



TERMINAL EVALUATION REPORT

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

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Terminal Evaluation Report

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

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GEF Project ID:	4644
Country:	Uganda
Region:	Africa
Focal Area:	Climate Change Mitigation and Land Degradation (GEF-5)
GEF Agency:	United Nations Development Programme
Implementing Agency:	United Nations Development Programme (UNDP)
Executing Agencies:	Ministry of Energy and Mineral Development (MEMD)
Other Executing Partners:	Ministry of Water and Environment (MWE), National Forest Authority (NFA), Forest Sector Support Department (FSSD), FAO, GIZ and District governments (Mubende, Nakaseke, Kiboga and Kiryandongo)

Project Summary

Title of UNDP supported GEF financed project	Addressing Barriers to Adoption of Improved Charcoal Production Technologies and Sustainable Land Management Practices through an Integrated Approach
UNDP Project ID	PIMS 4493
GEFSEC PROJECT ID	4644
Evaluation Time Frame	August 2019 to September 2019
Date of Evaluation Report	15 th Sept 2019
Region	Africa
Country	Uganda
GEF Operational Program/Strategic Program	CCM 2: Promote investment in energy efficiency technologies; CCM 5: Promote conservation and enhancement of carbon stocks through sustainable management of land use, land-use change, and forestry; SFM / REDD+ 1: Reduce pressures on forest resources and generate sustainable flows of forest ecosystem services; LD-2: Forest Landscapes: Generate sustainable flows of forest ecosystem services in drylands, including sustaining livelihoods of forest dependent people
Implementing Partner	UNDP
Lead Executing Partners	Ministry of Energy and Mineral Development (MEMD)
Other Executing Partners	Ministry of Water and Environment (MWE), National Forest Authority (NFA), Forest Sector Support Department (FSSD), FAO, GIZ and District governments (Mubende, Nakaseke, Kiboga and Kiryandongo)
Evaluation team members	Veronica Nyawira Muthui (Team Leader) Cliff Bernard Nawukora – Team Member
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Acronyms and Abbreviations

APFS	Agro-Pastoral Field Schools
APR	Annual Progress Report
BEST	Biomass Energy Strategy
CAI	Current Annual Increment
CBO	Community Based Organization
CCM	Climate Change Mitigation
CPAP	Country Program Action Plan
CSO	Civil Society Organization
DCAP	District Charcoal Action Plan
DFS	District Forestry Service
FAO	Food and Agriculture Organization
FFS	Farmer Field Schools
FSP	Full-Sized Project
FSSD	Forest Sector Support Department
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOU	Government of Uganda
KPI	Key performance indicators
LC	Local Councils
MAI	Mean Annual Increment
MEMD	Ministry of Energy and Mineral Development
MRV	Monitoring Reporting and Verifications
MTE	Mid-Term Evaluation
MWE	Ministry of Water and Environment
NDP	National Development Plan
NGO	Non-Governmental Organization
PIR	Project Implementation Review
PMU	Project Management Unit
PRODOC	Project Document
PSC	Project Steering Committee
REDD+	Reducing Emissions from Deforestation and forest Degradation
SFM	Sustainable Forest Management
SLM	Sustainable Land Management
ToC	Theory of Change
TOR	Terms of Reference
UNCDF	UN Capital Development Fund
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

Executive Summary

Project Summary

Table 1: Project Summary Table

UNDP Project ID (PIMS):	PIMS 4493	GEF Project ID (PMIS #)	4644
Award ID	00074620	Country	Uganda
Region	Africa	Focal Areas	CCM; LD
GEF-5 Strategic Programs:	CCM 2; CCM 5: SFM / REDD+ 1; LD-2	Trust Fund:	GEF TF
Executing Agency	Ministry of Energy and Mineral Development (MEMD)		
Other executing partners	Ministry of Water and Environment (MWE), National Forest Authority (NFA), Forest Sector Support Department (FSSD), FAO, GIZ and District governments (Mubende, Nakaseke, Kiboga and Kiryandongo)		
Project finance			
Project Financing:	at CEO endorsement (USD)		at Terminal Evaluation (USD)*
GEF Funding	3,480,000		3,480,000
UNDP Contribution	1,860,000		1,860,000
Government	6,928,246		36,928,246 ¹
FAO	1,600,000		600,000
UNCDF	1,300,000		1,300,000 ²
GIZ	2,607,562		2,280,000
BTC	290,000		Not tracked
Total Funds	18,065,808		46,448,246
Total Co-finance	14,585,808		42,968,246
Received by GEF:	Oct 18, 2011	PIF Approval	Nov 11, 2011
Key Dates			
CEO Endorsement Date:	Dec 16, 2013	Project Document (ProDoc) Signature Date (date project began):	May 20, 2014
Date project manager hired:		Midterm Review date:	April 28, 2017
Inception Workshop date:	Jan 2015	Planned closing date:	November 20, 2019

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,

¹ A new Renewable Energy Department was established at the Ministry of Energy and Mineral Development (MEMD) and over US\$ 30 million raised to support its work, in form of projects.

² These funds were disbursed as loans to national entities dealing in clean energy value chain, on a competitive bidding process.. However, none on the briquetting associations in the project pilot districts qualified for the loans.

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. 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.

The Government of Uganda, with technical assistance from UNDP, designed a GEF financed project to address the twin challenges of unsustainable utilization of biomass for charcoal and poor land management practices common in Uganda's Woodlands. Piloted in four districts in the most naturally wooded areas of the country (outside protected areas), the project expected to spend \$3,480,000 in GEF resources to address multiple issues across 50,000 ha inhabited by 1.7 million people. Project implementation started in 2014; operational closure is scheduled for November 2019. Implementation is led by the Ministry of Energy and Mineral Development (MEMD) in close partnership with the Ministry of Local Government, National Forestry Agency (Forestry Sector Support Department and District Forest Services), as well as Charcoal Producers Associations. Project monitoring and evaluation is conducted by the project team and the UNDP country office in accordance with established UNDP and GEF procedures for the GEF-5 cycle. UNDP Country Office with support from UNDP/GEF Regional Coordination Unit provides quality assurance for project implementation.

The project addressed barriers that hinder the stakeholders in the four districts and at the national level from 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 promotion of sustainable land management (SLM) and sustainable forest management (SFM) practices. The barriers to biomass technology development and sustainable land management identified during the project design are summarised below:

Absence of a nationally driven biomass energy research agenda caused by the absence of well-established and adequately funded research institutions that can monitor and generate timely knowledge for appropriate interventions and responses in the sector. This is exacerbated by the dearth of relevant charcoal data along the charcoal value chain, with policies on the sub-sector not being informed by accurate data. The informality of the sector has led to it being perceived as illegal by the public, and is subjected to many taxes, informal and formal. These factors drive the charcoal producers to go underground, making the charcoal production unattractive to many potential investors. Indeed, the formal banking institutions are reluctant to provide financing for actors in the sector. Furthermore, inadequate understanding of rights and responsibilities along the value chain by relevant actors, especially charcoal producers, makes them vulnerable to unscrupulous state actors.

In addition to poor coordination between the many institutions dealing with aspects of the charcoal value chain, the lack of national standards for the sector hinders market development; and formal market infrastructure for charcoal is grossly undeveloped. There were no established market places with records of participants along the value chain, and charcoal producers and sellers are not organized into associations. Furthermore, the low levels of business and technical skills amongst the majority of the players on the value chain make diffusion of existing and new technologies difficult. The lack of skills and capacity to assess biomass at the village level means that harvesting for charcoal is not linked to annual allowable cuts. The natural resources officers at the District Local Governments (District Councils) lacked the basic equipment (computers, IT, transportation) to provide technical services to the charcoal producers and sellers. This inadequate extension service has also led to poor uptake of proven technologies on sustainable forest and land management. The above challenges were exacerbated by the fact that interventions in the sector are largely project driven, making it difficult to sustain improvements once the project's funding comes to an end.

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 promotion of SLM and SFM practices. The goal is implemented through three components, namely: i) Data collection and improved coordination and enforcement of regulations governing the biomass energy sector, in particular those related to sustainable charcoal; ii) Dissemination of appropriate technologies for sustainable charcoal production in selected charcoal-producing districts (Mubende, Kiboga, Nakaseke and Kiryandongo) and; iii) Strengthening the capacity of key stakeholders in SFM and SLM best practices and establishment of sustainable woodlots.

The project was designed to put in place enabling conditions (institutional, policies and legislation, skills and technologies, incentives) for the widespread uptake of sustainable charcoal production processes nationally, piloted in four districts. It would therefore establish knowledge systems and support their application to provide up to date information for planning for the charcoal sub-sector; it would improve institutional coordination and legal provisions to mainstream sustainable charcoal production process into relevant district and national policies and programs, to increase funding for sustainable charcoal production. Additionally, it would disseminate technologies for sustainable charcoal production and climate smart agriculture, supported by local capacities and institutions. Finally, it would demonstrate sustainable forest management and tree cropping to supply sustainably grown biomass in support of sustainable charcoal production.

Terminal Evaluation Purpose and Methodology

The objectives of the terminal evaluation as outlined in the ToR (Annex 1) are: a) to assess the achievement of project results, b) to draw lessons that can both improve the sustainability of benefits from this project, and c) aid in the overall enhancement of UNDP programming in Uganda and beyond. The evaluation also aims to provide meaningful conclusions of the project covering the aspects of relevance, efficiency, effectiveness, sustainability, and impact of the project. The evaluation also identifies lessons learned from the Project experience to benefit future undertakings and to propose improvements in ensuring the sustainability of the results.

Evaluation approach and methods

The overall approach is based on the standard evaluation methods used for conducting project terminal evaluations of UNDP-supported, GEF-financed projects, which have been developed based on past experiences and learning (ToR in Annex 1). In line with UNDP Guidelines for the evaluation, the evaluators framed the assessment along the criteria of relevance, effectiveness, efficiency, sustainability, and impact. The team used both desk-top review and focus group and key informant discussions, supplemented by observations during a field trip to the project intervention areas. The evaluation team relied on feedback from members of the Project Board, Project manager who doubles as the Technical Advisor, Project Administration and Finance Officer, staff members of project Implementing Partners, the National Forestry Authority, the Forest Sector Support Department, District Local Governments, private sector participants and community members of the Charcoal Producers and Conservation Agriculture Associations (Annex 3 for list of people consulted). The Team used the feedback to objectively assess project performance and arrive at key findings and results. A set of evaluation questions covering each of these criteria were drafted, which were customized and adjusted as the evaluation progressed to align with the audience and the topics that were relevant or related to the interviewee’s assigned tasks or assignment. Informants were questioned on gender mainstreaming in the project, in order to build

understanding of the extent to which gender was considered in project implementation and benefits shared equitably between men, women and the youth. In addition, members of the Charcoal Producers and Conservation agriculture Associations were questioned on how gender integration was done in decisions regarding charcoal value chain and agriculture.

The TE team has made efforts to provide verifiable and evidence-based information that are credible, reliable and useful. In this endeavour, the Project Management Unit, UNDP and the Renewable Energy Department of the Ministry of Energy and Mineral Development provided useful feedback and organized the field visit in an efficient and effective manner. The evaluators have followed a consultative, participatory, listening and learning approach in their work ensuring close engagement with the PMU and other project executors. The TE team undertook a field mission to the project demonstration sites in three of the four districts and interviewed technical staff and political leaders of the District Local Governments as well as the members of the Associations (villagers) in an open and inclusive environment. The evaluators reviewed all relevant sources of data and information to get an in-depth understanding of the Project. They also reviewed national strategic and legal documents, and any other materials that the evaluators considered useful for a professionally sound assessment. A list of documents that were reviewed is included in Annex 4.

Summary of findings and conclusions

In line with the findings of the MTR, the TE found it challenging to assess the achievements of the project using the project results framework. This was due to the numerous outcomes and indicators. It therefore reconstructed the theory of change and developed 4 core outcomes and outputs in the Table below. It also re-organized the indicators to retrofit objective level indicators, which were missing from the original framework.

Result		Indicators
Goal: To secure multiple environmental benefits by addressing the twin challenges of unsustainable utilisation of biomass for charcoal and poor land management practices common in Uganda's Woodlands		
Objective: To put in place enabling conditions (institutional, policies and legislation, skills and technologies, incentives) for the widespread uptake of sustainable charcoal production processes nationally, piloted in four districts		Metric tons of wood saved because of the use of casamance kilns; ii) tons of carbon equivalent mitigated; iii) Hectares of avoided deforestation; iv) number of men, women and youth benefiting from the project results.
Outcomes	Outputs	
Outcome 1: Knowledge systems established and used to provide up to date information for planning for the charcoal sub-sector;	<p>Output 1.1.1. National charcoal survey and updated standardized baseline reports completed based on latest data³</p> <p>Output 1.3.1: Baseline report and functional biomass database established and hosted at MEMD and published in Uganda Bureau of Standards reports⁴ and used for a sustainable charcoal NAMA</p>	<p>Number of national policies and strategies formulated using up to date information on charcoal value chain;</p> <p>Sustainable charcoal research laboratory with capacity to spearhead research on the charcoal value chain</p>

³ Project will update the proposal for a new standardised baseline for charcoal projects in the Clean Development Mechanism prepared by Perspective GmbH and the Ugandan DNA (2011) Zurich, Switzerland.

