PROJECT DOCUMENT

Republic of Uganda

United Nations Development Programme

Global Environment Facility

Title:

Addressing Barriers to Adoption of Improved Charcoal Production Technologies and Sustainable Land Management Practices through an Integrated Approach

GEFSEC PROJECT ID: 4644; GEF AGENCY ID: PIMS 4493; AWARD ID: 00074620

Brief Project Description

Charcoal is the preferred cooking energy in Uganda (particularly by urban consumers) because of a variety of reasons including: it is affordable by all cadres of society and the only option available for the many low waged urban employees; it is substantially more efficient than wood and burns with very limited smoke, it has high-energy content per unit weight; it has a higher energy density than wood; it is easier to transport than wood and can be easily transported to markets far away from the forest. As a result, many people consider charcoal a relatively modern fuel rather than a traditional one. Government statistics attests to this. According to Uganda Bureau of Statistics, the total nominal value of household consumption of firewood and charcoal increased by 81.6% from UShs. 18.0 billion In 1996/97 to UShs. 32.7 billion In 2005/06. The value of charcoal consumption more than doubled, while the value of firewood consumption increased by 67.7% for the same period. Notwithstanding its popularity, the charcoal sub-sector remains plagued by inefficient production practices, lack of sustainable supplies of woody biomass and inadequate, often conflicting, policy statements. At this rate, the pressure on natural resources will be exacerbated even further as communities produce more charcoal to meet their livelihood demands and urban charcoal consumer demand.

Objectives of the Project: The overall goal of this project is "*Improved charcoal production technologies and sustainable land management practices through an integrated approach in Uganda.*" The objective of the project is to secure multiple environmental benefits by addressing the twin challenges of unsustainable utilization of fuel wood (including charcoal) and poor land management practices common in Uganda's woodland through *technology transfer*, *enhancement of the national policy framework and the promotion of Sustainable Land Management (SLM)* and *Sustainable Forest Management (SFM) practices*. The project consistent with the National Development Plan (NDP) to promote a low carbon emission development path, the National Forestry Policy (2001) that seeks to promote the rehabilitation and conservation of forests, soil and water resources, the National Action Plan (NAP) to combat desertification under the United Nations Convention to Combat Desertification (UNCCD) and other relevant national policy and legal frameworks. The project involves piloting low carbon emission sustainable charcoal technologies and broader sustainable land and forest management practices in four districts: Mubende, kiboga, Nakaseke and Kiryandongo.

Overcoming Barriers: This project has three main components to overcome the main barriers to transforming the current charcoal production practices into sustainable:

1. Data collection and improved coordination and enforcement of regulations governing the biomass energy sector, in particular those related to sustainable charcoal.
2. Dissemination of appropriate technologies for sustainable charcoal production in selected (4) charcoal-producing districts (Mubende, Kiboga, Nakaseke and Kiryandongo).
3. Strengthening the capacity of key stakeholders in SFM and SLM best practices and establishment of sustainable woodlots.

Management of Project: Ministry of Energy and Mineral Development (MEMD) / Partners: Implemented under the Global Environmental Facility Phase 5, System of Transparent Allocation of Resources (GEF-5 STAR)

