BEFS
Bioenergy and Food Security Projects

Creating sustainable and scalable solutions – Promoting better practices

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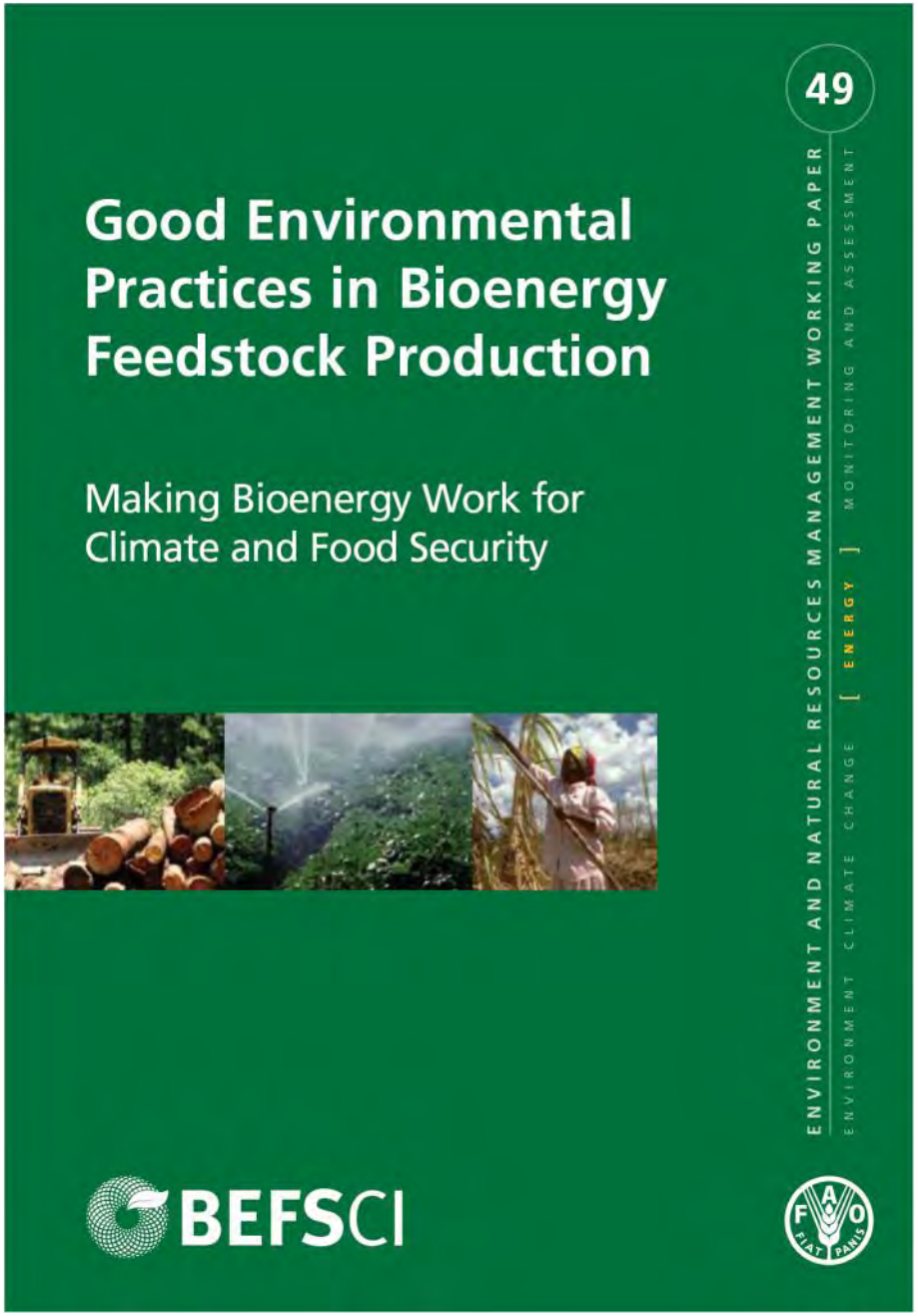
IPIECA-CONCAWE Workshop, Brussels, 18-19 September 2012