⁴ The database will be harmonized with the NFA biomass resource assessment

Result		Indicators
	<p>Output 1.5.2: Updated guidelines for measuring biomass (CAI⁵ & MAI⁶) calculated using the biomass study technical manual. Annual Allowable Cut (AAC) targets established for all districts by year 2;</p> <p>Research facilities established and operationalized to support nationally-led research and training on sustainable charcoal</p> <p>Output 3.2.3: Land use planning done in each target district using FAO-LADA-WOCAT outcomes.⁷</p> <p>Output 3.2.4: District Forestry and Land Use Planning staff trained in the use of techniques that support community planning, implementation processes and land degradation assessment.</p> <p>Output 3.2.5: Mapping completed of all targeted areas under sustainable forestry management as well as agricultural lands under SLM in collaboration with FAO and National Forestry Authority's new GIS/mapping platform</p>	
<p>Outcome 2: Institutional coordination and legal provisions established to mainstream sustainable charcoal production process into relevant district and national policies and programs (and increasing funding for charcoal value chain).</p>	<p>Output 1.2.1: Framework for institutional coordination and resource mobilization developed between MEMD, local government authorities and the National Forest Authority to manage charcoal trade at district level</p> <p>Output 1.4.1: Local ordinances and national standards for sustainable charcoal certification schemes developed, adopted and publicized in targeted pilot districts⁸</p> <p>Output 1.5.1: Awareness and educational program on local ordinances and standards for sustainable charcoal completed in all targeted pilot districts⁹</p> <p>Output 2.3.1: Basic Program of Activities (PoA) project submitted for registration to appropriate authority under a VCS methodology and/or a</p>	<p>Number of functional coordination mechanisms for fostering collaboration amongst the sustainable charcoal stakeholders;</p> <p>Amount of additional funds realized for financing various aspects of the sustainable charcoal and biomass energy;</p> <p>Changes in policies (number of legal frameworks supporting sustainability long the charcoal value chain)</p>

⁵ CAI – Current Annual Increment, i.e. the volumetric or biomass increment which a tree puts in a single year

⁶ MAI – Mean Annual Increment, i.e. the total volumetric or biomass increment up to a given age divided by that age

⁷ The Land Degradation Assessment in Drylands (LADA) is a tool of FAO and has as part of its objectives to assess land degradation at local, national and global scale. In order to do so, the project has developed guidelines for each assessment level. WOCAT (World Overview of Conservation Approaches and Technologies) is an established global network of Soil and Water Conservation (SWC) specialists, contributing to sustainable land management (SLM).

⁸ The targeted districts for this project are **Mubende, Kiboga, Nakaseke and Kiryandongo**

⁹ As noted in section B.2 the educational materials will include awareness raising and information sharing on the need for gender equity as a vital component of sustainable charcoal production and tree management

Result		Indicators
	Sustainable Charcoal NAMA Design Document developed and endorsed ¹⁰	
Outcome 3: Technologies for sustainable charcoal production and climate smart agriculture disseminated, supported by local and institutions.	<p>Output 2.1.1: 60 sustainable charcoal producer groups organized, trained and operational¹¹ comprised of a minimum 2,400 charcoal champions¹² spread across pilot districts.</p> <p>Kilns disseminated (400 units of Casamance and 200 units of retort) MRV, tracking and licensing system established for all improved kilns piloted¹³</p> <p>Output 2.5.1. Training and technical assistance provided to all briquetting businesses that are receiving loans for briquetting machines from Micro-Finance Institutions (in conjunction with <i>CleanStart</i>¹⁴)</p> <p>Output 3.2.1: Targeted communities indigenous knowledge of SLM enhanced using the “Stimulating Community Innovations (SCI–SLM) approach¹⁵” to generate local solutions to land degradation</p> <p>Output 3.2.2: Conservation Agriculture (CA) practices introduced to 400 farming households (50 in each district) over 400 ha</p>	<p>400 casamance and 200 retort kilns disseminated;</p> <p>60 charcoal producer associations with over 2400 members established and registered (15 in each district)</p> <p>Percentage increase in profits for Charcoal Producer Association as a result of improved kilns;</p> <p>Percentage increase in crop yield for adopters of conservation agriculture</p>
Outcome 4: Sustainable forest management and tree cropping support sustainable charcoal production	<p>Output 3.1.2: Sustainable woodlots (out-grower schemes) successfully established to supply improved kilns with renewable biomass established (5,900 ha).</p> <p>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 lifetime¹⁶</p>	<p>5,900 hectares of woodlands established to provide biomass for improved kilns;</p> <p>At least 1,100 private woodlot owners in the four pilot districts identified, trained and contracted to make land available for woodlot establishment (minimum set-aside).</p>

¹⁰ Direct support for the potential development of a Sustainable Charcoal NAMA under the project will be discussed with government during the first year of the project and a decision made based on those discussions.

¹¹ The charcoal cooperatives will likely be drawn from existing FAO APFS and FFS in districts where FAO is operational such as Nakaseke, Kiboga and Mubende; in Kiryandongo they will be formed in consultation with existing projects and structures already on the ground

¹² Disaggregated by gender

¹³ The MRV system will be compliant with NAMA requirements developed under the LECB Project

¹⁴ See a description of C/S in the Baseline Section A.4 as well as the Uganda *CleanStart* Business Plan sent under separate cover. This output will provide technical support those biomass briquetting enterprises that receive loans through participating C/S FSPs.

¹⁵ SCI-SLM stands for Stimulating Community Innovations centred on identifying innovative forms of land management within communities themselves (community generated solutions to land degradation). This included characterizing communities, validating their innovations, and improving them through joint experimentation with researchers and scientists and stimulating the communities to go forward with their efforts through farmer-to-farmer cross visits

¹⁶ As per GEF guidelines the lifetime is 20 years

Result		Indicators
		50,000 ha of forestlands across four pilot districts brought under improved multifunctional forest management

Using these reconstructed outcomes and indicators, the major findings are that the project has achieved its reconstructed objective of putting in place enabling conditions (institutional, policies and legislation, skills and technologies, incentives) for the widespread uptake of sustainable charcoal production processes nationally. This has been achieved through improving coordination amongst the charcoal and biomass energy actors, providing up to date information on the charcoal value chain that has been recognized internationally (accepted by UNCCD) and used at the national level to influence the Biomass Energy Strategy (BEST) and Nationally Agreed Mitigation Actions (NAMA) on sustainable charcoal; established capacity for nationally-led research on sustainable charcoal and biomass; provided approved national charcoal standards and guidelines; provided the tools for mainstreaming sustainable charcoal in the District Development Plans (District Charcoal Action Plans); demonstrated the value of energy plantations and provided capacity at the local level for the uptake of sustainable charcoal production as a respectable, profitable tax paying business. Most importantly, the project has demonstrated the complexity of formalizing the charcoal value chain, and created awareness of the necessity of this formalization as well as the instrument for its advancement – the NAMA on sustainable charcoal, which, if successful, will mobilize over US\$ 60,000,000; 50 million of which will be from the private sector.

It has delivered significant global environment benefits. 120,741 metric tons of wood have been saved from the adoption of the casamance kiln and skills. This translates to 6,674 ha of avoided deforestation. Although both achievements are at 84.2% of the target, the TE Team concurs with the MTR that these targets were too ambitious. 30,621 hectares of forest land (natural and planted forest lands) (84.2% of target) have been put under improved management, enhancing carbon sequestration of 1,310,872 metric tons of carbon equivalent, delivering 84.2% of the target tCO₂eq so far. However, the target of 2,100,000 tCO₂eq is to be realized over a twenty-year period. A total of 800 beneficiaries including 240 women in the pilot districts have been equipped with skills to efficiently utilize the improved charcoal production technologies and conservation agriculture practices. Adoption of climate smart agriculture (61% women) has led to over 100% increase in yields of annual crops and 28% for perennial crops. Approximately 300,000 households (2.5 million persons – M:1,700,00; F:800,000) have been sensitized on charcoal regulatory frameworks and guidelines through 116 live radio talk-shows and radio spot messages, community meetings and multi-stakeholder dialogues facilitated by the project.

Evaluation Rating Table

Criteria	Rating of this project	Remarks
IA&EA Execution: Satisfactory (S)		
Overall quality of project implementation/execution	Satisfactory	There was strong management by the Board, which provided adequate oversight role and policy direction and included representatives from key stakeholders. However, coordination roles and responsibilities were not sufficient, especially between upstream national Implementing Partners with downstream Local governments.
Implementing Agency execution	Satisfactory	
Executing Agency execution	Satisfactory	
Monitoring and Evaluation (M&E):		
Overall quality of monitoring and evaluation	Moderately Satisfactory	Whereas monitoring and evaluation endeavored to follow the UNDP GEF guidelines, the management hiccups as a result of National Implementation Modality (NIM) weakened the effectiveness of the M&E function. Whereas there was a Project Management Unit (PMU), decisions on project

Criteria	Rating of this project	Remarks
		processes followed government structures and systems, which is often too slow for a project with a tight deadline. Combined with the fact that there was no M&E Officer for the project, this weakened effectiveness of the M&E system. However, provision of an M&E tool by the PMU mitigated some of the weakness, and became an innovative step that augmented the M&E systems.
M&E design at project start up	Moderately Unsatisfactory	The design of the project M&E system fell short of the requirements as per GEF guidelines. This is because it had too many indicators with weak links between indicators, baseline values and targets. In addition, there was no provision for a project-specific M&E officer who would have refined the M&E system during the project implementation or consolidated the knowledge management for the project.
M&E plan implementation	Satisfactory	Various Stakeholders were involved UNDP, MEMD, MWE, NFA, DLGs and Political arm (Office of the President). Notwithstanding the inadequacies in M&E, the project management and Board were able to mitigate the weaknesses and risks, to deliver the project results in a Satisfactory manner.
Relevance: Relevant (R), Not Relevant (NR)		
Overall relevance of the project	Relevant	The Green Charcoal project was highly relevant to the development needs of Uganda, given the importance of charcoal as a source of energy and the need to reduce deforestation from the charcoal value chain, through a managed process combining adoption of efficient technologies and inclusion of energy plantations as part of natural resources management at the household and forestry sector levels.
GEF and UNDP strategic alignment	Relevant	The Green Charcoal project is highly relevant to GEF and UNDP strategic objectives. It contributed to three GEF Focal Areas (Climate Change Mitigation, Sustainable Forest and Land Management), contributing to four Focal Area Objectives and seven outcomes (Table 9). It contributed to Outcome 2 of the UN Development Assistance Framework (UNDAF) for 2012-2014 ¹⁷ and outcome 2.3 of the 2010-2014 UNDP CPAP ¹⁸
National policy frameworks and ownership	Relevant	The Green Charcoal project as indicated extensively in the prodoc is relevant to various national regulatory, policy, strategic and development plans such as the National constitution, NDP, National Environment Act, National forestry act, Local government Act, Land act, National Forestry and Tree planting, National forest plan as well as all relevant policies etc.
3. Assessment of Outcomes		
Overall Quality of Project Outputs and Outcomes	Satisfactory	To overcome the challenge of evaluating the twelve outcomes of the project, the TE reconfigured 4 core outcomes, which it used to assess performance (Table 6). The project has delivered on all the majority of outputs (75% implementation level) and delivered satisfactorily on outcomes. As a result, 120,741 metric tons of wood have been saved from the adoption of the casamance kiln and skills. This translates to 6,674 ha of avoided deforestation. Although both achievements are at 84.2% of the target, the TE Team concurs with the MTR that these targets were too ambitious. 30,621 hectares of forest land (natural and planted forest lands) (84.2% of target) have been put under improved management, enhancing carbon sequestration of 1,310,872 metric tons of carbon equivalent, delivering 84.2% of the target tCO ₂ eq so far. A total of 800 beneficiaries including 240 women in the pilot districts have been equipped with skills to

¹⁷ Vulnerable segments of the population increasingly benefit from sustainable livelihoods and in particular improved agricultural systems and employment opportunities to cope with the population dynamics, increasing economic disparities, economic impact of HIV&AIDS, environment shocks and recovery challenges by 2014. Notably: Outcome 2.2 Vulnerable communities, Government, civil society and the private sector are sustainably managing and using the environment and natural resources for improved livelihoods and to cope with the impact of climate change.

¹⁸ CPAP Outcome 2.3: Capacity of Selected Institutions Strengthened for Sustainable Environment and Natural Resources Management (ENRM) as well as Climate Change (CC) Adaptation/ Mitigation and Disaster Risk Management

Criteria	Rating of this project	Remarks
		efficiently utilize the improved charcoal production technologies and conservation agriculture practices. Adoption of climate smart agriculture (61% women) has led to over 100% increase in yields of annual crops and 28% for perennial crops. Approximately 300,000 households (2.5 million persons – M:1,700,00; F:800,000) have been sensitized on charcoal regulatory frameworks and guidelines through 116 live radio talk-shows and radio spot messages, community meetings and multi-stakeholder dialogues facilitated by the project.
Outcome 1: Knowledge systems established and used to provide up to date information for planning for the charcoal sub-sector	Satisfactory	<p>National charcoal assessment completed. Both BEST and NAMA have utilized the information provided;</p> <p>The sustainable charcoal research laboratory has been established and equipped; it is undertaking research using staff and graduate students.</p> <p>Analogue database in place (needs to be digitized); land cover maps have been provided; but they need to be converted to land use maps.</p>
Outcome 2: Institutional coordination and legal provisions established to mainstream sustainable charcoal production process into relevant district and national policies and programs (increasing funding for charcoal value chain).	Satisfactory	National level stakeholder coordination put in place; District Charcoal Action Plans in place and mainstreamed into District Development Plans (sustainable charcoal is recognized in the District budgets of the four districts); national charcoal standards have been approved and district charcoal ordinances have been finalized; more than 30 million US dollars have been raised to support the work of the new Renewable Energy department and priorities of BEST; NAMA completed which is likely to add over 60 million USD when funded, \$50 million from the private sector.
Outcome 3: Adoption of technologies for sustainable charcoal production and climate smart agriculture, supported by local capacities and institutions	Moderately Satisfactory	<p>337 casamance and 15 retort kilns disseminated; dissemination of the Adam retort kiln rightly stopped after the first 15 failed to function fully;</p> <p>Forty Charcoal Associations with over 800 members (40% women) have been established and registered across the 4 project districts.</p> <p>28% increase in income per bag of charcoal produced via casamance</p> <p>100% increase in yields of annual crops and 28% in perennial crops.</p>
Outcome 4: Sustainable forest management and tree cropping support sustainable charcoal production	Moderately Satisfactory	<p>About 5,888 hectares of well grown planted sustainable charcoal woodlots of mainly eucalyptus tree species have been established in the four pilot districts. This acreage is determined after planting 6,542,000 seedlings and factoring in the seedling survival rate of 72% and considering farmer practices.</p> <p>About 1,800 tree planters growing trees, 18% of whom are women.</p> <p>30,621 hectares of forest land (natural and planted forest lands) across four pilot districts have been brought under improved multi-functional forest management</p>
Effective and efficiency:		
Effectiveness	Satisfactory	At the output levels a number of indicators and targets were realized all above 75%
Efficiency	Satisfactory	The project having used output/activity based budgeting was able to institute control measures but this was bogged down by the bureaucracies that were brought about by NIM modality, which was experienced delays in disbursement of funds and approvals. However, with use of government and DLG structures and systems the project was able to mitigate the negative impacts of the government bureaucratic processes.
Partnership:		