SIGNATURE PAGE

Country: Uganda

Project Title: Addressing Barriers to Adoption of Improved Charcoal Production Technologies and Sustainable Land Management Practices through an Integrated Approach in Uganda: Biomass Energy Technology Transfer
UNDAF Outcome(s): Vulnerable segments of the population increasingly benefiting from sustainable livelihoods and, in particular, improved agricultural systems and employment opportunities to cope with population dynamics, increasing economic disparities, economic impact of HIV/AIDS, environment shocks and recovery challenges by 2014.
UNDP Strategic Plan: Environment and Sustainable Development
Environment and Sustainable Development Primary outcome: Markets transformed to support sustainable use of natural capital in national development.
UNDP Strategic Plan Secondary Outcome:
Expected CP Outcome(s): Selected institutions have capacity for sustainable environment and natural resources management as well as climate change adaptation and mitigation.
Expected CPAP Output(s):(1) Selected national and local government institutions have the capacity to develop key policies and systems for sustainable environment and natural resources management and climate change adaptation and mitigation and (2) Selected local government and communities have the capacity to mainstream and pilot sustainable environment and natural resources management, climate change adaptation and mitigation interventions.
Executing Entity/Implementing Partner: Ministry of Energy and Mineral Development (MEMD)
Implementing Entity/Responsible Partners: MWE, NFA, District Local Governments of Mubende, Kiboga, Nakaseke and Kiryandongo.Implemented under the Global Environmental Facility Phase 5, System of Transparent Allocation of Resources (GEF-5 STAR)

Programme Period:	2014 - 2017
Atlas Award ID:	00074620
Project ID:	00086931
PIMS No.	4493
Start date:	March 2014
End Date	March 2018
Management Arrangements: NIM	
LPAC Meeting Date:	29 January 2014

Total Budget:	US$ 18,065,808.00
• GEF	US$ 3,480,000.00
• UNDP	US$ 1,860,000.00
Government	US$ 6,928,246.00
FAO	US$ 1,600,000.00
UNCDF	US$ 1,300,000.00
GIZ	US$ 2,607,562.00
BTC	US$ 290,000.00

Agreed by the Executing Agency (Ministry of Finance, Planning and Economic Development):

KEITH MUHAKANIZI

NAME SIGNATURE
Date/Month/Year 02-05-14

Agreed by the Implementing Partner: Ministry of Energy and Mineral Development

F.A. KABAGAMBE-KAIHURA

NAME SIGNATURE
Date/Month/Year

Agreed by United Nations Development Programme:

ALMAZ GEBRU, COUNTRY DIRECTOR

NAME 07/05/2014 SIGNATURE
Date/Month/Year

Summary

Problem Statement

Uganda's National State of Environment (NSE) Report (2010) identifies biomass sources of energy as the most widely used despite government efforts to promote hydro-electricity. In rural areas, access to energy services remains very poor, with only five percent of the rural population connected to an electricity supply; 93% still rely on biomass for cooking. The energy sector is characterized by over dependence on biomass energy which contributes massively to the country's total energy consumption. The report further estimates that wood supplies will still contribute over 75% of total energy consumption in year 2015 even if the entire 2,000MW hydro-electric potential of the country is fully utilized (Republic of Uganda, 2010a). The Renewable Energy & Energy Efficiency Partnership (REEEP) reports that low-grade forms of energy, especially traditional biomass fuels, account for more than 90% of total energy consumption (REEEP, 2012).Charcoal is preferred to firewood (particularly by urban consumers) because it has a higher energy density than wood. Due to this high-energy content per unit weight, it is easier to transport than wood and can be transported to markets far away from the forest. When used for cooking, it is substantially more efficient than wood and does not burn with much smoke. As a result, many people consider charcoal a relatively modern fuel rather than a traditional one. However, notwithstanding its popularity, the charcoal sub-sector remains plagued by inefficient production practices and the lack of sustainable supplies of woody biomass and inadequate, often conflicting, policy statements.

Underlying Causes of the Problem

Most of the charcoal produced in Uganda is from natural forests and 70% of such trees are found on private land where the government has limited control on land use and tree harvesting (IRDI, Undated). According to a 2007 national survey, about 33 million cubic meters of firewood is consumed nationally each year (NFA, 2009). The country's average population growth rate is 3.2%, one of the highest in the world (UBOS, 2009). At this growth rate, the population increased to 31.8 million in 2010 and is projected to increase to 37.9 million in 2015 and 61 million by 2040 (NDP, 2010). The population growth is highest in arid areas, where most charcoal farming is rampant.