Main environmental dimensions that may be affected by bioenergy production

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

Factors determining environmental impacts of bioenergy production

- Local environmental conditions and pressures from other sectors/activities
- the regional, national and local policy environment
- the types of bioenergy, feedstocks and processing technologies
- the way production (especially feedstock production) is managed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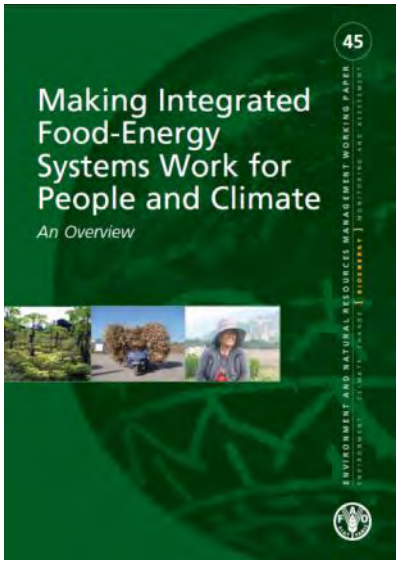
Good Environmental Practices in Bioenergy Feedstock Production
Making Bioenergy Work for Climate and Food Security
ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT WORKING PAPER
ENVIRONMENT CLIMATE CHANGE [ENERGY] MONITORING AND ASSESSMENT
BEFSCI

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

Good environmental practices: no 'silver bullet' solutions

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

- The *effectiveness* of each good environmental practice depends on local biophysical conditions and on how the practice is implemented

Sustainable field-level agricultural and forestry practices: main potential direct benefits

Sustainable field-level agricultural and forestry practices: main implementation challenges

- Agronomic issues (e.g. pests)
- Economic issues (e.g. labour requirements and productivity)
- Lack of awareness among farmers and extension agents
- Lack of research and development
- Perverse incentives (e.g. fertilizer subsidies)

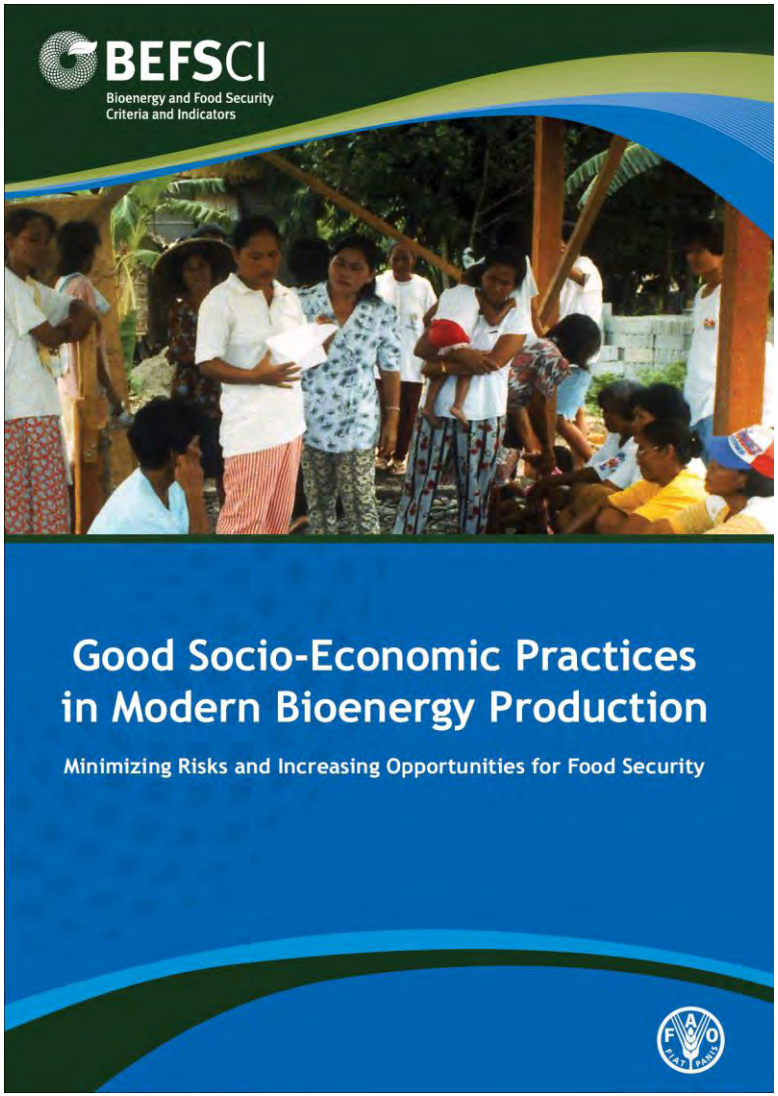
Main socio-economic dimensions that may be affected by bioenergy development

- 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 socio-economic impacts of bioenergy production

- The local socio-economic context
- the regional, national and local policy environment
- the types of bioenergy, feedstocks and processing technologies
- the scale and ownership of production
- the types of business models found along the bioenergy supply chain
- the way production (especially feedstock production) is managed

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**

Good socio-economic practices: no 'silver bullet' solutions

- The *relevance* and *viability* of each socio-economic practice depend on the structure of the supply chain and on the socio-economic context

- The *effectiveness* of each good socio-economic practice depends on local socio-economic conditions and cultural context, on the quality of local governance and institutions, and on how the practice is implemented