Criteria	Rating of this project	Remarks
Overall partnerships built	Satisfactory	Partnerships were forged between national and district levels as well as with both private and Civil society. These were both formal and informal in nature. At the upstream national level government ministries and semi-autonomous agencies were brought on board such as MEMD, MWE, NFA, FSSD while at the downstream the DLGs and civil society organizations also formed a strong partnership well community level beneficiaries. A key partnership with the CleanStart did not function as envisaged at project design, impacting delivery of some activities.
Overall stakeholders participation	Highly Satisfactory	As intimated above stakeholder engagement involved Government, Development Partners, CSOs, Private sector and communities
Sustainability: Likely (L) Moderate Likely (ML), Moderately Unlikely (MU), Unlikely (U)		
Overall likelihood of Sustainability	ML – Moderately Likely	Sustainability of the production of charcoal by improved technologies is threatened by the fact that neither the casamance nor the retort kilns are available in the markets (can only be obtained via the project); the modified retort kiln is not yet functional; although completed, the district ordinances and not yet approved; charcoal is still sold by volume in significant markets (hence no real reward for sustainably produced charcoal); and 90% of the seedlings planted are eucalyptus, which is in high demand for timber and poles. However, if the NAMA takes off, it will tackle these challenges.
Financial resources	ML – Moderately Likely	Even though charcoal has a budget line in the district development plans (in the four districts), financing the budget is likely to suffer in the regular budget shortfalls. District revenues continue to be dominated by forest products, yet sustainable charcoal discourse has not been in part of the revenue collection by contractors. Work on charcoal continues to be largely project funded; the absence of an exit strategy for the project is particularly worrying, given that many initiatives are just starting and will need continued support.
Socio-economic and Environmental aspects	Moderately Likely	There is need to closely monitor and follow up the socio economic aspects so far realized since they are likely to vanish if the relevant improved charcoal and SLM/SFM activities are not up scaled.
Institutional systems	Likely	The creation of the Renewable Energy Department at the MEMD, the approval of the national charcoal standards, the formulation of the District Charcoal Ordinances and the formation of the Charcoal and Conservation Farmers Associations will all go a long way in sustaining institutional arrangements for sustainable charcoal production.
Impact: Significant (S), Minimal (M), Negligible (N) There are clear indicators that would lead to great impact over time through mentioned best practices		
Environmental status improvement	Significant	The Green Charcoal project highlighted and showcased improved charcoal and SLM/SFM practices which addressed the environmental concerns as well as sustainable charcoal production measures.
Social-economic status improvement	Minimum	The Green charcoal project was positive in directly addressing social and economic aspects especially with the direct beneficiaries including tackling gender issues in sustainable charcoal production by bringing women on board in the entire value chain. However short implementation period will render them hanging without being consolidated.
Overall Project Results	Satisfactory	The Green Charcoal project delivered over 75% of the outputs; delivered close to 80% of the reconstructed impact indicators. However, the sustainability of these results will only be secured if the proposed NAMA materializes to tackle the considerable threats to sustainability.

Summary of conclusions, recommendations and lessons

Conclusions

Although the theory of change of the project on sustainable charcoal was weak, the project sought to put in place enabling conditions (institutional, policies and legislation, skills and technologies, incentives) for the widespread uptake of sustainable charcoal production processes nationally, which it effectively piloted in four districts. At TE, the project has delivered significant outcomes and contributed to the goal, by delivering some environmental benefits.

On advancing the use of knowledge and current information in decision-making on charcoal value chain, the national charcoal assessment was completed and has provided up to date information on the charcoal value chain. Both the BEST and NAMA have utilized the information provided. A data base has been established and an equipped sustainable charcoal research laboratory is spearheading research on sustainable charcoal. Land use maps have been completed.

On improving institutional coordination and legal provisions to mainstream sustainable charcoal production process into relevant district and national policies and programs (and increasing funding for charcoal value chain), the project has established a national level stakeholder coordination; it has produced District Charcoal Action Plans which have been mainstreamed into District Development Plans; thus sustainable charcoal is now recognized in the District budgets of these four districts. National charcoal standards have been approved and district charcoal ordinances have been finalized; more than 30 million US dollars have been raised to support the work of the new Renewable Energy Department and priorities of BEST; a NAMA on sustainable charcoal was drafted which is likely to add over 60 million USD when funded.

On dissemination of technologies for sustainable charcoal production and climate smart agriculture, forty two Charcoal Producer Associations have been facilitated and registered, with over 800 members (40% women) across the 4 project districts. Three hundred and thirty seven (337) casamance and 15 retort kilns disseminated; dissemination of the Adam retort kiln was rightly stopped after the first 15 failed to function fully. There is a 28% increase in income per bag of charcoal produced via casamance. In addition, there is 100% increase in yields of annual crops and 28% in perennial crops.

It has contributed to environmental benefits. 120,741 metric tons of wood have been saved from the adoption of the casamance kiln and skills. This translates to 6,674 ha of avoided deforestation. Although both achievements are at 84.2% of the target, the TE Team concurs with the MTR that these targets were too ambitious. 30,621 hectares of forest land (natural and planted forest lands) (84.2% of target) have been put under improved management, enhancing carbon sequestration of 1,310,872 metric tons of carbon equivalent, delivering 84.2% of the target tCO₂eq so far. However, the target of 2,100,000 tCO₂eq is to be realized over a twenty-year period. A total of 800 beneficiaries including 240 women in the pilot districts have been equipped with skills to efficiently utilize the improved charcoal production technologies and conservation agriculture practices. Adoption of climate smart agriculture (61% women) has led to over 100% increase in yields of annual crops and 28% for perennial crops. Approximately 300,000 households (2.5 million persons – M:1,700,00; F:800,000) have been sensitized on charcoal regulatory frameworks and guidelines through 116 live radio talk-shows and radio spot messages, community meetings and multi-stakeholder dialogues facilitated by the project.

Recommendations for the future

Project stage	Corrective actions recommended for the future
Design	a. In-depth analysis is good as a basis of project design. However, too detailed analysis of too many issues crowded the theory of change of the project, especially because the project did not address all of the issues raised in the threats and

Project stage	Corrective actions recommended for the future
	<p>barriers section. It is recommended to keep the project document short and sharp, tightly linking analysis to issues the project can actually address.</p> <p>b. There should be clearer linkages between the components, outcomes and outputs. The project had 12 outcomes which meant that some of them were outputs. This also led to too many indicators. There was weak links between the indicators, baselines and targets.</p> <p>c. Four years is too short for a project that sought to establish woodlots for biomass supply to sustainable charcoal producers. A longer period – up to ten years – is necessary to allow at least two cycles of harvesting of the woodlots, in a staggered planting system. This would ensure that adequate biomass is produced each year.</p>
Implementation	<p>d. The NIM modality is effective for sustainability and drawing in partner capacities for project implementation. However, given the short timeline of the project (four years at design), this should have been supported by a PMU with executive powers, supported by adequate controls. The weak PMU was unable to overcome the bureaucratic delays caused by the government and UNDP systems, particularly on procurements, processing allowances for field work, payment for consultants, etc.</p> <p>e. Two important outputs were not delivered, without a credible explanation: Output 3.2.3: Land use planning done in each target district using FAO-LADA-WOCAT outcomes¹⁹; and, Output 1.5.2: Updated guidelines for measuring biomass (CAI²⁰ & MAI²¹) calculated using the biomass study technical manual. Annual Allowable Cut (AAC) targets established for all districts by year 2. Both outputs would have contributed to the planning of biomass supply for the sustainable charcoal production and highlighting land degradation and sustainable management issues. This information is still necessary. It's provision should be catered for in the exit plan of this project, and it should be emphasized in the NAMA and similar projects.</p> <p>f. The project used existing community groups as the Charcoal Producer and Conservation Farmers Associations. While this is good for sustainability, it is likely to introduce new entrants into the charcoal production while not integrating the migrant charcoal producers. This needs to be investigated further, to ensure that introduction of sustainable charcoal processes in the four districts do not cause leakage in other districts (where the migrant charcoal producers could move to).</p>
M&E	There is need to strengthen the M&E function with a robust system/framework and well-resourced with a substantive M&E Specialist

¹⁹ The Land Degradation Assessment in Drylands (LADA) is a tool of FAO and has as part of its objectives to assess land degradation at local, national and global scale. In order to do so, the project has developed guidelines for each assessment level. WOCAT (World Overview of Conservation Approaches and Technologies) is an established global network of Soil and Water Conservation (SWC) specialists, contributing to sustainable land management (SLM).

²⁰ CAI – Current Annual Increment, i.e. the volumetric or biomass increment which a tree puts in a single year

²¹ MAI – Mean Annual Increment, i.e. the total volumetric or biomass increment up to a given age divided by that age

Actions to follow up or reinforce initial benefits from the project

The following actions should be undertaken to reinforce initial benefits from the project;

- a. Develop an exit strategy: there are many project initiated activities that need funding to take root, deliver and/or sustain the benefits already manifesting. They include the gazettment of the District Charcoal Ordinances; funding the priority actions of the District Charcoal Action Plans; mainstreaming the sustainable charcoal production recommendations/discourse into the district revenue collection from forest products; continuing the amendments of the Adam retort kiln, providing the casamance on the market, continuing research in the Sustainable Charcoal Laboratory. While the NAMA may eventually provide the required funding, such funding has not yet been secured. The MTR recommended that the project produce an exit strategy before the TE. This is still pending, and is urgently required. **Responsible Party - PSC**
- b. Although the four Districts report political support and willingness to mainstream sustainable charcoal production, the budgetary allocation to the Natural Resources and Forestry Units need to be increased and prioritized. Although the districts derive considerable revenue from forest products and levies on charcoal, budget allocation for these sectors and implementation of the district charcoal action plans may not necessarily increase financial availability. This is because the low priority Natural Resources and Forestry Units will likely be the ones to suffer when there is a budget shortfall, which happens regularly. In addition, capacities for these units need to be built at the Parish levels where the services of the extension service are required. **Responsible Party – District Authority and the Forestry Department, with support from the NAMA PSC**
- c. The district revenue collection system (contracting) should take on board sustainable charcoal production principles. Currently, the sustainable charcoal project is being implemented in parallel with these revenue collection activities. **Responsible Party – District Councils and the Forestry Department**
- d. Work on market transformation should be prioritized. Although Charcoal Producer Associations report US\$ 10,000 pricing difference between casamance produced and earth mound produced charcoal, this is not evident beyond the local markets. The charcoal certification and national standards are now in place; but implementation needs to be prioritized to move to labeling. Proposals for future directions underlining main objectives. **Responsible Party – the Renewable Energy Department at the MEMD, with support for the NAMA PSC**
- e. The District Councils, Forest Sector Support Department (FSSD) and the MEMD should investigate further which parts of the eucalyptus woodlots will provide sustainable biomass for charcoal production versus timber and poles to the building industry. They should use this information to plan. **Responsible Party – The District Councils, Forest Sector Support Department (FSSD) and the MEMD**
- f. Ensure NAMA funding is mobilized/realized. **Responsible Party – the Renewable Energy Department at the MEMD**
- g. Knowledge Management: Produce KM products such as documentaries, videos, technical publications summarizing knowledge products/messages, to capture best practices and lessons for the future replication. **Responsible Party – the Renewable Energy Department with support from the PSC partners.**

Best and worst practices in addressing issues relating to relevance, performance and success

Best practice	Relevance	Performance	Success
Highly participatory project design process	✓	✓	✓

Building on existing community associations, which had a history of being groups that have worked together to implement joint activities		✓	✓
Engaging District Authorities in the project implementation	✓	✓	✓
Introduction of improved charcoal production technologies like the casamances	✓	✓	✓
Dropping the dissemination of retort kiln after discovering that it was not effective	✓	✓	✓
Worst Practices			
Highly complex project document with too much information, some not relevant to the project strategy	✓	✓	✓
Weak indicators and M&E system – which was not addressed, even after the MTR pointed it out and recommended that indicators be strengthened	✓	✓	✓
Lack of an exit strategy, despite the MTR recommendation to formulate one urgently.	✓	✓	✓
Incomplete modification of the retort kiln; a stationery kiln is still necessary for charcoal production in plantations	✓	✓	✓

1 Introduction

1.1 Purpose of the evaluation

The Government of Uganda, with technical assistance from UNDP, designed a GEF financed project to address the twin challenges of unsustainable utilization of biomass for charcoal and poor land management practices common in Uganda's woodlands. Piloted in four districts in the most naturally wooded areas of the country (outside protected areas), the project expected to spend \$3,480,000 in GEF resources to address multiple issues across 50,000 ha inhabited by 1.7 million people. Project implementation started in 2014; operational closure is scheduled for November 2019. Implementation is led by the Ministry of Energy and Mineral Development (MEMD) in close partnership with the Ministry of Local Government, National Forestry Agency (Forestry Sector Support Department and District Forest Services), as well as Charcoal Producers Associations. Project monitoring and evaluation is conducted by the project team and the UNDP country office in accordance with established UNDP and GEF procedures for the GEF-5 cycle. UNDP Country Office with support from UNDP/GEF Regional Coordination Unit provides quality assurance for project implementation.

This terminal evaluation (TE) is being conducted to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming. The evaluation was carried out in accordance with the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects (reflected in the Terms of Reference in Annex 1). The evaluation will therefore cover four areas of the project: namely, Project Strategy; Results Framework/Log-frame; Progress towards Results and; Project Implementation and Adaptive Management. Evaluation of progress towards achievement of the formal project overall objective, purpose, goals and component outcomes will be done using the project's own results statements as presented in the Project Document, complemented by findings of the field missions and discussions with key stakeholders. Thus the evaluation will assess progress towards results, identify lessons learnt as well as early risks to sustainability, and, provide supportive recommendations to ensure that the project meets its stated objectives.