Uganda is extraordinary in that it contains three of the ecosystems identified by the Intergovernmental Panel on Climate Change (IPCC) as the most vulnerable in Africa: dry lands, water-basins, and mountain ranges (IPCC, 2007b).To meet the needs of a growing population within such vulnerable ecosystems, natural resources are harvested unsustainably and this poses significant challenges to sustainable agricultural production, energy access, job creation and livelihoods assets. Deforestation is the main environmental issue confronting Uganda's forest and savannah woodlands. While in 1890 around 45% of Uganda was covered by forests and woodlands, total forest coverage has now reduced to only 20% of the total land area. FAO estimates that forest cover in Uganda has halved during the past century, and continues to shrink at a rate of 55,000 ha per year. Others estimate the rate of land clearance to be between 70,000 and 200,000 ha per year. The leading causes of deforestation are over-harvesting (timber, firewood-domestic, firewood-industrial and charcoal) and encroachment, with the root causes being policy deficiencies, lack of sustainable land management (SLM) and sustainable forest management (SFM) practices, lack of appropriate technologies, market failures, weak regulations and a rapidly increasing population driving up demand for forest and woodland products. A lack of viable alternatives perpetuates extractive activities from the natural resource base with low returns and high costs on the environment. In Uganda's dry lands, which occupy an area stretching from the north-east through central regions to the south-west (commonly referred to as the cattle corridor), the greatest environmental challenge is desertification. Drivers of desertification in this region are droughts, unsustainable utilization of biomass for fuel wood (mainly charcoal), poor farming practices and overgrazing. As a result, the region experiences soil erosion, declining fertility and nutrient loading of water bodies. Additionally, soil erosion has been on the increase in the whole corridor area despite the huge efforts to contain it.

Objectives of the Project

The overall goal of this project is to develop "*improved charcoal production technologies and sustainable land management practices through an integrated approach in Uganda.*" The objective

of the project is to secure multiple environmental benefits by addressing the twin challenges of unsustainable utilization of biomass for charcoal and poor land management practices common in Uganda's Woodlands. The project is being developed within the context of the National Development Plan (NDP) to promote a low carbon emission development path; the National Forestry Policy (2001) that seeks to promote the rehabilitation and conservation of forests, soil and water resources; the National Action Plan (NAP) to combat desertification under the United Nations Convention to Combat Desertification (UNCCD) and other relevant national policy and legal frameworks. The project involves piloting low carbon emission sustainable charcoal technologies and broader sustainable land and forest management practices in four districts: Mubende, kiboga, Nakaseke and Kiryandongo.

Barriers

There are many barriers to overcome in order to improve charcoal production technologies and establish sustainable land management practices. The overriding ones are the socio-economic-cultural issues that drive the community to use inefficient earth kilns which degrade the environment and cause deforestation. To encourage sustainable change in the charcoal production system, it is imperative to introduce a production system that is environmentally friendly and compatible with values and expectations of the target communities. The choice of an appropriate charcoal conversion technology must contend with the challenges for providing a consistent and reliable technology that will generate more income and benefits in comparison with the traditional sources of income and means of survival. Given that for sustainability, the wood should be grown or coppices from properly managed forests be selectively cut, the conversion technology should be able to efficiently convert wood of relatively small and uniform diameter in order to be acceptable.

Overcoming Barriers

This project has **three main components** to overcome the main barriers to transforming the current charcoal production practices into a sustainable model:

I. Data collection and improved coordination and enforcement of regulations governing the biomass energy sector, in particular those related to sustainable charcoal. This component has five outcomes:
   a. Outcome 1: Existing & ongoing policy, regulatory and institutional work on sustainable charcoal and land tenure security integrated with recommendation from the new biomass energy strategy (BEST)
   b. Outcome 2: Improved coordination of institutions managing sustainable charcoal production at district level
   c. Outcome 3: Improved data collection and monitoring of biomass energy and charcoal production and use (integrated into national database)
   d. Outcome 4: Improved charcoal and biomass guidelines and ordinances at district level
   e. Outcome 5: Heightened awareness of new institutional frameworks and ordnances, guidelines and certification schemes at district level