Example:
Addax Bioenergy, Sierra Leone

- **Location**: Makeni, central Sierra Leone
- **Extension**: 20 000 hectares
- **Crop/Feedstock**: Sugarcane
- **Products**: bioethanol (on-site processing) and electricity from bagasse
- **Job creation**: 2 000 jobs expected

Addax Bioenergy, Sierra Leone
GPs to safeguard access to land for local communities

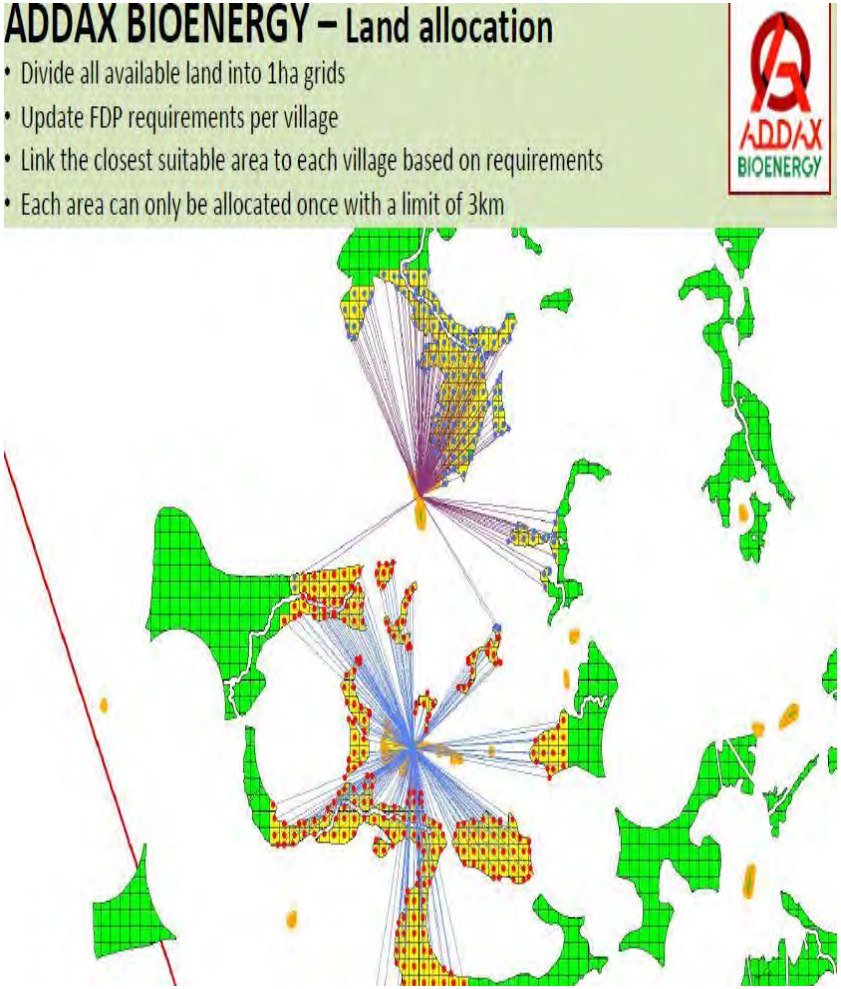
- **Draft land lease agreement** developed by two local law firms, of which one selected by the communities and Chiefdom Councils
- Land lease draft negotiated for 11 months with Districts and **Chiefdom officials, traditional landowners and affected villages**
- Annual **direct rent payments** to traditional landowners
- **Grievance mechanisms to receive and facilitate resolution** of affected communities' concerns and grievances about company's environmental and social performance

Addax Bioenergy, Sierra Leone
GPs to safeguard or enhance local food security

Farmer Development Programme:

2 000 ha of community fields for directly affected communities in the project area (largest food producing project in the country), with:

- farmer training
- livelihood
- and land access and preparation



Addax Bioenergy, Sierra Leone
Main challenges encountered in implementing GPs

- No detailed maps of local land use
- Lack of documentation on traditional landowners' rights
- Lack of education at all levels, high illiteracy
- Limited resources available (seeds, fertilizers, etc.)
- Low technologies in agriculture
- Lack of ownership of GP training among local farmers

Concluding remarks (I)

- Sustainable solutions exist, e.g. successful examples of good environmental and socio-economic practices implemented by operators

- But no 'silver bullet' solutions:

  - 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

Concluding remarks (II)

- 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, an *enabling environment* is needed for the scaling-up of good environmental and socio-economic practices

Concluding remarks (III)

- Adequate *policy instruments* and *incentives* are required in order to create this enabling environment
- Part of the *voluntary standards* make explicit reference to some of the aforementioned good practices
- However, in the lack of specific *requirements* in importing markets and in producing countries, the incentive to implement potentially challenging and costly good practices might not be sufficient…

THANK YOU!

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

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