1.2 Scope & Methodology

The evaluation was undertaken through the steps outlined in Figure 1, described in detail in the TE Inception Report (Annex 10) and in line with the Terms of Reference (Annex 1). The steps are:

Preparation and Inception: This step included meetings with UNDP and the PSC to discuss the programme of work, gather the relevant documents, agree on a list of stakeholders to be consulted and finalize the evaluation questions. The outcome of these consultations culminated in the Inception workshop Report (Annex 10).

Data Gathering: Data was gathered using a combination of desktop research, focused group discussions and observations. These steps were necessary to cross-reference and triangulate data reported in the project reports with information provided by the respondents and observations in the field. Data on gender was cross-checked with the project gender strategy, which was formulated late into project implementation process. Every effort was made to ensure that both men and women (and youth) participated in the focused group discussions. However, this was done in full recognition of the fact that traditionally, there is a distinct gender based division of labour on the charcoal value chain. Men, especially the youth dominate charcoal production, while women largely dominate charcoal sales and use (in households). The evaluation questions included questions on gender issues, regardless of the gender of the respondent.

The key documents reviewed during the evaluation are listed in Annex 3. They include: a) **background documentation** such as UNDP Development Assistance Framework (UNDAF), UNDP Country Programme Document (CPD), UNDP Country Programme Action Plan (CPAP), GEF focal area strategic program objectives, national strategic documents including the National Forestry Plan (NFP), National Development Plan (NDP), National Action Plan (NAP), Renewable Energy Policy and other relevant documents; b) **Project design documents** - the Project Identification Form, GEF CEOR, UNDP Project Document, UNDP Initiation Plan and project implementation plan; c) **Project reporting documents** such as project inception report, mid-term review, annual project implementation reports, gender strategy, project budget and financial data, project tracking tool, progress reports from collaboration partners, lessons learnt, minutes of the Project Board meetings, relevant correspondence revisions to the project and any other documents deemed relevant.



Figure 1: Evaluation Methodology

Key Respondent Interviews: The list of people and institutions consulted is in Annex 3. The TE Team held several meetings in Kampala and the four districts hosting the pilot projects where they discussed all relevant aspects of project implementation and results with, among others, the following: Leadership of the Ministry of Energy and Mineral Development; Officials of the Renewable Energy Department in Ministry of Energy and Mineral Development; Project Management Unit; Select officials from the Ministry of Water and Environment; Select officials of the Ministry of Agriculture, Animal Industry and Fisheries; Select officials of the National Forestry Authority; Select officials of the Nyabeyya Forestry College; Leadership of Kiboga District Local Government; Kiboga District Natural Resources department; Leadership of Kiryandogo District Local Government; Kiryandogo District Natural Resources department; Leadership of Mubende District Local Government; Mubende District Natural Resources department; Leadership of Nakaseke District Local Government; Nakaseke District Natural Resources department; Officials of UNDP Regional Services Centre for Africa and UNDP Uganda. Others

consulted include Charcoal Producers Associations, communities and CSOs engaged with the project activities. These discussions were guided by the evaluation questions in Annex 5.

Site visits: The TE Team spent ten days in the four districts (itinerary in Annex 2), which allowed direct observation of the issues being tackled by the project and an appreciation of the wide geographic area covered by the project. At each site, the TE Team held structured group discussions with the relevant stakeholders (community groups, extension service) using the evaluation questions in Annex 5.

Analysis and Reporting: the TE Team used the data gathered to analyse and review project progress at closure. The analysis was done along the issues below, which are in line with the ToR and the report consequently produced:

Project Strategy (Project design and Results Framework/Logframe): The TE examined the problem addressed by the project and the underlying assumptions; reviewed the effect of any incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document; reviewed the relevance of the project strategy and assessed whether it provides the most effective route towards expected/intended results; reviewed whether lessons from other relevant projects were properly incorporated into the project design; examined how the project addresses country priorities and reviewed country ownership. The TE also reviewed decision-making processes to determine if the planning phase took into account the perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources; and, the extent to which relevant gender issues were raised in the project design.

On Progress Towards Outcomes Analysis: The TE guidelines required the review of the logframe indicators against progress made towards the end-of-project targets; comparison and analysis of the GEF Tracking Tools at the Baseline with the one completed right before the TE; identification of remaining barriers to achieving the project objective; review of the aspects of the project that have already been successful, identifying ways in which the project partners can further expand these benefits even after the end of the project.

On Management Arrangements: The TE reviewed the overall effectiveness of project management as outlined in the Project Document, determining if changes have been made and if they are effective; examined if responsibilities and reporting lines are clear and if decision-making is transparent and undertaken in a timely manner. Further, the quality of execution of the Executing Agency/Implementing Partners was reviewed along with the quality of support provided by the GEF Partner Agency (UNDP).

On project implementation, the TE assessed if there were delays in project start-up and implementation, identifying the causes and examining if they have been solved; it also examined if work-planning processes were results-based, and if changes have been made to the original logframe and if it was used as a management tool.

On finance and co-finance - the TE assessed; i) Whether strong financial controls have been established that allow the project management team to make informed decisions regarding the budget at any time, and allow for the timely flow of funds and the payment of satisfactory project deliverables; ii) Variances between planned and actual expenditures; iii) Whether the project demonstrates due diligence in the management of funds, including annual audits; iv) Any changes made to fund allocations as a result of budget revisions and the appropriateness and relevance of such revisions; v) Whether co-finance has been delivered in accordance with expectations laid out in the project document, and if the Project Team has made effort to pursue delivery of co-finance.

The cost-effectiveness of the project was evaluated by analysing how the planned activities met or exceeded the expected outcomes over the designed timeframe, and whether an appropriate level of due diligence was maintained in managing project funds. Cost-effectiveness is not only based on how judiciously the funds were managed, but also examines compliance with respect to the incremental cost concept, i.e., the GEF funds were

allocated for activities not supported under baseline conditions, with the goal of generating global environmental benefits.

On stakeholder engagement, the review assessed whether the project management team developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders; whether local and national government stakeholders support the objectives of the project and continue to have an active role in project decision-making; whether public awareness has been created to support the project and how stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives.

On reporting and Communication, the review assessed how adaptive management changes have been reported by the Project Team and shared with the Project Board; how well the Project Team and partners undertook and fulfilled GEF reporting requirements (i.e. how have they addressed poorly-rated Project Implementation Reports (PIRs) and how these have been shared with the Project Board and other key stakeholders; in addition, it assessed how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners and incorporated into project implementation.

On financial risks to sustainability, the TE assessed the likelihood of financial and economic resources being available once the GEF assistance ends, examining the opportunities for financial sustainability and additional factors needed to create an enabling environment for continued financing.

On socio-economic risks to sustainability, the TE assessed whether there are social or political risks that may have jeopardized sustainability of project outcomes; whether there is a risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained; whether lessons learned are being documented continually; and whether successful aspects of the project are being transferred to appropriate parties, potential future beneficiaries, and others who could learn from the project and potentially replicate and/or scale it in the future.

On institutional framework and governance risks to sustainability, the TE assessed whether the country's legal frameworks, policies, governance structures and processes pose risks that may jeopardize project benefits; whether the project has in place frameworks, policies, governance structures and processes that will create mechanisms for accountability, transparency, and technical knowledge transfer after the project's closure; whether the project has developed appropriate institutional capacity (systems, structures, staff, expertise, etc.) that will be self-sufficient after the project closure date; and how the project identified and involved champions (i.e. individuals in government and civil society) who can promote sustainability of project outcomes; and whether the project leadership have the ability to respond to future institutional and governance changes (i.e. foreseeable changes to local or national political leadership) – thus can the project strategies effectively be incorporated/mainstreamed into future planning?

On environmental risks to sustainability, the TE assessed whether there are environmental factors that could undermine and reverse the project's outcomes and results, including factors that have been identified by project stakeholders.

Conclusions & Recommendations: The TE offered evidence-based conclusions, in light of the findings. Recommendations made with succinct suggestions for critical interventions that are specific, measurable, achievable, and relevant. Ratings along the objectives have been provided in accordance with the guidelines in Figure 1 (below).

Figure 2: Progress towards results rating scale

Highly Satisfactory (HS) --- The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as “good practice”.

Satisfactory (S) -- The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.

Moderately Satisfactory (MS) -- The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.

Moderately Unsatisfactory (MU) -- The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.

Unsatisfactory (U) -- The objective/outcome is expected not to achieve most of its end-of-project targets.

Highly Unsatisfactory -- (HU) The objective/outcome has failed to achieve its midterm targets, and is not expected to achieve any of its end-of-project targets. C. Project Implementation & Adaptive Management

2 Project description and development context

2.1 Project start and duration

The Sustainable Charcoal Project (also referred to as the Green Charcoal project) was initially a four year undertaking that commenced in May 2014 and was envisaged to be completed by May 2018. However, due to activity implementation delays, the project has been extended to November 2019. Approval for the extension was obtained from UNDP-GEF management.

2.2 Problems that the project sought to address

The project addressed barriers that hinder the stakeholders in the four districts and at the national level from 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 promotion of SLM and SFM practices. The barriers to biomass technology development and sustainable land management identified during the project design are summarised below:

Absence of a nationally driven biomass energy research agenda, caused by the absence of a well-established and adequately funded research institutions that can monitor and generate timely knowledge for appropriate interventions and responses in the sector. This is exacerbated by the dearth of relevant charcoal data along the charcoal value chain, with policies on the sub-sector not being informed by accurate data. The informality of the sector has led to it being perceived as illegal by the public, and is subjected to many taxes, informal and formal. These factors drive the charcoal producers to go underground, making the charcoal production unattractive to many potential investors. Indeed, the formal banking institutions are reluctant to provide financing for actors in the sector. Furthermore, inadequate understanding of rights and responsibilities along the value chain by relevant actors, especially charcoal producers makes them vulnerable to unscrupulous state actors.

In addition to poor coordination for the many institutions dealing with aspects of charcoal value chain, the lack of national standards for the sector hinders market development; and formal market infrastructure for charcoal is grossly undeveloped. There were no established market places with records of participants along the value chain, and charcoal producers and sellers are not organized into associations. Furthermore, the low levels of business and technical skills amongst the majority of the players on the value chain make diffusion of existing and new technologies difficult. The lack of skills and capacity to assess biomass at the village level means that harvesting for charcoal is not linked to annual allowable cuts. The natural resources officers at the District Local Governments (District Councils) lacked the basic equipment (computers, IT, transportation) to provide technical services to the charcoal producers and sellers. This inadequate extension service has also led to poor uptake of proven technologies on sustainable forest and land management.

The above challenges were exacerbated by the fact that interventions in the sector are largely project driven, making it difficult to sustain improvements once the projects' funding comes to an end.

2.3 Immediate and development 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 promotion of SLM and SFM practices. The project is implemented through three components, namely: i) Data collection and improved coordination and

enforcement of regulations governing the biomass energy sector, in particular those related to sustainable charcoal; ii) Dissemination of appropriate technologies for sustainable charcoal production in selected charcoal-producing districts (Mubende, Kiboga, Nakaseke and Kiryandongo) and; iii) Strengthening the capacity of key stakeholders in SFM and SLM best practices and establishment of sustainable woodlots. The detailed outcomes and outputs are outlined in Table 2.

2.4 Baseline Indicators established

The project did not set indicators for the objective or component levels. All the indicators were set at the outcome level.

- (1.1) Biomass Energy Strategy (BEST) developed, validated, approved and in use. National charcoal survey and updated standardized baseline reports completed based on current data
- (1.2) Framework for institutional coordination and resource mobilization developed between MEMD, local government authorities and the National Forest Authority to manage charcoal trade at district level
- (1.2) Charcoal by-laws including licensing procedures standardized and strengthened
- (1.3) Baseline report and functional biomass database established and hosted at MEMD and published in Uganda Bureau of Standards reports
- (1.4) Local guidelines and standards for certification schemes developed, adopted and publicized in targeted pilot districts
- (1.5) Awareness and educational program on local guidelines and standards completed in all targeted pilot districts
- (1.5) Updated guidelines for measuring biomass (CAI & MAI) calculated using the biomass study technical manual. The technical manual will be updated and revised by year 2
- (2.1) 60 sustainable charcoal cooperatives organized and operational with 2,400 charcoal champions in pilot districts. Activities to meet this KPI will involve:
 - Developing ranking criteria for categorizing charcoal producers or entrepreneurs
 - Conducting surveys to rank different actors into pre-determined categories
 - Training of all groups on local ordinances and standards for sustainable charcoal certification schemes as well as improved kiln technologies
 - Demonstration of Casamance kiln operation and viability to target group (total of 400 casamance kilns deployed)
 - Demonstration of retort kiln operation and viability to target groups (total of 200 retort kilns deployed)
 - MRV, tracking and licensing system established for all improved kilns piloted
 - All groups in compliance with certification standards (as per Output 1.4.1)
- (2.2) Delivery model to support consumer financing schemes for charcoal producing groups with local financial institutions established.
- (2.3) Basic Project submitted for registration to appropriate authority under an appropriate carbon development methodology in the Voluntary Market and/or a Sustainable Charcoal NAMA Design Document developed and endorsed

(2.4) Profit margin per output unit of charcoal produced with new technologies increased by at least 20% per group (with new kilns) as compared to baseline scenario for all participating charcoal cooperatives

(2.5) Training and technical assistance provided to all briquetting businesses that are receiving loans from Micro-Finance Institutions in conjunction with CleanStart

(3.1) Improved capacities of stakeholders in targeted districts to manage SFM and establish dedicated renewable biomass feed stocks. More specifically:

- At least 1,100 private woodlot owners in the four pilot districts identified, trained and contracted to make land available for woodlot establishment (minimum 5,900 hectares set-aside).
- Training all communities/woodlot managers on new charcoal regulations and SFM best practices, including use of specified tree species and optimal ecological yield from such species.
- Technical support provided to all woodlot owners on tree nursery management as an entrepreneurial activity with target to plant over 17.4 million seedlings
- Dissemination of over 17.4 million tree seedlings to woodlot owners
- Establishment of land use and forest management plans (including zoning and mapping of forest areas) for all targeted woodlot areas
- Contracts signed between woodlots owners and charcoal producer groups for feedstock supply

(3.2) SLM/SFM knowledge effectively transferred from on-going SLM projects in neighbouring districts to four pilot districts for this project.

