

SUSTAINABLE FINANCING FOR THE WOOD FUEL VALUE CHAIN

1.0 Introduction

This policy brief highlights key issues related to investment constraints and financing bottlenecks production of wood fuel in Uganda, and provides recommendations for stakeholders in Uganda to address these issues as a step to making the wood fuel value sustainable. The recommendations presented are drawn from a study on the status of the wood fuel industry in Uganda carried out by the World Wide Fund for Nature Uganda Country Office (WWF UCO) and other various publications on sustainable charcoal production in Sub-Saharan Africa.

Fire wood and charcoal are principal cooking fuels in Uganda in addition to being fuel sources for small and medium scale, and rural cottage industries Uganda's energy sector is dominated by biomass that contributes nearly 90% of the total consumable energy as indicated in Table 1 below. Biomass resource utilization is facing a number of challenges including;

- Limited access to improved and efficient biomass conversion technologies
- Lack of technical and institutional capacity and financing to roll out the technologies
- Limited facilities for testing biomass energy technologies
- Limited specific incentives for growing of energy crops

Table 1: Biomass in Uganda's Energy Mix

Source of Energy	% Contribution
Biomass	Fuel wood 78.6
	Charcoal 5.6
	Agro residues 4.7
Petroleum Products	9.7
Electricity	1.4
TOTAL	100

Source: MEMD 2013

The contribution of firewood and charcoal to Uganda's GDP is estimated at US\$1,760 million (Table: 2 below, 2013). In terms of employment, biomass production and trade creates nearly 220,000 jobs for Ugandans. The sub-sector also supports an estimated 1,000,000 dependents. Nonetheless, these economic activities are also accumulating significant costs on the economy in form of environmental degradation. Millions of Ugandan Shillings are estimated to be lost each year as a result of ecosystem services and biodiversity losses as well as degradation of soil resources attributed to unsustainable harvesting and use of biomass in the country. Despite the on-going environmental degradation, it is clear that the biomass and charcoal sub-sector represent significant economic opportunities.

Biomass Supply-Demand Equation does not balance; Uganda’s available woody biomass stock stands at 286 million tons with an annual increment of 50 million tons (growth). Whereas household cooking consumes 20 million tons of firewood and charcoal 1.1 million tons equivalents to 11 million tons of wood, institutional cooking 2 million tons, brick burning 6 million tons, other SMEs consume about 1.0 million tons. This adds up to 39 million tons of woody biomass required. However all the 50 million tons of biomass available is not only for energy, it is also used as timber for housing construction and other uses. What is available for energy is only 25 million, thus we are operating at an annual deficit of about 14.0 million tons.

Table 2: Conservative Value for Biomass Energy

Fuel Type	Millions of tons Consumed	Conservative Cost USD/ton	Value in Million USD	Value in UGX Bn.
Charcoal	1.8	200	360	900
Wood	28.0	50	1,400	3,500
Agro residues	3.5	25	88	218
Total			1,848	4,618

Source: MEMD 2013

Limited or lack of investments in the wood fuel industry is one of the major barriers to making the wood fuel value chain sustainable in Uganda. As a result, current initiatives by stakeholders in the energy and forestry sectors are either underfunded or unattractive hence not effective and/or sustainable to create the desired change. This policy brief provides a rationale for investing in the fuel wood industry, and gives insights into viable recommendations for sustainable financing for the wood fuel value chain. The recommendations presented are drawn from a study on the status of the wood fuel industry in Uganda carried out by the World Wide Fund for Nature Uganda Country Office (WWF UCO) and other related publications carried out in Sub-Saharan Africa.

2.0 Current Strategies and Initiatives

This policy brief recognizes the various strategies and initiatives that have been developed by stakeholders through existing policies and other engagement frameworks to address financing of the wood fuel value chain, these include:

- i) Provision of financial incentives for the production of biofuels in order to promote the sustainable production and utilization of Biofuels as stated in the Renewable Energy Policy for Uganda, 2007.
- ii) Formulation of the Biomass Energy Strategy which has various supply and demand interventions, including the aggressive promotion improved charcoal kilns and gasification technologies as well as promotion of biogas and use of inferior forms of biomass and invasive species, among other interventions.
- iii) The Green Charcoal project is currently under implementation and this is expected to address communication and dissemination of biomass and other renewable energy technologies as required in the Biomass Energy Strategy.
- iv) A draft biofuels bill has been gazette and due for debate by Parliament and this looks at enabling biofuels project developers to access long term finance and the use of biofuels directly for domestic needs as a substitute for kerosene with an assumed level of up to 10% replacement of kerosene used for lighting and cooking purposes.

