

BIOMASS ENERGY STRATEGY (BEST)

LESSONS LEARNED AND RECOMMENDATIONS FOR COOKING ENERGY INTERVENTIONS

POLICY BRIEF

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BACKGROUND

Biomass remains the most widely used source of energy in developing countries today. The bulk of energy from biomass fuels is consumed by households, mostly for cooking purposes. In recent years a number of developing countries have introduced Biomass Energy Strategies (BEST)¹ in order to ensure the sustainable management and use of biomass resources. One of the most successful and widely applied measures within the framework of BEST is the introduction of energy-efficient cooking stoves.

The dissemination of energy-efficient stoves can yield manifold benefits in the form of advantageous health, environmental and economic effects. It is therefore crucial that governments attach high importance to the subject, for example through the implementation of Biomass Energy Strategies.

Government investments in stove dissemination pay off – evidence from Uganda

A Cost-Benefit Analysis by a GTZ stove project in Uganda, calculated for a period of 10 years and a discount rate of 10%, indicates that the investment in training, monitoring and awareness campaigns is cost effective. Each 1 EUR of public funds spent by the project yields a return of 25 EUR through all the economic benefits for private households and the public sector: fuel saving, cooking time, reduced costs for the health sector, increased forest conservation and reduced emissions.

OBJECTIVE

Biomass Energy Strategies describe the key interventions needed to achieve sustainable biomass use, both on the supply-side and on the demand-side. The focus of the present document lies on demand-side interventions in the cooking energy sector, primarily the dissemination of improved stoves.

In particular, this document outlines the potential role of government in demand-side interventions in the cooking energy sector within the frame of wider Biomass Energy Strategies. By describing the major lessons learned for cooking energy interventions, the document is intended to facilitate the planning process and provide policymakers with a sound basis for sustainable implementation.

THE ROLE OF THE GOVERNMENT

A general theme arising from experiences with demand-side cooking energy interventions is that the government should not be directly involved in the dissemination of cooking technologies through the production or sale of stoves. A commercial market-based approach supporting private entrepreneurs has been proven to be more effective and sustainable.

The role of government should rather lie in the formulation of an enabling policy framework, the integration of cooking energy into research and development efforts, the promotion of awareness raising campaigns as well as the provision of required public funds.

¹ Biomass Energy Strategies (BEST) are sometimes also labelled “household” or “rural energy” strategies.

OVERVIEW OF GOVERNMENT ACTORS

The question of which organisational unit within the government should take over responsibility of implementing cooking energy interventions depends to a large extent on national circumstances. Government authorities are characterised by differing operative responsibilities and interests. Thus certain agencies may be more suitable for implementation of interventions than others. While it is necessary that one agency leads the strategy development process, it is recommended to involve all relevant government agencies in implementation efforts. One ministry is not enough to solve the multi-sectoral issues associated with biomass energy.

A list describing different government agencies and their potential role in cooking energy interventions is given below.

Government agency	Potential role in cooking energy interventions
Ministry of Energy (MoE)	The responsibility of the MoE is to ensure the sustainable and efficient use of biomass energy. It therefore needs to integrate biomass energy into the overall policy framework (e.g. PRSP, environmental and forest programmes). Moreover, the MoE should have the intersectoral lead to mainstream biomass energy issues into other sectors. Another role of the MoE is the balancing of fuel prices (e.g. with rising kerosene prices people will move back to fuelwood).
Ministry of Health	The Ministry of Health should recognise the importance of Indoor Air Pollution (IAP). Its role could lie in awareness raising, impact monitoring and the development of emission benchmarks.
Ministry of Education/Information	The Ministry of Education can play a role in awareness raising and information campaigns, for instance by introducing cooking energy issues into formal education.
Ministry of Housing	The Ministry of Housing has a potential role through the setting of technical norms e.g. for IAP (emission benchmarks) or for housing schemes (clean kitchen).
Ministry of Social Development	Cooking energy interventions can build on / piggy back on the structure of existing social programmes.
Ministry of Finance	The Ministry of Finance will be responsible for mobilising external financial resources, setting taxes, approving subsidies and reducing import duties.
Ministry of Economic Affairs/Industry/SME Promotion	The Ministry of Economic Affairs can provide assistance to stove producers in the fields of business development services (BDS), technical training and microfinance.
Ministry of Agriculture/ Forestry/ Environment	The Green Sector has an important role with respect to biomass energy supply-side management strategies (natural resource management, landuse rights issues, woodlots, sustainable charcoal production, etc.).
Ministry of Research and Technology	The Ministry of Research and Technology can fund Research & Development (R&D) activities in cooperation with local user and producers to ensure satisfactory stove quality.
National Bureau of Standards	The Bureau of Standards can set norms for improved stoves and ensure quality control.
Local government authorities	Local government authorities have a role in ensuring sustainable biomass energy supply and use on local level.
Parliamentary committees	Parliamentary committees are often responsible for approving budgets related to interventions proposed by government ministries (e.g. awareness and research programmes).