2.5 Main stakeholders

The project design emphasized an active and wide stakeholder participation. The project document identified relevant Ministry of Energy and Mineral Development (MEMD), Ministry of Water and Environment (MWE), National Forestry Authority (NFA) and other representatives from the local communities, local governments, government ministries, private sector, CBOs and NGOs. Project design identified key roles and responsibilities of each stakeholder category. Apparently, there were other stakeholders that evolved as the implementation went on such as the District based Charcoal associations and groups, SLM associations, SACCOs etc. as this also ensured that relevance of the project is enhanced. The project also benefited by bringing on board political stakeholders especially during the National Charcoal dialogue organised by the President's Office.

2.6 Expected Results

The project was expected to deliver results in three core areas (components), described below.

Component 1: Data collection and improved coordination and enforcement of regulations governing the biomass energy sector, in particular those related to sustainable charcoal: Under this component, the project aimed to put conditions in place to integrate the biomass sub-sector into development processes in Uganda. This would be achieved by putting in place an interlinked biomass resource database, establishing an information centre with representatives from key line Government agencies and improving coordination amongst the key players in the charcoaling sub-sector. It would therefore support data collection platforms and improved coordination and enforcement of current regulations governing the biomass energy sector. The component would fund a national charcoal survey and update standardized baseline report; it would create a new framework for coordination among national and district actors and ensure that a functional biomass

database is established and hosted at MEMD and published in Uganda Bureau of Standards reports and that such a database is used as a baseline in the development of a sustainable charcoal NAMA.

At the district level, the project sought to replicate sustainable charcoal governance and enforcement structures, certification schemes, community-based learning platforms and policy-making initiatives that were previously successfully piloted in two other districts as part of the UNDP-funded *Promotion of Sustainable Charcoal Production Project*. These measures included adoption of improved charcoal and biomass guidelines and ordinances; formation of charcoal producer associations, formally registered with the respective District Director of Community Services; updating guidelines for measuring biomass and establishment of Annual Allowable Cut (AAC) targets for each district; and, implementation of awareness and educational programs.

Component 2: Dissemination of appropriate technologies for sustainable charcoal production in selected (4) charcoal-producing districts (Mubende, Kiboga, Nakaseke and Kiryandongo): This component supported the roll-out of appropriate technologies (i.e. improved kilns and promotion of briquetting technologies) for sustainable charcoal production to at least 60 sustainable charcoal cooperatives, with at least 2,400 sustainable charcoal champions. The project aimed to disseminate at least four hundred Casamance and two hundred retort kilns. The retort kilns would be distributed to sustainable charcoal producer groups who would agree to operate the kilns in areas adjacent to woodlots established under Component #3 and who were willing to plant more trees to ensure sustainability. All the groups would be trained on the use of the kilns, sustainable charcoaling processes and relevant district ordinances and standards for sustainable charcoal certification schemes developed under Component 1. Additional training and technical assistance would be provided to briquetting businesses that received loans from participating Micro-Finance Institutions (FSPs) working in conjunction with *CleanStart*.

Under the component, the project aimed to develop a model scheme to support consumer financing schemes for charcoal producing groups (with local financial institutions) to purchase improved kiln technologies post-project. This was needed because improved kiln technologies are not commercially mature enough to attract asset-backed financing. It was hoped that following the dissemination of the technologies in the target areas their viability would be proven and local banks would begin to view them as productive assets eligible for commercial financing.

It was expected that as a result of these actions, the project would deliver total direct lifetime emissions (avoided) of 1,576,502 tCO₂eq. this would be as a result of a reduction in wood usage of 723,000 MT over the asset lifetimes (15 years - from use of improved kilns compared to BAU scenario); Lifetime²² 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). There would also be additional lifetime avoided methane emissions by all retort kilns of **252,000 tCO₂ eq.**

Component 3: Strengthening the capacity of key stakeholders in SFM and SLM best practices and establishment of sustainable woodlots – Under this component, the project aimed to put 50,000 ha of woodlands across the four pilot districts under improved land use management and establish about 5,900 ha of community woodlots of indigenous fast-growing trees. It was expected that improved management of woodlots would lead to avoided emissions of 2,100,000 tCO₂eq over lifetime²³, while establishment of woodlots would produce a cumulative biomass stock of 368,771 MT of wood. Established on under-productive agricultural lands or degraded forests, the woodlots would supply the improved kilns (deployed under Component 2) with renewable biomass. The project formulation process had established that there was adequate, farmer willingness and land

²² Casamance kilns have an estimated lifetime of 5 years; retort kilns have an estimated lifetime of 15 years

²³ As per GEF guidelines the lifetime is 20 years

tenure arrangements to support establishment of such a magnitude of woodlots, provided technical assistance was provided.

Three indigenous species were selected for piloting (*Markhamia lutea*, *Vitex doniana* and *Acacia tortilis*), chosen on the following characteristics of tree species which are suitable for wood fuel production: i) Grow quickly, yield a high volume of wood quickly, and require minimum management time; ii) Water extraction rates that are suitable for local agronomic conditions; iii) Coppice or sprout well from shoots; iv) Have dense wood with low moisture content; v) Produce little and non-toxic smoke; vi) Produce wood that splits easily and can easily be transported; vii) Yield other products or services for the household; viii) Produce wood that does not spit or spark when burning. It was estimated that 2,610 land owners would progressively commit on average up to 2.27 ha of their land to establishment of woodlots, hence by the fourth year (end of project) a total acreage of 5,930 ha of tree plantations would be in place.

Table 2: Project Details showing Components and Outcomes (details in Annex 8)

Project components	Outcomes	KPIs	Stakeholders
COMPONENT 1: Data collection and improved coordination and enforcement of regulations governing the biomass energy sector, in particular those related to sustainable charcoal	Existing & on-going policy, regulatory and institutional work on sustainable charcoal and land tenure security integrated with new biomass energy strategy (BEST) under development	Biomass Energy Strategy (BEST) developed, validated, approved and in use. National charcoal survey and updated standardized baseline reports completed based on current data	MEMD working closely with DFS NFA, FSSD, MWE, NGOs and charcoal producers. BEST stakeholders and the GEF SLM project (Ministry of Agriculture)
	Improved coordination of institutions managing sustainable charcoal production at pilot district level	Framework for institutional coordination and resource mobilization developed between MEMD, local government authorities and the National Forest Authority to manage charcoal trade at district level	
		Charcoal by-laws including licensing procedures standardized and strengthened	
	Improved data collection and monitoring of biomass energy and charcoal production and use (integrated into national database and for use as baseline information in a possible NAMA)	Baseline report and functional biomass database established and hosted at MEMD and published in Uganda Bureau of Standards report	
	Improved charcoal and biomass guidelines and ordinances at district level	Local guidelines and standards for certification schemes developed, adopted and publicized in targeted pilot districts	
	Heightened awareness of new institutional frameworks and ordinances, guidelines and certification schemes at district level	Awareness and educational program on local guidelines and standards completed in all targeted pilot district	
Component 2: Financial	Low carbon charcoal production technologies have successfully replaced inefficient systems in targeted pilot districts	60 sustainable charcoal cooperatives organized and operational ²³ with 2,400 charcoal champions in pilot districts	MEMD charcoal producers,

Project components	Outcomes	KPIs	Stakeholders
	Sustainable charcoal recognized as a viable SME in pilot districts by end of project	Delivery model to support consumer financing schemes for charcoal producing groups with local financial institutions established.	
	Carbon finance is integrated into sustainable charcoal practice in targeted areas	Basic Project submitted for registration to appropriate authority under an appropriate carbon development methodology in the Voluntary Market and/or a Sustainable Charcoal NAMA Design Document developed and endorsed	
	Increased incomes for all charcoal cooperatives involved in project	Profit margin per output unit of charcoal produced with new technologies increased by at least 20% per group (with new kilns) as compared to baseline scenario for all participating charcoal cooperatives	
	Technical support for charcoal briquetting producers enhanced	Training and technical assistance provided to all briquetting businesses that are receiving loans from Micro-Finance Institutions in conjunction with CleanStart	
Component 3. Strengthening the capacity of key stakeholders in SFM and SLM best practices and establishment of sustainable woodlots	Strengthening the capacity of key stakeholders in SFM and SLM best practices and establishment of sustainable woodlots	Improved capacities of stakeholders in targeted districts to manage SFM and establish dedicated renewable biomass feed stocks	MEMD DFS, NFA and FSSD in the MWE; Ministry of Local Government; District Chief Administrative offices, District Environment Offices and District Forest Offices; Land owners; Charcoal Producer Associations; NGOs; and FAO FFS
	SLM/SFM knowledge effectively transferred from on-going SLM Best Practices in the neighbouring Cattle Corridor districts replicated in the four target districts	SLM/SFM knowledge effectively transferred from on-going SLM projects in neighbouring districts to four pilot districts for this project.	

3 Findings

3.1 Project Design / Formulation

3.1.1 Analysis of LFA/Results Framework (Project logic /strategy; Indicators)

The TE finds that the project strategy was based on a detailed and thorough analysis of the threats to woodlands from charcoal production and the barriers to improving efficiencies and formalizing the charcoal sub-sector. The project design provided a detailed background, base information, research findings as well as experiences from other projects and programs dealing with charcoal, sustainable forest management, and sustainable land management in Uganda. The core issue identified was that charcoal is preferred to firewood (particularly by urban consumers) where many people consider it a modern fuel. Households used 1.5 million tons of charcoal in 2014, with 0.3 ton being used by others, most probably industry. However, notwithstanding its popularity, the charcoal sub-sector is plagued by inefficient production practices and the lack of sustainable supplies of woody biomass and inadequate, often conflicting, policy statements. Most of the charcoal is produced informally by rural populations from natural forests, with 70% of such trees found on private land where the government has limited control on land use and tree harvesting. There are huge discrepancies in charcoal production data and uncertainties at all levels due to informal nature of the sector.

The TE however finds that the analysis underlying the project design was far too detailed and touched on issues of the wider biomass sub-sector, which were not included in the project results. In addition, the analysis related to the sustainable forest and land management was not fully integrated within the narrative of sustainable charcoal production. The three components do not cover the huge number of issues raised in the background analysis.

In addition, four years for this type of project was too short. The project intended to demonstrate tree cropping for sustainable charcoal production. Most trees take longer than four years to be mature enough (including lignification) to yield high quality charcoal. Even though this fact is recognized in the project design, it was not catered for in the length of the project.

3.1.2 Indicators and targets

The strategic results framework for the project was assessed against gender sensitivity/responsiveness and “SMART” criteria, whether the indicators and targets were gender segregated, sufficiently specific, measurable, achievable, relevant, and time-bound.

Were indicators smart?

The project had twelve outcomes, majority pitched at output level, forcing a repetition of the same outcome statements as outputs and indicators (see Table 3). The indicators are far too many and in most cases have weak links to the outcome statement, or the baseline and end of target values. For this reason, the TE concurs with the midterm review finding that the theory of change was not clear or robust, with the logic being crowded by too many issues being brought on board, weak indicators with poor linkages to baseline values and end of project targets. This is best exemplified by outcome 2.1 in the Table 3 below.

Table 3: Weak relationship between outcome, indicators, baseline and target values

Result	Indicator	Baseline value	End of project target
Outcome 2.1: Low- carbon charcoal production technologies have <u>successfully replaced</u> inefficient systems in targeted pilot districts	60 sustainable charcoal cooperatives organized and operational with 2,400 charcoal champions in pilot districts. Activities to meet this KPI will involve: <ul style="list-style-type: none"> •Developing ranking criteria for categorizing charcoal producers or entrepreneurs • Conducting surveys to rank different actors into pre- determined categories • Training of all groups on local ordinances and standards for sustainable charcoal certification schemes as well as improved kiln technologies • Demonstration of Casamance kiln operation and viability to target group (total of 400 casamance kilns deployed) • Demonstration of retort kiln operation and viability to target groups (total of 200 retort kilns deployed) • MRV, tracking and licensing system established for all 	BAU Carbonization Technologies = Earthmound Kilns @ 10% efficiency conversion Biomass Sources = non-renewable No widespread use of improved kiln technologies and those that are in use are not licensed or monitored Charcoal producers in target districts are not formally organized and do not have access to improved carbonization technologies	143,314 metric tons 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: <ul style="list-style-type: none"> • 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 equivalent

The outcome statement (*Low- carbon charcoal production technologies have successfully replaced inefficient systems in targeted pilot districts*) is completely unachievable in four years for the level of investment of the project which was only piloting interventions. There was no estimation of the quantity of charcoal produced in the four districts or the number of charcoal producers at the start of the project; hence what was to be replaced was quite unknown. It is therefore difficult to judge whether the indicator (*60 sustainable charcoal cooperatives organized and operational with 2,400 charcoal champions*) would be a reasonable measure of the extent to which inefficient charcoal production has been replaced (this could be 1 % of all charcoal produced in the four districts), and it should not contain activities as part of the indicator. While the statements in the baseline values represent facts, they are not SMART measures of the extent of charcoal being produced at the start of the project. The targets provide a different measure other than the extent to which inefficient charcoal production would be replaced by efficient measures.

Were indicators gender sensitive?

The TE finds that at design, the indicators listed in the Box below should have been disaggregated by: a) sex; b) age; and c) socio-economic group (or any other socially significant category in society). Although this was not the case, a gender strategy was designed during project formulation, which introduced gender disaggregated reporting on the indicators. The strategy fell short of disaggregating the targets and results along the other two criteria (age and socio-economics category). The TE therefore concludes that the project design did not

adequately guarantee a sufficient level of gender balance in activities (e.g. quotas for male and female participation).