3.0 Key challenges

3.1 Weak sub-sector revenue collecting mechanism: In Uganda, just like other countries in Sub-Saharan Africa, the wood fuel industry has potential to be an important part of the economy as it provides jobs directly and indirectly, generates income for both rural and urban households and also provides an affordable source of energy. It is however not given priority by government like other energy industries to generate substantial revenues to be economically sustainable. Currently the wood fuel industry in Uganda is largely informal with many unchecked sources of revenue at various stages of the wood fuel value chain. For instance, Districts in Uganda charge a levy in the range of 15 to 20 percent of the total value of charcoal that is transported out of the districts. However given the unorganized nature of trade in wood fuel, this arrangement has shortfalls as traders find means to bypass¹ these fees resulting in significant losses in revenue for the fuel wood industry.

3.2 Undocumented economic value of wood fuel: The failure to capture the real economic value of the wood fuel industry (partly due to lost revenues as highlighted above) results in low wood fuel prices. Wood fuel prices often do not reflect their real value since wood is illegally harvested and licenses and levies (where they exist) are largely evaded (Sander et al.2011). Low wood fuel prices mean that the small holder farmers who plant and manage the forests at local level will earn less money resulting into limited funding being ploughed back for forest management initiatives. As a result tree growing initiatives remain ineffective. Currently, this financing gap is noticeable in the wood fuel value chain in Uganda because these farmers do not have enough funds to invest in increasing the supply of woody biomass.

3.3 Inadequate financing mechanism to support growth in the sub-sector

According to Sepp, 2008b, low prices for wood fuel have other serious consequences on the wood fuel value chain, which calls for incentives and sustainable financing mechanisms. These concerns are highlighted below:

- v) Tree growing approaches remain ineffective, as planting and maintenance cost must be taken into account, when competing with open access resources. Significant subsidies (e.g. reforestation in Madagascar: 200 to 300 €/ha) are necessary to provide enough incentive. This holds also true for any investments in natural forest management.
- vi) Investment cost for improved kilns do not pay off as long as wood remains a free resource. Despite training support, charcoal burners eventually abandon the improved technology. This is the main reason why the improved and superiorly efficient Casamance Kiln has been disseminated for 20 years throughout Africa without major success.
- vii) Dissemination of improved stoves succumbs, as wood fuel prices remain low. Additional incentives are required to increase the dissemination rate. Development agencies estimate that successful stove dissemination entails cost of 7 to 10 USD a piece.
- viii) Substitute fuels such as LPG must be highly subsidized to be competitive, as is the case in a number of countries (e.g. Ivory Coast, Chad). On the one hand, the need for substantial subsidies creates a long-term foreign exchange burden and tilts a country's trade balance. On the other hand, only the wealthier segments of society benefit. Furthermore, state subsidies for substitute fuels create perverse incentives, which further discourage investment into tree planting or forest management by communities or the private sector. In view of the above

¹ Transporters often resort to taking detours through lanes and forest roads to bypass check points located on major arterial roads.

issues, sustainable financing mechanisms are needed to initiate the switch from an unsustainable to a sustainable fuel wood value chain with strong emphasis on formalizing/regulating the fuel wood industry.

ix) Inadequate support to popularize modern biomass energy technologies. Most of the modern biomass energy technologies are new in Uganda. There will be need for substantial support to make them known and acceptable to a wider population. Use of modern technologies greatly reduces the amount of biomass being utilized.

4.0 Key Recommendations

In the traditional society, government is expected to provide financing for the sectors of the economy. However if roles of financing the biomass sector are clearly articulated for various stakeholders, more sustainability will be achieved. In order to help mobilize the required investments, government, private sector enterprises, civil society, and development partners can work out a financing arrangement that will minimize individual risks while maximizing returns. The following recommendations are provided to address the financing challenges that exist along the wood fuel value chain.

4.1 Government

4.1.1 Formalize trade in wood fuel in the country. This should among other things involve setting up a government research and database management center for planning and development purposes. One of the major roles of this research institute is to have current updated information on the basic supply and demand balances, market studies, origins of wood fuel production and identification of areas under stress, etc. This is important for keeping track of the trends in order to avoid any unplanned and unpredictable imbalances that would affect smooth and sustainable running of the formalized wood fuel value chain.

