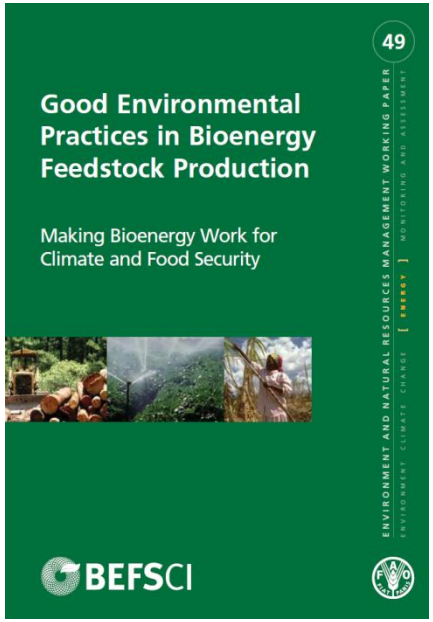
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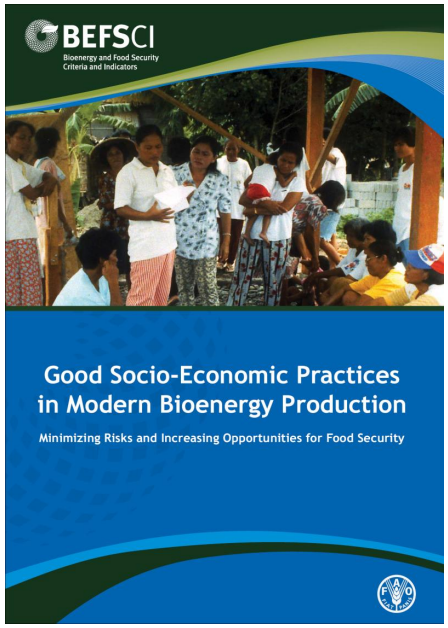
Good Environmental Practices in Bioenergy Feedstock Production
Making Bioenergy Work for Climate and Food Security
BEFSCI
ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT WORKING PAPER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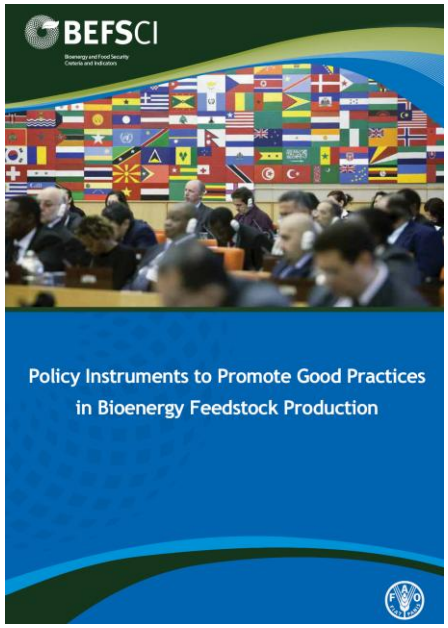
Bioenergy and Food Security Criteria and Indicators
Good Socio-Economic Practices in Modern Bioenergy Production
Minimizing Risks and Increasing Opportunities for Food Security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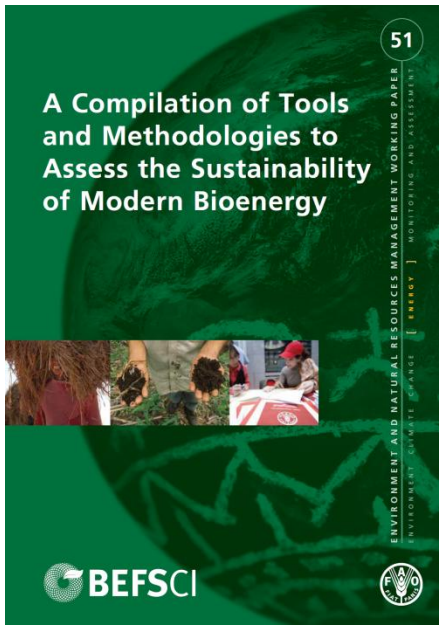
Policy Instruments to Promote Good Practices in Bioenergy Feedstock Production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A Compilation of Tools and Methodologies to Assess the Sustainability of Modern Bioenergy
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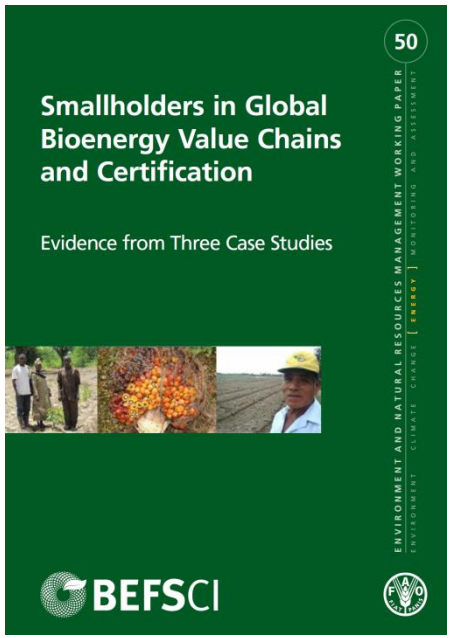
ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT WORKING PAPER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Smallholders in Global Bioenergy Value Chains and Certification
Evidence from Three Case Studies
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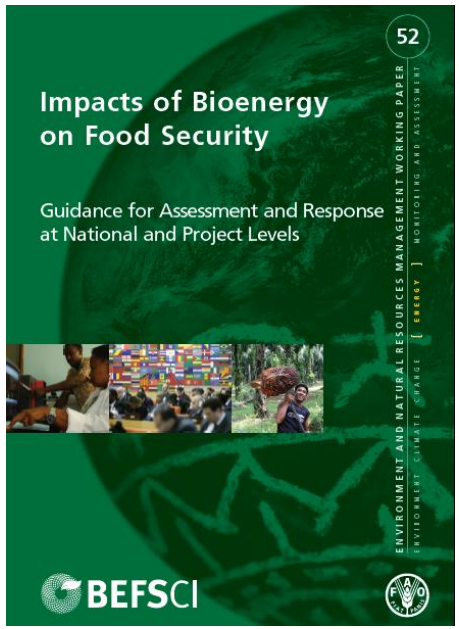
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Impacts of Bioenergy on Food Security
Guidance for Assessment and Response at National and Project Levels
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ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT WORKING PAPER