- 60 sustainable charcoal cooperatives organized and operational with 2,400 charcoal champions in pilot districts.
- Awareness and educational program on local guidelines and standards completed in all targeted pilot districts
- Profit margin per output unit of charcoal produced with new technologies increased by at least 20% per group (with new kilns) as compared to baseline scenario for all participating charcoal cooperatives
- Training and technical assistance provided to all briquetting businesses that are receiving loans from Micro-Finance Institutions in conjunction with CleanStart
- Improved capacities of stakeholders in targeted districts to manage SFM and establish dedicated renewable biomass feed stocks. More specifically:
 - At least 1,100 private woodlot owners in the four pilot districts identified, trained and contracted to make land available for woodlot establishment (minimum 5,900 hectares set-aside).
 - Training all communities/woodlot managers on new charcoal regulations and SFM best practices, including use of specified tree species and optimal ecological yield from such species
 - Technical support provided to all woodlot owners on tree nursery management as an entrepreneurial activity with target to plant over 17.4 million seedlings
 - Dissemination of over 17.4 million tree seedlings to woodlot owners
 - Establishment of land use and forest management plans (including zoning and mapping of forest areas) for all targeted woodlot areas
- Contracts signed between woodlots owners and charcoal producer groups for feedstock supply
- SLM/SFM knowledge effectively transferred from on-going SLM projects in neighboring districts to four pilot districts for this project.

3.1.3 Assumptions and risks

The TE finds that project design was based on a thorough analysis of assumptions and risks. The TE finds that although the analysis of assumptions was thorough, many of them did not pan out, or nearly turned into risks, with the impacts on the project results and sustainability explained in Table 4.

Table 4: Assumptions and their effects on project implementation and achievements

Assumption	How it panned out	Impact on the results
That there is available suitable land for woodlot establishment for selected tree species;	The project reports that it has facilitated establishment of 6,208 hectares of well grown woodlots of mainly eucalyptus; a total of 6,898,000 seedlings have been planted by about 1,800 tree planters, 18% of whom are women. This translates into about 581,595 metric tons of renewable biomass by year five	The project has almost reached the target of 5,900 hectares and passed the target of number of farmers by 700. However, over 90% of the seedlings planted are eucalyptus, which had not been identified among the three suitable indigenous species for charcoal. The change in species occurred as an adaptive management action – where the tree planters demanded

<p>That the land owners will appreciate that there are more benefits for investing in woodlots for charcoal production compared to some conventional land use practices;</p>	<p>Despite the fact that respondents to the TE questions reported that land tenure continues to be a deterrent to tree planting, the demand for seedlings of eucalyptus is reported to be higher than supply. While this confirms that land owners appreciate the value of tree farming, the low uptake of the indigenous species suitable for charcoal casts doubt on whether they appreciate that there are more benefits for investing in woodlots for charcoal production compared to some conventional land use practices</p>	<p>the multi-purpose eucalyptus with very low uptake of the indigenous species.</p> <p>Given the high demand for eucalyptus by other sectors (timber, building and electricity poles) this raises doubt on whether the reported 581,595 metric tons of renewable biomass by year five would be supplied to sustainable charcoal production. This is especially because the planters are not contracted by sustainable charcoal producers and the retort kilns failed to function – important because the larger woodlots would be best served by the stationary retort kilns.</p>
<p>That government will come up with standards for the charcoal value chain and put mechanisms in place to regulate and monitor charcoal production and marketing</p>	<p>National Standards for the charcoal value chain have been developed and approved at the national level. There is improved data on the charcoal value chain. The districts have drafted ordinances which are yet to be gazetted; however, the mechanisms to regulate and monitor charcoal production and marketing are not yet in place.</p>	<p>The project has done a great deal of work on the standards and district ordinances. However, since these have not been operationalized, it has had no real impact on integrating sustainable charcoal into development processes via policy reform. Indeed, although the District Councils demonstrated support for the project, sustainable charcoal issues/measures are not integrated into the District revenue collection from forest products, which are undertaken by contractors. This is a very serious risk to sustainability.</p>
<p>That the industry will provide market incentives for investment in efficient charcoal production technologies like efficient kilns and retorts as well as management practices</p> <p>Flexible financing mechanisms will be put in place for tree production for charcoal</p>	<p>The project has piloted Casamance and retort kilns; it has sensitized financial institutions and the private sector in the four districts on the potential of sustainable charcoal as a business. Indeed, respondents to the terminal evaluation reported that the public is slowly appreciating sustainable charcoal as an acceptable business, rather than an illegal activity undertaken by the poorest in society. Although the project reports that two micro institutions have entered into MoUs with some charcoal producer associations, no associations reported having received loans to invest in the business and there is still no manufacture of the improved kilns outside of the project contracts. These technologies are therefore not available in the market yet. Although some members of the charcoal associations reported a Uganda</p>	<p>The lack of substantive financial incentive for investing in improved technologies and sustainable charcoal production is likely to be a major risk to sustaining the project results. The Casamance has a lifetime of about 5 years; without further project support, these kilns, currently distributed to groups of up to 20 people (sharing one kiln) are likely to require serious maintenance and/or replacement. It is not clear how these groups will handle these developments when they cannot purchase the kilns in any market.</p> <p>The retort kiln still faces design challenges and is not currently functional. The original designer of the retort kiln challenged the project on copyright issues that were difficult to solve; the project contracted an engineer to modify the kiln to avoid the copyright issues. The consequent modified Adam retort is not yet functional.</p>

	Shillings 10,000 (US\$ 2.77), per bag of charcoal, this is not evident in the substantive markets for charcoal – such as the district headquarters or Kampala; furthermore, charcoal is still largely sold by volume (bags of unspecified weight).	
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The majority of the risks were largely relevant, straightforward and monitored throughout the implementation period. It is however worth noting that one risk was a precondition: the risk that “the type of kilns proposed could prove to be unsuitable for the designated areas; semi-industrial charcoal kilns may only be a viable option in large-scale, plantation-based production enterprises; and modern, stationary kilns may not be viable if the woodlots are not well- established and managed”. The project had full control of the choice of the technologies to introduce. However, the Adam retort kiln, adopted after the project encountered copyright issues with the original retort kiln that could not be resolved, failed to become fully functional. As a result the project has focused more on the casamance kiln, dismissing the distribution of the retort after the first 15.

There is need to investigate if one risk became a reality, preferably through student research supported by the Nyabweya Forestry College. “The introduction of improved kilns in charcoal-producing areas with large areas of standing forest could actually create a perverse incentive whereby efficiencies incentivize more production of charcoal rather than replacement of inefficient methods and reduced pressure on forests”.

Four key mitigation measures were proposed: i) that all kilns would be licensed and monitored by the forestry department and local authorities; ii) As part of the certification schemes the producer cooperatives would document the amount of charcoal produced with each kiln keep financial and operational records; iii) that charcoal activities would take place within the context of appropriate land use planning involving a broad range of stakeholders in the districts; iv) Best practices would be adopted from organizations such as FAO and partnerships would be formed to monitor charcoaling with CSOs and private sector entities.

While charcoal producers have been licensed, the certification scheme is yet to be implemented, no land use planning took place and the TE did not find evidence of notable involvement of FAO in the charcoal associations. One of the criteria for selecting groups was that they had to have a history of existence. Thus the project converted existing groups into charcoal producer associations. While this is excellent for sustainability, it is not clear if these groups had been engaged in charcoal production pre-project, or whether they had charcoal producers as members. There was no monitoring of the group dynamics of the charcoal associations to check whether the project was reaching bona fide charcoal producers. However, a random assessment of the umbrella charcoal producer association of Mubende district revealed that close to 40% of the members had been engaged in charcoal production for four years and below (project timeline). The Ministry of Energy needs to make a detailed assessment of whether the project has engaged inefficient charcoal producers or has recruited new entrants into the charcoal production without significantly introducing efficient technologies to majority of the regular charcoal producers. This is critical for future projects if leakage is to be avoided.

3.1.4 Lessons from other Relevant Projects

Charcoal production is of great significance to Uganda given the high percentage of the urban population relying on it, and the risk to the environment especially to its nationally and globally significant ecological assets such as the forests and woodlands. The country has implemented several other projects touching on improving charcoal production, whose lessons informed the design of the sustainable charcoal project. Indeed, at the district level, the project sought to replicate relevant localized governance and enforcement structures, certification schemes, community-based learning platforms and policy-making initiatives that were previously

successfully piloted in 8 sub-counties in two other districts (Luwero and Nakasongola) as part of the UNDP-funded *Promotion of Sustainable Charcoal Production Project*. The measures included adoption of improved charcoal and biomass guidelines and charcoal ordinances. Component 3 upscaled best practices and lessons drawn from three relevant projects: a) EU financed project on promoting bio-energy plantation and improved charcoal production technologies; b) UNDP/DDC project on sustainable land management in the Cattle Corridor Districts of Uganda; c) UNDP/GEF project on enabling environment for SLM to overcome land degradation in the cattle corridor of Uganda.

The TE finds that the project design was informed by lessons from other projects in the five aspects of lessons: a. context and background of the charcoal value chain in Uganda and the region ; b. practical application of sustainable and efficient charcoal technologies; c. legislative status of charcoal value chain in the country, d. specific situation analysis of scope and potential of sustainably produced charcoal via charcoal producer associations; and e. suggestions for incorporation in sustainably produced biomass in the design and implementation processes.

3.1.5 Planned stakeholder participation

The project was formulated over an eighteen-month period, involving a wide spectrum of stakeholders (through a Project Preparatory Grant – PPG). This ensured that the perspectives of all relevant stakeholders informed the project design, and that it drew on lessons from similar projects. The project focused stakeholder engagement at two levels of intervention: (i) working with national, district and local public institutions and agencies in order to strengthen their capacity to address the twin challenges of unsustainable utilization of fuel wood (including charcoal) and poor land management practices that lead to land and forest degradation and deforestation and to align project activities with government’s strategic priorities; and (ii) working directly with civil society organizations, formal and informal resource users (rights holders), private landowners and individuals to strengthen collaborative relationships for participatory improved use of current information, uptake of efficient carbonization technologies, land and forest management practices, mitigate impacts of unsustainable charcoal practices, and optimize the benefits arising from project activities.

During the project preparation stage, a preliminary stakeholder analysis was undertaken in order to identify key stakeholders, assess their interests in the project and define their roles and responsibilities in project implementation. This included the collection of baseline socio-economic information on the proposed pilot communities, informing them about the project have planned activities and confirming their willingness to participate in demonstration activities. The stakeholder analysis concluded that “Key stakeholders in the implementation of this project will include MEMD, MWE, NAFA, local authority (local district councils), NGOs and CBOs. Other important stakeholders will include international organizations such as GIZ, FAO, that are implementing energy projects in the pilot districts. This project will encourage a cross-sectoral approach to include agriculture, water, livestock and natural resources essential for its success. The key stakeholders and beneficiaries however, will be the land-users, local communities, local government agencies and the private sector in the four pilot districts”. Following this analysis, a Stakeholder Involvement Plan was drafted and confirmed during the project inception. The TE team examined the Stakeholder Analysis section of the Situation Analysis in the Project document which describes the major categories of stakeholders identified, and their roles envisaged in the project. These were found largely followed.

The TE therefore finds that the project design was based on a clear analysis of stakeholder needs; that capacities of the executing institution and its counterparts were adequately considered; the partnership arrangements were identified properly, their roles and responsibilities negotiated prior to project submission; and that counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements were in place at project entry.

The TE also finds that while stakeholder participation during the implementation was largely as expected at the project design stage, briquette producers in the four project pilot districts were unable to participate in the CleanStart programme because of the small scale of their operations. The CleanStart Programme was open to national level competition for loans by the private sector/players engaged in energy value chains. None of the briquette producers in the pilot district qualified for CleanStart funding. The impacts of this are discussed in Section 3.5 (Results – under Outcome3) and in Table 11 (Rating project achievements by indicators and assessment of delivery on outputs).

3.1.6 Replication and Scaling Approach

Uganda's economy is driven by agricultural production. Most rural farmers and pastoralists practice charcoal production. The project strategy of building capacity in SFM and SLM to produce wood for sustainable charcoal production and the adoption of improved technologies through incorporation of consumer financing, has very high replicability. Indeed, the replication approach of the sustainable charcoal production and uptake of conservation agriculture are well laid out. First these concepts were tested in neighbouring districts of Luwero and Nakasongola by other UNDP projects; then they were replicated in the four districts benefitting from this project. These initiatives are already being upscaled by the US\$ 2.28 million mobilized from the German Development Agency (GIZ) to support investment in alternative and improved energy technologies in line with the 10-year Action Plan of the Biomass Energy Strategy (BEST). They will be further upscaled by the NAMA on sustainable charcoal, if funding is provided. The government, through the MEMD, is aggressively seeking funds for the NAMA.

3.1.7 UNDP comparative advantage

The TE finds that UNDP has excellent comparative advantage in the biomass energy sector, having implemented numerous projects in Uganda, Africa and other regions of the world. UNDP comparative advantage as the GEF implementing agency was based on its extensive experience working in Uganda, with in-country operations, its favourable standing among national stakeholders, collective experience in supporting GEF sustainable land and forest management projects (including those addressing the charcoal sub-sector) in Uganda and elsewhere globally, as well as its institutional expertise in leading initiatives focused on broader human development issues, such as gender mainstreaming, social inclusion, and governance. UNDP's comparative advantage extends beyond providing management support during the implementation; the country office and regional centre staff also provide technical / strategic support and timely back-stopping on key issues to the project.

3.1.8 Linkages between Project and other Interventions

The design of the project took into account many lessons generated by the baseline projects. There are many national and international organizations engaged in the sustainable land and forest management and the charcoal value chain in Uganda. They include: i) GIZ, which is supporting MEMD in implementation of PREEP (Promotion of Renewable Energy and Energy Efficiency Programme) in close partnership with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the German Financial Cooperation (KfW) and the Center for International Migration (CIM). The focus of PREEP is to improve access to modern energy services and promote energy efficiency in households, with the primary focus on improved cook stoves; ii) the European Union (EU), which is supporting MEMD with implementation of the Biomass Energy for Rural Development Project. The project supports a wide variety of technologies in the biomass energy sector (biogas digestors, charcoal briquetting, gasifiers, improved charcoal production techniques). It is one of the key platforms supported by MEMD to achieve the goals of the Energy Policy and more specifically the Renewable Energy Policy for Uganda (2007) whose policy goal is to increase the use of modern and sustainable renewable energy to 84.2% of the total energy consumption by the year 2017. MEMD is also supporting BEST; iii) FAO, which supports

Farmer Field Schools (FFS) and Agro-Pastoralist Field Schools (APFS) in many parts of Uganda. FAO supports the use of the LADA-WOCAT tools for detailed assessment and mapping of land degradation processes as a basis for land use planning and sustainable land management interventions at the local levels. It also supports national level application of geographic information systems to help Uganda generate useful and detailed forestry statistics and land cover maps. These tools and information are critical in monitoring national forest resources and making informed decisions regarding long-term forestry and investment policies, as well as avoiding unintended forest conversion and the degradation of the productive and protective functions of forests.

