

Bioenergy and Food Security

The Approach and Rapid Appraisal



Food and Agriculture
Organization of the
United Nations

Background:

Energy is an essential part of modern livelihoods, but current energy pathways are having strong climate change impacts. As the world continues to develop, the urgency to find alternative energy pathways that can assist in the struggle against climate change and its impacts is becoming stringent. Agriculture has a role to play in this effort both as a user of energy and as a provider of energy. In terms of energy provision, bioenergy, i.e. energy generated from agriculture-based biomass, can be part of a renewable energy strategy that assists countries in diversifying away from traditional fossil fuel use and allowing it to move onto pathway with lower fossil fuel intensity.

Bioenergy offers a wide range of options in terms of energy end use ranging from heat, power and transport which can be sourced from a range of agriculture residues, crops and woody biomass. Options can be complex as they closely tie the agriculture sector to the energy sector. The key is to accurately assess the options being considered within the country context and define which bioenergy pathways can be sustainable. The role that bioenergy can play in the renewable energy mix can be very diverse both in terms of types and magnitudes. This will depend on the country context, agriculture potential and energy needs. The key element in terms of bioenergy strategy is to build the bioenergy policy on the country evidence generated through this process.

The BEFS Approach:

In order to support decision-making related to bioenergy developments, the Food and Agriculture Organization of the United Nations (FAO) has developed a Sustainable Bioenergy Support Package. A core element of the package is the Bioenergy and Food Security (BEFS) Approach which supports countries in designing and implementing sustainable bioenergy strategies. The formulation of these bioenergy policies is based on country level evidence that is developed in close consultation with key country stakeholders and experts. There are six key components in the BEFS Approach (Fig 1):

- Scoping,
- Stakeholder Dialogue and Capacity Building,
- Sustainable Bioenergy Assessment,
- Support to Policy Formulation,
- Impact Monitoring, Evaluation and Response, and
- Risk Prevention, Management and Investment Screening.

Depending on the areas of interest, the level of bioenergy development, and the status of bioenergy policy formulation and implementation, countries may decide to use specific components of the BEFS Approach.

BEFS Training:

Learn about the BEFS Approach, the use of evidence to support policy and master the use of the excel based tool to define which bioenergy options might be viable for you.

Next training: February through May 2017

Training Structure:

Face to face training in Zagreb (Croatia), followed by two virtual training sessions. .

How to apply:

Follow the indications given in the invitation and submit your expression of interest as indicated in the invitation letter.

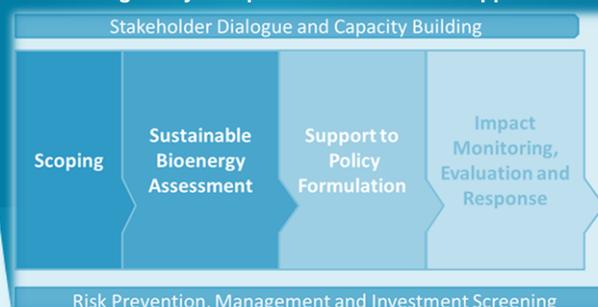
Training team: FAO and EIHP

A multidisciplinary team based from the Food and Agriculture Organization (FAO) of the UN and the Energy Institute Hrvoje Požar based in Zagreb (Croatia)

Contact person:

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Fig 1 Key components in the BEFS Approach



Key Related links:

Bioenergy and Food Security Approach
www.fao.org/energy/bioenergy/bioenergy-and-food-security/en/

Bioenergy and Food Security Rapid Appraisal
www.fao.org/energy/bioenergy/befs/assessment/befs-ra/en/

Here please consult the: **Introductory manual**, excel based **tools** and **manuals and data collection sheets**.

Contact us:

BEFS-Support@fao.org

Levels of analysis

In order to ensure evidence-based bioenergy policies, the BEFS Approach has two levels to conduct a sustainable bioenergy assessment. The assessment covers the whole bioenergy pathway starting from feedstock availability assessment to energy end use options. There is an initial assessment level named the BEFS Rapid Appraisal and a more in-depth level named the BEFS Detailed Analysis.