II. Dissemination of appropriate technologies for sustainable charcoal production in selected (4) charcoal-producing districts (Mubende, Kiboga, Nakaseke and Kiryandongo). This component has five outcomes:
   a. Outcome 1: Low-carbon charcoal production technologies have successfully replaced inefficient systems in targeted pilot districts leading to:

      - 143,314 metric tons (MT) of wood saved over project lifetime from improved kilns compared to BAU scenario (14,431 hectares of avoided deforestation)

      Lifetime energy savings (compared to BAU scenario) of :

      - 1,843,200,000 MJ for Casamance kilns (avoided emissions of 210,816 tCO2eq) ; and
      - 9,737,142,857 MJ for retort kilns (avoided emissions of 1,113,686 tCO2eq)
      - additional lifetime avoided methane emissions for all retort kilns introduced of 252,000 tCO2 eq

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      - additional lifetime avoided methane emissions for all retort kilns introduced of 252,000 tCO2 eq

b. Outcome 2: Sustainable charcoal recognized as a viable SME in pilot districts by end of project and for post-project sustainability
c. Outcome 3: Carbon finance is integrated into sustainable charcoal practice in targeted areas
d. Outcome 4: Increased incomes for all charcoal cooperatives involved in project
e. Outcome 5: Technical support for charcoal briquetting producers enhanced

III. Strengthening the capacity of key stakeholders in SFM and SLM best practices and establishment of sustainable woodlots. This component has two main outcomes:

a. Outcome 1: Improved capacities of stakeholders in targeted districts to establish and manage dedicated sustainable woodlots leading to:

- Accumulated yields of **368,770** [1] MT of renewable biomass produced over 5,900 hectares under woodlot management by end of project (year 5) and 1,475,083 MT of biomass accumulation over the lifetime.

- Net avoided lifetime emission reductions of **2,699,402 tCO2eq** of avoided deforestation compared to the BAU scenario from use of this renewable biomass in kilns compared to a BAU scenario[2]

b. Outcome 2: Best practice SLM/SFM knowledge effectively transferred from successful SLM projects in neighboring districts to four pilot districts for this project leading to:

- 50,000 ha of forestlands across four pilot districts brought under improved multifunctional forest management leading to enhanced carbon sequestration of **2,100,000 tCO2eq over lifetime**
- A least half of land under improved SFM registers reduction in land degradation by at least 20% as measured by reduction in soil erosion and improvement in soil organic matter
- Conservation farming practices piloted leading to verified improved soil organic matter and yield increased across 400 hectares

Project Management, Monitoring and Evaluation

The project will be managed by MEMD which will build institutional capacities within it to manage biomass energy and make vertical linkages with DFS, District Local Governments and Forestry Sector Support Department (FSSD) in the MWE. FSSD offers supportive back-up to the NFA and District Forest Services, as well as Charcoal Producers Association. Project monitoring and evaluation will be conducted by the project team and the UNDP country office in accordance with established UNDP and GEF procedures for GEF-5 STAR. UNDP Country Office with support from UNDP/GEF Regional Coordination Unit will provide quality assurance for project implementation.

[1] See Section A.5 for detailed assumptions behind figure

[2] This figure nets out estimated BAU CO^2 eq emissions from deforestation activities for charcoal production in the four targeted districts – see Annex F

TOTAL BUDGET AND WORK PLAN

Award ID:	00074620	Project ID(s):	00086931
Award Title:	Improved Charcoal Production Technologies		
Business Unit:	UGA10		
Project Title:	Uganda -		
PIMS no.	4493		
Implementing Partner (Executing Agency)	Uganda_ Ministry of Energy and Mineral Development		