Collectively, these institutions have capacities that will be useful in upscaling of the project initiatives nationally. The TE notes that the process has begun, with the investments raised to implement priorities of the BEST and the formulation of the NAMA.

3.1.9 Management arrangement

The project design identified the National Implementation Modality (NIM) characteristic of UNDP-GEF projects of this nature and magnitude. The lead Executing Partner was the Ministry of Energy and Mineral Development, which has a Biomass Energy Unit. Direct technical supervision of the project would be the responsibility of the MEMD with close technical support and collaboration from the Ministry of Water and Environment through the National Forest Authority and Department Forestry Services. The MEMD would be directly responsible for the timely delivery of inputs and outputs and for coordination with all other executing agencies through a Project Management Unit (PMU). The PMU would be composed of a Project Manager, Technical Advisor and a Finance/Administrative Assistant, a driver and 4 district level project officers. A Project Board, co-chaired by the Permanent Secretary of MEMD and UNDP, was set up to provide overall policy guidance and to ensure ownership of the project.

The TE finds that while this management arrangement was appropriate, the PMU had no executive powers over budgets and overall project plans, thus majority of project decisions required input of the PS (or senior representative in Government) and the UNDP Resident Representative. This subjected the project to full government and UNDP bureaucratic processes, slowing down implementation, as discussed in the Section on Adaptive Management.

3.2 Project Implementation

3.2.1 Adaptive management (changes to the project design and project outputs during implementation)

By the time of the MTR, the project had not put in place any adaptive management measures as noted from the MTR report. However during the post MTR course of implementation the following adaptive measures were enacted.

- The Board decided to combine the dual roles of the Project Manager together with those of the Technical Advisor.
- The Project Board's open door policy in overseeing the governance of the project was also another good management adaptive measure.
- The bi-annual releases of funds instead of quarterly releases in order to mitigate against the delays in financial disbursements due to the inherent red tape brought about by the NIM modality that was purely relying on use of government systems coupled with IFMIS which in itself creates more bureaucratic delays.
- The integration of the District Charcoal Action Plans (DCAPs) into the District Development Plans was also another positive adaptive measure to ensure sustainable green charcoal funding and production.
- Adopting an Indicator Performance monitoring tool in addition to the PIR as the project never relied on the GEF tracking tools.
- As a result of lean staffing with the PMU, the Project Finance Assistant was also found to perform the roles of the would be M&E specialist.
- Other significant adaptive measures were for the project to opt for the planting of quick growing tree species like Eucalyptus instead of the indigenous species.

3.2.2 Stakeholder Engagements

At the design stage of the project a number of stakeholders were involved to a certain extent and these included both government at the national and local government levels, private sector, NGOs and Development Partners. The project generally has got a good level of stakeholder involvement both at the upstream and downstream levels in its quest to ensure that there is coordinated and good ownership and buy-in during the course of its activities' implementation. It was also noted that during the Inception workshop a mix of various stakeholders from central and local government especially from the 4 pilot districts, development partners, NGOs, and private sector were effectively mobilized to attend the launch of the project. It was further noted that before the launch of the project a stakeholder analysis was undertaken in order to effectively inform the design the relevant and potential partners as well as decide on key strategies. A National Dialogue on Green Charcoal was held under the auspices of the President's Office which brought on board many stakeholders across the country. This was a good indicator of national ownership as well as political will and buy-in.

The Project also engaged various charcoal groups and associations such as Mubende Enviro Save Charcoal Producers association an umbrella association with many charcoal groups that are also operating at each of the sub counties in the district. In Kiboga also charcoal groups were found to be active. These charcoal associations and groups were reported to have formalized engagements with district local governments in order to streamline charcoal business and its sustainable production. During our interaction with many of the

stakeholders including the user community there is positive feedback for this project, as it contributes to the improvement of the quality of the product standards and the environment. The good stakeholder engagement at national, district and sub county levels up to community level was able to contribute to achievement of the project outputs and outcomes. **Networking and information sharing:** The stakeholders reported that the project was able to bring them together and helped them to network especially like Kiboga and Mubende district charcoal associations network and share information on technologies as well as marketing systems of the produced charcoal. Women were also reported to have appreciated the project as it brought them on board in the entire value chain of charcoal production and marketing as well as brought harmony between them and husbands and families. SLM/SFM was also reported to have led to groups at village level to organize themselves in accessing other services at district as well as micro finance a case in point was in Kiboga. Some stakeholders however, felt that although they have gained a lot from the project, the expiry of it may render associations and groups inactive since there was short period to build social cohesion. **Rating:-Satisfactory.**

3.2.3 Feedback from M&E activities used for adaptive management

The Project document clearly lays out the monitoring and evaluation framework whereby a number of tools are provided for as per GEF guidelines which includes (Quarterly Reports, PIR, APR, M&E). The PMU and Board has tried to follow this system and processes as stipulated in Project which was also cascaded down to the DLGs. The M&E framework spells out M&E activities, responsible parties, the project log-frame, the annual work plans as well as progress activity reports. At the design stage the MTR and Final Terminal evaluations were provided for in addition to internal monitoring mechanisms whereby joint monitoring and supervision missions were undertaken by the IPs, PMU, and Board mostly quarterly. In addition, the project's technical advisor/Project Manager as well as UNDP country office all conducted supervisory monitoring missions to verify the reported progress in the reports as a result of adaptive management where both roles were amalgamated.

Although the project design was relevant with objectives, outcomes, outputs and activities, which were consistent with the overall project goal, it was discerned that the monitoring and reporting was more hinged on outputs without sufficient analysis to the outcomes. The major concern from the stakeholders consulted was that the project was ambitious in its scope with many outcomes given the short implementation period. Another short coming was that some outputs e.g. Output 3.4.1 were presented as indicators while others lacked baselines. The major challenge in the M&E framework of the project was reported to be inadequate budget to carry out routine monitoring and supervisory missions and functions. Further still the fact that the Project had not substantive M&E Officer but relied more on the national and DLGs structures and systems often had a negative impact especially in the respect to late submission of progress reports. **Rating - Moderately Unsatisfactory.**

3.3 Project Finance

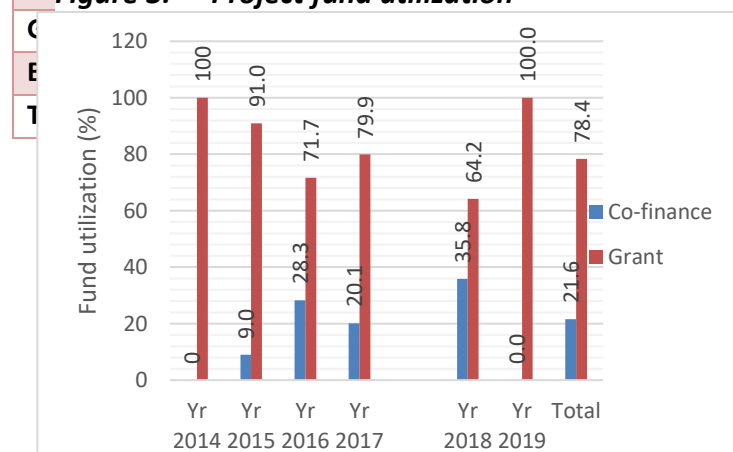
The project document spells out the project financial management arrangement. Accordingly, the project adopted UNDP National Execution modality. At the design stage, the total project budget was USD 18,065,808 of which USD 3,480,000 (19%) was a grant from GEF and the remaining 14,585,808 (81%) was to be realized through a co-financing arrangement involving government of Uganda, UNDP, FAO, UNCDF, GIZ and BTC as indicated in the table 5 below.

Table 5: Project Financing

Funders	Pledged amount	% of the total budget
GEF	3,480,000	19.3
UNDP	1,860,000	10.3
Gov't	6,928,246	38.4
FAO	1,600,000	8.8

Analysis of the Combined Delivery Reports 2014 - June 2019 shows that by June 2019 a total of USD 3,090,744.43 had been spent (as of December 2018). Of this amount, 22.2% was disbursed through the government while 78.4% was disbursed through the UNDP system as shown in figure 3 below.

Figure 3: Project fund utilization



Indeed, project expenditure in the first year (2014) and last year (2019) was fully channelled through the UNDP system (Fig 3). In all the project years, much of the funds were channelled through UNDP system which indicates the use of a hybrid of NIM and DIM.

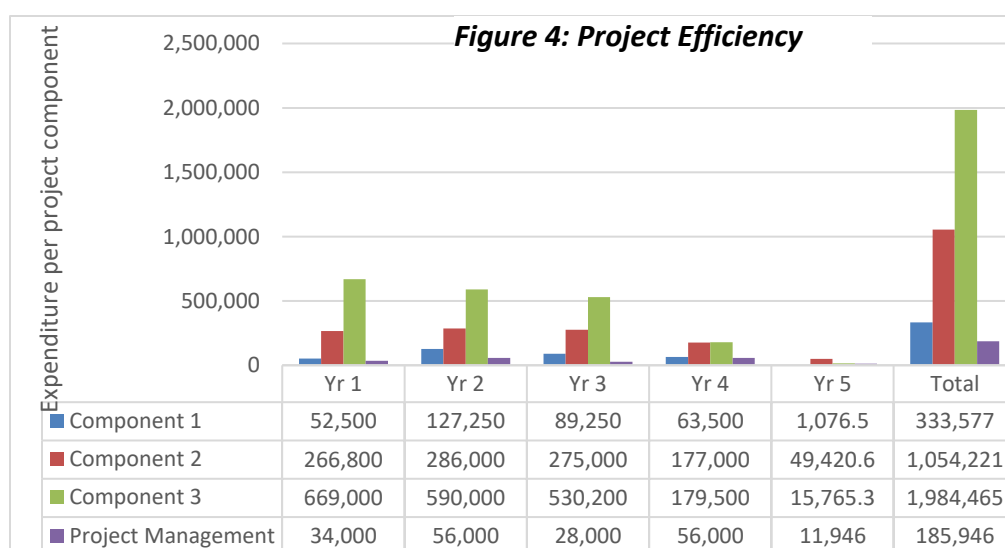
Co-finance: Although the project did not systematically track and report on co-finance, analysis of the project reports showed that the co-finance contribution from other project partners exceeded the CEOR estimates by three times (realizing US\$ 42,968,246 against an estimate of

\$14,585,808) (Details in Table 6). About 80% of the co-finance realized was grants while about 20% was in kind contribution. The creation of a Renewable Energy Department at the Mineral Development (MEMD) with the subsequent raising of over US\$ 30 million to support its work (in the form of projects) contributed to this jump in co-finance. The new Renewable Energy Department is currently implementing USD \$3.2 million project for biogas generation from municipal solid waste, Euro 15 million project for improved cook stoves for all schools, and USD \$4 million project for grants for promoting biomass investments. The TE finds that the increased coordination contributed to mobilization of co-finance; it indeed led to the USD 2.28 million mobilized from GIZ to support investment in alternative and improved energy technologies in line with the 10-year Action Plan of the Biomass Energy Strategy (BEST). Additional co-finance from government has been mobilized through the District Charcoal Action Plans, which have been integrated into the District Development Plans allowing districts to allocate budget lines and budgetary resources for their implementation; as demonstrated in Nakaseke and Mubende districts, which have budget lines for priority interventions of the Action Plans. It is expected that the draft Charcoal Industry Ordinances and District Charcoal Action Plans will further enhance coordination, charcoal production and trade; and revenue collection at district level. It is worth noting that once approved and financed, the NAMA will mobilize additional \$60 million, \$50 million of it from the private sector.

Table 6: Details of Co-finance Mobilized by Terminal Evaluation

Sources of Cofinancing	Name of Co-financer	Type of Co-financing	Amount at TE (US\$)	Investment mobilized*
GEF Agency	UNDP	In kind	1,860,000	Recurrent expenditures
Recipient Country Government	Government of Uganda	In kind	6,928,246	Recurrent expenditures
Recipient Country Government	Government of Uganda	Grant	30,000,000	Investment mobilized
GEF Agency	FAO	Grant	600,000	Grant supporting multiple government agencies to update landcover maps of Uganda, including the four pilot districts.
Donor Agency	UNCDF	Grant	1,300,000	These funds were disbursed as loans to national entities dealing in clean energy value chain, on a competitive bidding process.. However, none on the briquetting associations in the project pilot districts qualified for the loans.
Donor Agency	GIZ	Grant	2,280,000	Funds used to support investment in alternative and improved energy technologies in line with the 10-year Action Plan of the Biomass Energy Strategy (BEST).
Total			42,968,246	

The project adopted output based budgeting in that project resources were tagged to specific results. Accordingly, grant funds were apportioned to the project components; a system that was satisfactorily adhered to according to



the 2016 audit findings. According to the project work plan and budget, component 3 took the biggest share of the grant budget (55.8%) while components 1 and 2 took 9.4% and 29.6% respectively. Project management cost constituted 5.2% of the grant project which is an indicator of efficient projects as shown in figure 4.

The evaluation noted that as a result of low resource absorption, the project was

granted a No cost extension to an extent that activity implementation is envisaged to be completed by November, 2019 according to the 2019 annual work plan.

The instituted financial management system ensured that project expenditure well adhered to the approved work plans and budgets. As confirmed by the audit reports 2016 and 17, all project funded activities were derived from the work plans. In consistence with the project document, there was adequate financial management compliance with the UNDP/GEF financial management requirements as enshrined in the respective manuals.

The project was audited twice by PriceWaterCopers and Ernest and Young in 2016 and 17 respectively. In both audits, the project received a favorable opinion despite some gaps in the verification of payments and some irregularities in the project procurement. In response to audit observations, management expressed commitment to plugging the identified gaps in the financial management.

The End of Project evaluation noted that a sound financial management system was instituted and played a pivotal role in ensuring efficient resource mobilization. Financial reports were routinely prepared and shared in the formats agreed upon. As a good practice, Management performed a budget-expenditure analysis in its quarterly and annual reporting. This enabled timely detection of variances in the financial performance of the project. However, in some of the reports reviewed, the analysis was highly summarized and did not provide the reasons for variances.