The initial BEFS Rapid Appraisal (BEFS RA) consists of a set of easily applicable and user-friendly tools which allow countries to get an initial indication of their sustainable bioenergy potential and of the associated risks and benefits, economic viability and key social indicators. The BEFS RA is divided into three modules: Country Status, Natural Resources and Energy End Use Options. The modules run in sequence to obtain a set of results covering the bioenergy pathways identified within the analysis.

The steps of the BEFS RA analysis

Step 1: Country Status

This module collects information on the country status and defines the context, needs and constraints in the key sectors such as agriculture, food security, energy and the environment.

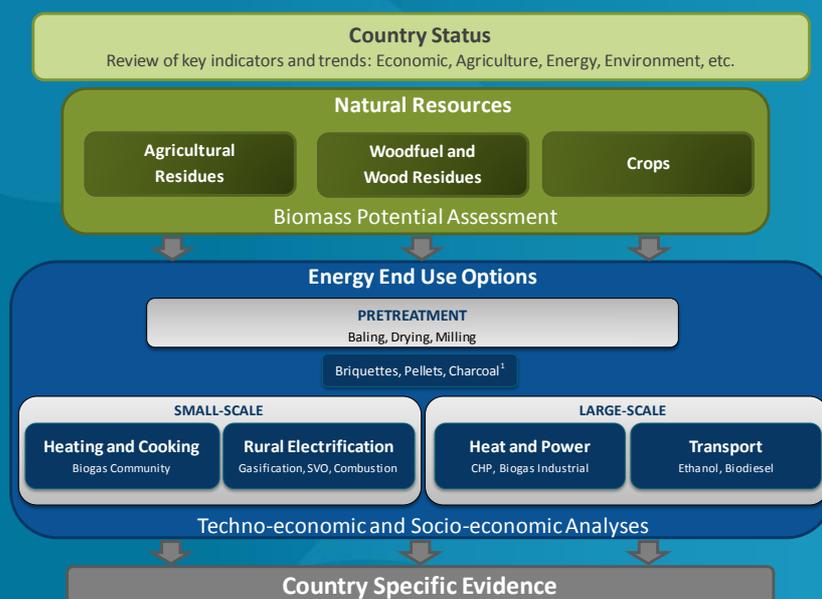
Step 2: Natural Resources: Biomass Potential Assessment

The natural resources module estimates feedstock availability, considering competing uses and needs. The output is an initial indication of the quantities of feedstock available from crop and livestock residues, forest harvesting and wood processing residues, as well as potential availability of crops. Profitability of different crops is also taken into consideration.

Step 3: Energy End Use Options: Techno-economic and Socio-economic Analysis

The energy end use options module evaluates the following bioenergy options based on the country context:

- Intermediate or Final Products: Briquettes, Pellets and Charcoal;
- Heating and Cooking: Biogas Community;
- Rural Electrification: Gasification, Straight Vegetable Oil (SVO) and Combustion;
- Heat and Power: CHP (cogeneration) and Biogas Industrial; and
- Transport: Ethanol and Biodiesel.



Benefits of the BEFS RA analysis:

The analysis can be tailored to address specific needs of countries by selection of specific modules or components of the BEFS RA; nonetheless users are encouraged to run the whole BEFS RA to get an initial overview of the options based on country validated evidence. Moreover, the analysis can be repeated, when newer or better data is available, so as to achieve more accurate results. The tools are globally applicable and are tailored for county-level or area-level assessment, depending on country size and data availability.

Phase 1	Country needs, focus and data collection
Phase 2	Analysis with the BEFS RA tools
Phase 3	Results screening, discussion and decision on way forward

The tools of the BEFS RA assist policy makers/technical officers in:

- Defining the country energy, agriculture and food security context;
- Outlining the sustainable bioenergy options of interest;
- Obtaining initial estimates of which sustainable bioenergy supply chains are viable in the country, based on economic profitability, labour implications and smallholder inclusion; and
- Identifying options of interest that require in-depth analysis, e.g. through the BEFS Detailed Analysis.