It should be noted that some of the above tasks may be initiated by the government but can eventually be handed over to e.g. NGOs for implementation. The effective coordination between all the involved government agencies and other relevant actors (NGOs, private sector, donor agencies) needs to be ensured, for example through the establishment of an intersectoral steering committee. The Ministry of Energy should take the lead in this regard.

KEY ELEMENTS OF COOKING ENERGY INTERVENTIONS AND ROLE OF THE GOVERNMENT

For the dissemination of efficient stoves to be successful, the following four elements are necessary:

- 1) The efficiency and quality of improved stoves is secured
- 2) The marketed stoves are affordable for the customer
- 3) Improved stoves are available in urban and rural areas
- 4) End-users are aware of the availability and benefits of improved stoves

These four elements are described in more detail below.

1) The efficiency and quality of improved stoves is secured

Why is this element important?

Poor quality and efficiency of improved stove technologies represent an important barrier to successful stove dissemination. This applies to decentralised stove production in the informal sector as well as to factory finished products.

What is the role of the government?

The government can ensure adequate stove quality through funding and promotion of research and development (R&D) activities. R&D should be based on a close interaction between researchers and local producers and users, in order to ensure that stoves are adjusted to local conditions, skills and materials as well as to user preferences and purchasing power. Measures to ensure quality control of stove technologies include the adoption of quality standards and the establishment of a quality control system, for example through certification of highly skilled producers or labelling of quality products.

Who in the government is involved?

Ministry of Energy and subordinated agencies, Ministry of Research and Technology, National Bureau of Standards, public research institutions

Example

In 2005 the Kenyan Bureau of Standards (KEBS) developed standards for a charcoal stove, the Kenyan Ceramic Jiko. This standard describes performance requirements and test methods. It also provides production instructions with detailed images. The test methods are specified in detail to ensure reproducibility at recognised testing establishments within Kenya, and objective acceptance criteria are defined to ensure consistency of assessment. In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed.

2) The marketed stoves are affordable for the customer

Why is this element important?

The low level of income of the households depending on biomass fuels is a major barrier to increasing the dissemination of improved stoves. For poor households stoves represent a high initial investment cost which prevents them from purchasing the product. Ideally, in a market-based approach the stove prices will be geared towards the low purchasing power of these households.

What is the role of the government?

The government's role in a sustainable, commercial dissemination approach is to support the development of markets for affordable products, but not to provide stoves to the customer free of charge or at reduced prices. In the past, implementing agencies of stove programmes such as government bodies or NGOs often distributed the stove for free, or they provided subsidies in order to accelerate uptake. The main problem with subsidies is that users often do not value, use and maintain a stove for which the price is too low. Also, high levels of subsidy towards stove cost create market distortions that make it impossible for stove manufacturers to compete freely in the market. Moreover, the use of subsidies is not sustainable as the market will break down once the subsidies are removed.