4.1.2 Institute innovative taxation and revenue collection modalities. The possible sources of such revenue should include taxes, fees and licenses, service charges and penalties from the trade in fuel wood in the country. A percentage of this revenue should be used to create a sustainable wood fuel fund or levy that can be re-invested along the wood fuel value chain, for example to support establishment of tree nurseries, dissemination of efficient energy saving stoves and efficient community charcoal kilns managed at community and sub county levels, etc. This approach has been tested successfully in Ghana where a restoration tax on forest produce has been introduced by government and 0.5% of the tax collection is ploughed back to the forest sector.

4.1.3 Adopt the Collaborative Forest Management (CFM) practices in areas adjacent to protected areas. Through this approach, communities can derive their livelihood from collaborative management of natural resources rather than their destructive extraction that will lessen pressure on forest reserves in Uganda. The funds generated by the communities from this approach can also be used to set up a revolving fund to finance income-generating activities and forestry investments in the communities adjacent the forests. This approach has been successfully piloted by WWF UCO in collaboration with National Forestry Authority (NFA) with two community groups. One of the community groups based in Mitooma District with about 254 people has been able to plant 60 hectares of indigenous trees.

4.1.4 Advocate for increased budget allocation. Policy advocacy for allocation to the forest sector and dedicate a portion of the funds for wood fuel sustainability which will leverage private sector investment especially in financial and technical support to small and medium enterprises (SMEs) that trade in efficient stoves, carry out tree planting initiatives, undertake charcoal production, etc.

4.1.5 Support to private sector engagement in forestry investment. Privatization of forest plantations and possibly indigenous woodland both generate substantial revenues and relieve public institutions of recurrent operating costs that are not being recouped. The possibility of channeling some of the revenues from privatization activities into environmental protection and natural resource management should be adopted.

4.1.6 Increase budgetary support to support the popularization and adoption of modern biomass energy technologies

4.1.7 Improve the education curricula so as to train cadres to promote the dissemination of modern biomass energy technologies

4.1.8 Improve regulations and enforcement of biomass resources utilization

4.2 Private sector and Civil Society Organizations

4.2.1 Community-level skills training and capacity strengthening. Civil society should be interested in engaging in approaches where local people are trained in programs to widen their skills including tree planting, marketing and packaging, enforcement of sustainable wood fuel production in their communities, running a formal business (entrepreneurial skills) and using improved kilns and energy saving stoves. In addition, funds should be set aside to support small enterprise development programs that result from these capacity building initiatives.

4.2.2 Support to technical extension service in the sector. Organizations should take on the promotion of the promising approach of revenue generation within the decentralized administrative frameworks such as Community Based Organizations and SACCOs in the adoption of a “fee-for-service strategy” when promoting sustainability. Here several small-grant initiatives that involve grantees covering some of the costs such as providing technical extension services are taken up. In these cases, the funding is still derived from donor support provided the grantees activities generate some revenues; a portion is made available for service and needs provision.

4.2.3 Support to organizations engaged in sub-sector activities. Substantial financing should be provided by civil society for distribution of energy efficient technologies to producers and consumers as well as the distribution of tree seedlings to farmers in rural areas. Energy efficient technologies reduce the quantity of wood fuel utilized during cooking and hence reduce the deforestation rate. Through provision of seedlings farmers can replant trees when they cut down trees and create woodlots for charcoal production at household level.

4.2.4 Support linkage to carbon credit trade. The opportunities of obtaining funding for improved forest management or diversification through trading carbon credits should be

promoted by civil society organizations and government so that these opportunities are taken up by the private sector. Subsequently private sector should capitalize these funds that promote the conservation of carbon sinks or encourage enhanced carbon sequestration mechanisms in local community settings.

4.2.5 Institute and implement user-pay policy. Private sector developments should provide compensation for environmental disruption by capitalizing trust funds that promote environmental protection or by creating protected areas for wood fuel production and funding their management. The channeling investment revenues into environmentally friendly ventures by using such mechanisms rather than having the revenues suffer attrition as they pass through government accounts should be adopted.

4.2.6 Support livelihood diversification. In order to meet their needs, local communities living near forests should diversify into activities like eco-tourism. These generate tangible economic benefits for communities and diversify these locals from overly depleting forest reserves to obtain wood for activities such as charcoal production for sale. The potential for community organizations to derive tangible economic benefits from tourism should not be underestimated. Demand and depletion of natural resources can only be addressed at the local level through changes in behavior on the part of the resource users.

Participatory Forest and Land Management should be adopted by the local communities as a way of enhancing ownership of natural resources in this case forests. This activates joint efforts stirred towards environmental sustainability. For example if agro forestry is encouraged and adoption of energy efficient technologies is taken up, it will reduce the rate of natural resource extraction and optioning for alternative forms of energy hence reduce over dependence on biomass energy and the pressure imposed on natural forests.

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