GEF Outcome / Atlas Activity	Responsible Party / Implementing Agent	Fund ID	Donor Name	Atlas Budget Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	Budget Note
Component 1: Data collection and improved coordination and enforcement of regulations governing the biomass energy sector, in particular those related to sustainable charcoal	**MEMD**	**62000**	**GEF**	71200	International Consultants	15,000	30,000	30,000	15,000	90,000	1
				71300	Local Consultants	10,000	28,750	28,750	15,000	82,500	2
				72100	Contractual Services - companies	5,000	10,000	10,000	10,000	35,000	3
				72200	Equipment and Furniture	10,000	40,000	2,000	10,000	62,000	4
				75700	Training, Workshops and Conference	5,000	10,000	10,000	5,000	30,000	5
				74200	Audio Visual & Print Prod Costs	2,500	2,500	2,500	2,500	10,000	6
				71600	Travel	5,000	6,000	6,000	6,000	23,000	7
					Total Component 1	**52,500**	**127,250**	**89,250**	**63,500**	**332,500**	
Component 2: Dissemination of appropriate technologies for sustainable charcoal production and SLM in selected	**MEMD**	**62000**	**GEF**	71200	International Consultants	7,500	22,500	22,500	7,500	60,000	8
				71300	Local Consultants	20,000	40,000	30,000	10,000	100,000	9
				72100	Contractual Services - Companies	75,000	86,000	75,000	75,000	311,000	10
				72600	Grants	6,800	50,000	50,000	7,000	113,800	11
				75700	Training, Workshops and Confer	10,000	30,000	30,000	10,000	80,000	12
				74100	Professional Services	20,000	20,000	20,000	20,000	80,000	13
				72200	Equipment and Furniture.	100,000	10,000	20,000	20,000	150,000	14
				74200	Audio Visual & Print Prod Costs	2,500	2,500	2,500	2,500	10,000	15

GEF Outcome / Atlas Activity	Responsible Party / Implementing Agent	Fund ID	Donor Name	Atlas Budget Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	Budget Note
(4) charcoal-producing districts (Mubende, Kiboga, Nakaseke and Kiryandongo)				71600	Travel	25,000	25,000	25,000	25,000	100,000	16
					Total Component 2	**266,800**	**286,000**	**275,000**	**177,000**	**1,004,800**	
Component 3: Strengthening the Capacity of key stakeholders in SFM and SLM best practices and establishment of sustainable woodlots	**MWE**	**62000**	**GEF**	71200	International Consultants	7,500	22,500	22,500	7,500	60,000	17
				71300	Local Consultants	40,000	115,000	115,000	30,000	300,000	18
				72100	Contractual Services - Companies	20,000	140,000	160,000	20,000	340,000	19
				72600	Grants	29,000	120,000	120,000	29,000	298,000	20
				72200	Equipment and Furniture	500,000	100,000	20,000	20,000	640,000	21
				75700	Training, Workshops and Conference	20,000	40,000	40,000	20,000	120,000	22
				74100	Professional Services	20,000	20,000	20,000	20,000	80,000	23
				74200	Audio Visual & Print Prod Costs	2,500	2,500	2,700	3,000	10,700	24
				71600	Travel	30,000	30,000	30,000	30,000	120,000	25
					Total Component 3	**669,000**	**590,000**	**530,200**	**179,500**	**1,968,700**	
Project Management	**MEMD**	**62000**	**GEF**	71200	International consultants	0	30,000	0	30,000	60,000	26
				74100	Professional Services (Audit)	3,000	3,000	3,000	3,000	12,000	27
				71400	Contractual Services - Individuals	19,500	19,500	19,500	19,500	78,000	28
				71600	Travel	3,500	3,500	3,500	3,500	14,000	29
				72200	Equipment and Furniture	8,000	0	2,000	0	10,000	29
					Total Project Management	**34,000**	**56,000**	**28,000**	**56,000**	**174,000**	
					PROJECT TOTAL	**1,022,300**	**1,059,250**	**922,450**	**476,000**	**3,480,000**	