Experience indicates that the majority of successful programmes involve little or no 'direct' subsidy for the stove itself. Instead funds in these programmes are used for e.g. promotion and awareness campaigns or R&D (which could be regarded as 'indirect' subsidies).

There may be room for investigating well-designed subsidies that are time-limited, rule-bound and transparent.² However, it is important to mention that sustainable stove dissemination is possible without subsidies, for instance in regions where wood is scarce. In these areas stoves will be valued more by users. Further options to overcome the cost barrier for the consumer are the facilitation of end-user financing through support of microfinance mechanisms, or leasing arrangements with stove producers. Mass production of stoves or use of local materials in the production process will also help to lower cost of the stoves.

Who in the government is involved?

Ministry of Energy and subordinated agencies, Ministry of Economic Affairs

Examples

In the country of Burkina Faso cooking energy interventions have been carried out over the last decades. However, the visible results of these interventions are negligible, and few producers are still in business, due to market distortion created by subsidised stoves. A GTZ intervention started in 2005 took these lessons learnt from the past seriously and avoided offering subsidies. Instead the project strongly promoted information and awareness raising efforts and carried out an extensive marketing campaign in order to facilitate market penetration. This commercial approach has led to high numbers of households using stoves and has increased income of producers.

3) The supply of improved stoves in both urban and rural areas is ensured*Why is this element important?*

Experience from many cooking interventions shows that stove production and distribution can be carried out more effectively by private entrepreneurs than by government bodies. However, private stove suppliers - if existing - often suffer from insufficient access to finance and lack of technical or business management skills.

What is the role of the government?

Government assistance to entrepreneurs in rural and urban areas can include support for training in business and marketing as well as technical aspects of stove production.

² Such subsidies are sometimes referred to as "smart" subsidies.

The facilitation of access to credit for private stove entrepreneurs is a further potential area for government involvement. Here government should not engage in giving out loans (as loans from government can easily turn into grants), but instead encourage local banks or microfinance institutions to develop appropriate financing schemes.

Government may also encourage the production of improved stoves through income tax exemptions and the import of stoves through reduced import duties.

Who in the government is involved?

Ministry of Economic Affairs, Trade and Industry, SME Development Agency

Examples

E+Co is a not-for-profit company specialised in promoting small and medium clean energy enterprises in developing countries. To this end, E+Co, supports the enterprises through a combination of business development services and credits between approximately USD 20.000 and 200.000. In cooperation with BMZ and DGIS, E+Co managed to provide over 130.000 people in Sub-Saharan Africa with modern energy over the course of two years.

4) End-users are aware of the availability and benefits of improved stoves

Why is this element important?

People from low income communities, who may be characterised by low level of basic education, are often not well informed about biomass energy efficiency, available stove technologies and their potential benefits. Moreover, they may not be able to distinguish between high and low quality stoves. Initiatives will need to provide information to end-users in order to convince them to purchase efficient and high quality products.

What is the role of the government?

Governments can support promotional and information campaigns to raise awareness of efficient biomass use and the availability of improved stoves. Experience has shown that these campaigns are particularly effective when the difference between conventional cooking practices and efficient stoves is practically demonstrated on site (e.g. at markets or fairs). Information about the various technology options could also be disseminated through a range of communication tools and media to end-users. Government authorities may decide to provide stoves in certain public facilities such as schools, or to include relevant information in school or university curricula.³

Who in the government is involved?

Ministry of Education, Ministry of Health, NGO (contracted)

Examples

In Uganda information on biomass energy conservation and improved stoves, in combination with other energy related issues, are included in the public school curriculum. In order to raise awareness among children, the Ministry of Energy and Mineral Development (MoEMD) and the Ministry of Education developed teaching materials for primary schools. This, along with the high acceptance of the locally marketed stoves and the support of the local leadership, contributed to dissemination rates of up to 90% in some villages. The demand is still high.

³ However, it should be noted that promotion campaigns, which are essentially designed to stimulate demand, should be carried out only in regions where supply of stoves can be provided in a reasonable time span, in order to avoid customers developing a negative attitude towards the product.