The National Implementation Modality that was adopted for the project subjected project financial management to the requirements and procedures enshrined in the Public Finance and Accountability Act (2003). The evaluation established that the public financial and accountability requirements were duly followed as well as the UNDP financial management system. This hybrid of the project financial management system that was adopted enabled the project to establish a sound management system that ensured timely accountability and appropriate resource utilization.

However, according to several responsible parties, the stringent financial management and accountability system occasioned delays in payment and in some other instances caused delayed activity implementation. Whereas direct payment system was agreed upon between the government and UNDP in anticipation of fast tracking payments for services rendered to the project, responsible parties that took part in this evaluation still decried of the delays in the payment system. The gaps in the instituted project financial management and accountability system notwithstanding, there is sufficient evidence as contained in the two audit reports that the project financial management system was robust and sound to ensure economical and efficient use of project resources.

3.4 UNDP and Implementing Partner implementation / execution coordination, and operational issues – Moderately Unsatisfactory

As already pointed out the project was implemented following a NIM modality. MEMD was the main IP, with close collaboration with MWE, NFA and DLGs; who were the responsible partners. Although NIM promotes ownership and internal capacity enhancement, the project did not escape the usual government red tape, including regularly delayed financial disbursements etc. This was partly due to the fact that the PMU was not empowered enough; hence did not have control over the project funds and their management, which was vested in the MEMD staff. The use of government systems together with the IFMIS for instance made it more cumbersome for the project financial disbursements to be processed on time. Another operational issue was the dual roles played by Technical Advisor after adding on the roles of the Project Manager. this resulted in enormous workload for effective project management and oversight coupled with his disempowerment in financial approvals. On the part of government it was noted that there was some mistrust between agencies such as MEMD, MWE and NFA due to their conflicting respective mandates in issues to deal with renewable energy and natural resources management. The TE assessed the effectiveness of UNDP and Implementing Partner implementation along the issues outlined in the Table below:

Evaluation Issue	Finding
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a) Focus on results	The TE finds that although the project was planned using the Results Based methodologies with a lograme and Project results Framework, the theory of change at design was weak. However, it was transferred into the PIR without modification. Unfortunately, many outcomes were simply outputs. Despite the recommendation to modify the ToC by the MTR, this was ignored. Hence project management and reporting was focused largely at the output level.
b) The adequacy of UNDP support to the Implementing Partner and project team Quality and timeliness of technical support to the Executing Agency and project team	Focus group discussions with the implementing partners reported that UNDP was highly responsive to project requests. However, the responsiveness did not always translate to effectiveness where the NIM modality meant UNDP could not override government procedures. For example in delayed procurement processes; weak PMU (that did not have executive power over project budget). The TE also finds that UNDP should have been pro-active in fixing the theory of change; at the very least in response to the MTR recommendation to refine indicators. The PIR for this project is complex and cumbersome to understand. This should have been simplified. In addition, there is no evidence that the GEF Tracking Tools were used in managing the project or reporting. The PMU was unaware of their existence and it was extraordinarily difficult to get them to produce updated copies.
c) Candour and realism in annual reporting	The TE finds that the impact of the failed retort kiln on effectiveness of the project is under evaluated internally and consequently under reported. It is not clear how the mitigation values reported in the 2019 PIR were arrived at in the absence of a functional retort (noting that this TE did not adopt those figures in its findings).
d) The quality of risk management by UNDP	UNDP actively managed risks somewhat effectively, within the complexities of the implementation arrangement of NIM projects in Uganda.
e) Responsiveness of the managing parties to significant implementation problems (if any)	The government bureaucratic procedures are too slow for a four year project with ambitious targets. The effect of the weak PMU was pointed out to the PSC, as reflected in minutes of several PSC meetings, and the MTR. The Government did not make any changes to the implementation arrangement to address this challenge.
f) How does project delay affect project outcomes and sustainability	Despite the many challenges, the project delivered impressive results (summarised in the executive summary), with only one year cost-neutral extension. However, the delayed approval of the district ordinances may derail the continued implementation of sustainable charcoal action plans; the failed retort kiln means the plantation-based charcoal production kiln challenge is unaddressed; the analogue database is not as flexible and useful as a digital database. These challenges are expected to be taken up and resolved by the NAMA.

3.5 Project Results

3.4.1 Overall results (attainment of objectives)

The analysis of achievement of objectives for this project is challenged by the weak indicators and baselines set at project design. The project did not set objective and impact level indicators; most indicators were established at outcome levels. But because the 12 outcomes were set at output level, the project has largely output level indicators in the PIR. To overcome this difficulty, the TE Team has reconstructed a results chain (goal, objective, outcomes and outputs) for the analysis of achievements of results (table 7). It is however noted that the detailed analysis in Annex 8 uses the original results framework.

Table 7: Reconstructed Objective, Outcomes and Outputs for Assessing Achievement of Results

Goal: To secure multiple environmental benefits by addressing the twin challenges of unsustainable utilisation of biomass for charcoal and poor land management practices common in Uganda's Woodlands	
Objective: To put in place enabling conditions (institutional, policies and legislation, skills and technologies, incentives) for the widespread uptake of sustainable charcoal production processes nationally, piloted in four districts	
Outcomes	Outputs
Knowledge systems established and used to provide up to date information for planning for the charcoal sub-sector;	<p>Output 1.1.1: National charcoal survey and updated standardized baseline reports completed based on latest data²⁴</p> <p>Output 1.3.1: Baseline report and functional biomass database established and hosted at MEMD and published in Uganda Bureau of Standards reports²⁵ and used for a sustainable charcoal NAMA</p> <p>Output 1.5.2: Updated guidelines for measuring biomass (CAI²⁶ & MAI²⁷) calculated using the biomass study technical manual. Annual Allowable Cut (AAC) targets established for all districts by year 2;</p> <p>Research facilities established and operationalized to support nationally-led research and training on sustainable charcoal</p> <p>Output 3.2.3: Land use planning done in each target district using FAO-LADA-WOCAT outcomes.²⁸</p> <p>Output 3.2.4: District Forestry and Land Use Planning staff trained in the use of techniques that support community planning, implementation processes and land degradation assessment.</p> <p>Output 3.2.5: Mapping completed of all targeted areas under sustainable forestry management as well as agricultural lands under SLM in collaboration with FAO and National Forestry Authority's new GIS/mapping platform</p>
Institutional coordination and legal provisions established to mainstream sustainable charcoal production process into relevant district and national policies and programs (and increasing funding for charcoal value chain).	<p>Output 1.2.1: Framework for institutional coordination and resource mobilization developed between MEMD, local government authorities and the National Forest Authority to manage charcoal trade at district level</p> <p>Output 1.4.1: Local ordinances and standards for sustainable charcoal certification schemes developed, adopted and publicized in targeted pilot districts²⁹</p> <p>Output 1.5.1: Awareness and educational program on local ordinances and standards for sustainable charcoal completed in all targeted pilot districts³⁰</p> <p>Output 2.3.1: Basic Program of Activities (PoA) project submitted for registration to appropriate authority under a VCS methodology and/or a Sustainable Charcoal NAMA Design Document developed and endorsed³¹</p>

²⁴ Project will update the proposal for a new standardised baseline for charcoal projects in the Clean Development Mechanism prepared by Perspective GmbH and the Ugandan DNA (2011) Zurich, Switzerland.

²⁵ The database will be harmonized with the NFA biomass resource assessment

²⁶ CAI – Current Annual Increment, i.e. the volumetric or biomass increment which a tree puts in a single year

²⁷ MAI – Mean Annual Increment, i.e. the total volumetric or biomass increment up to a given age divided by that age

²⁸ The Land Degradation Assessment in Drylands (LADA) is a tool of FAO and has as part of its objectives to assess land degradation at local, national and global scale. In order to do so, the project has developed guidelines for each assessment level. WOCAT (World Overview of Conservation Approaches and Technologies) is an established global network of Soil and Water Conservation (SWC) specialists, contributing to sustainable land management (SLM).

²⁹ The targeted districts for this project are **Mubende, Kiboga, Nakaseke and Kiryandongo**

³⁰ As noted in section B.2 the educational materials will include awareness raising and information sharing on the need for gender equity as a vital component of sustainable charcoal production and tree management

³¹ Direct support for the potential development of a Sustainable Charcoal NAMA under the project will be discussed with government during the first year of the project and a decision made based on those discussions.

Technologies for sustainable charcoal production and climate smart agriculture disseminated, supported by local capacities and institutions.	<p>Output 2.1.1: 60 sustainable charcoal producer groups organized, trained and operational³² comprised of a minimum 2,400 charcoal champions³³ spread across pilot districts. Kilns disseminated (400 units of Casamance and 200 units of retort) MRV, tracking and licensing system established for all improved kilns piloted³⁴</p> <p>Output 2.5.1. Training and technical assistance provided to all CPA and briquetting businesses that receive loans for briquetting machines from Micro-Finance Institutions (in conjunction with <i>CleanStart</i>³⁵), increasing incomes for participants.</p> <p>Output 3.2.1 and 3.2.2: Conservation Agriculture (CA) practices and indigenous knowledge of SLM piloted (over 400 farmers adopt CA)</p>
Sustainable forest management and tree cropping demonstrated and support sustainable charcoal production in the four districts	<p>Output 3.1.2: Sustainable woodlots (out-grower schemes) successfully established to supply improved kilns with renewable biomass established (5,900 ha).</p> <p>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 lifetime³⁶</p>

Using this results hierarchy, the TE finds that the overall results achievement is Satisfactory. The details are provided below. To achieve the project goal, objective, outcomes and outputs, various activities were designed and implemented by mobilizing and supervising different high calibre professional teams. The programme design, implementation plans and progress were discussed by organizing national and district workshops in line with the work plan (WP) approved by the Project Board and the UNDP CO. A self-assessment of the project performance by the PMU concluded that about 70% of the outputs have been delivered (detailed analysis in Annex 8).

Project Objective: To put in place enabling conditions (institutional, policies and legislation, skills and technologies, incentives) for the widespread uptake of sustainable charcoal production processes nationally, piloted in four districts	Attainment of objective
	Satisfactory

As detailed below, the project has successfully provided updated information on the charcoal value chain which provided input into the revised BEST and the NAMA on sustainable charcoal; it established a national database to support the continued updating of information on charcoal (although this is yet to be digitized). National charcoal rules and standards have been approved and district charcoal ordinances have been formulated (yet to be approved). It has provided a national and district level coordination framework for institutions relevant to charcoal value chain and created local level institutions (Charcoal Producer Associations) equipped with technologies and skills to adopt sustainable charcoal production.

Outcome 1: Knowledge systems established and used to provide up to date information for planning for the charcoal sub-sector	Attainment of Outcome
	Moderately Satisfactory

This outcome addressed the barriers related to the use of up to date information and knowledge in the policy-making and planning of programmes related to the charcoal value chain. It would provide relevant data along the

³² The charcoal cooperatives will likely be drawn from existing FAO APFS and FFS in districts where FAO is operational such as Nakaseke, Kiboga and Mubende; in Kiryandongo they will be formed in consultation with existing projects and structures already on the ground

³³ Disaggregated by gender

³⁴ The MRV system will be compliant with NAMA requirements developed under the LECB Project

³⁵ See a description of C/S in the Baseline Section A.4 as well as the Uganda *CleanStart* Business Plan sent under separate cover. This output will provide technical support those biomass briquetting enterprises that receive loans through participating C/S FSPs.

³⁶ As per GEF guidelines the lifetime is 20 years

charcoal value chain and establish a nationally driven biomass energy research agenda, which would enable the relevant stakeholders to clean up the disorganization along the charcoal value chain and overcome the negative perception of the value chain. Provision of up-to date maps and methods to estimate allowable annual harvesting levels would enable monitoring of biomass resources, in support of formalization of the value chain.

Output: National charcoal survey and updated standardized baseline reports completed based on latest data: a National Charcoal Standardized Baseline was developed in partnership with GIZ; and was approved and registered with UNFCCC. The standardized baseline informed the preparation of the draft Charcoal NAMA for Uganda as well as the draft National Renewable Energy Policy 2018.

The survey aimed at generating adequate and reliable data and information on the charcoal industry in Uganda, providing an analytical status of charcoal production, supply and usage in the country. It has aided proper planning and informed decision-making by authorities involved in the management of the charcoal industry; creating a national data base on charcoal; creating a baseline situation for the GEF project and other future interventions; heightening awareness and making the public more knowledgeable on the charcoal value chain and trade.

The study found that the main source of wood for charcoal production in Uganda is from privately owned forests (43%), followed by central forest reserves (22%), on-farm trees (20%) and others (14%). The study further confirmed that there were no dedicated forest plantations for charcoal production. It found that only 41% of charcoal producers engaged in full-time charcoal production. According to charcoal producers, a total of 101 tree and shrub species are used for charcoal production. The major tree species/shrubs used are *Acacia hockii*, *Ficus natalensis*, *Albizia coriaria*, *Eucalyptus grandis*, *Combretum molle*, *Maesopsis eminii*, *Mangifera indica* and *Milicia excelsa*.

The majority of charcoal producers (89%) indicated that they do not sort the wood species before burning charcoal. Majority (63%) of the producers reported an output of 0.5 to 10 bags per carbonization process. Most charcoal is produced during the wet season (48%) because producers readily access wet soil to cover the kilns. On the other hand, 36% of the producers noted that they mostly produce charcoal during the dry weather since they are less busy with agricultural activities. Also, the study noted that majority of the charcoal producers conduct carbonization processes within their home localities. It was also found out that the challenges experienced most by charcoal producers included high labour intensity, wood scarcity and health complications. Majority of charcoal producers utilize the earth mound (traditional) kilns to produce charcoal. District Forestry Officers (DFOs) recommended sensitization and training of charcoal producers through demonstrations and regulation of the sector to compel charcoal producers to adopt efficient technologies.

Charcoal supply to all urban centres is mainly carried out by charcoal transporters. The Kampala charcoal business chain comprises of suppliers buying a bag of charcoal at an average of UGX. 25,000/= from producers and selling it at an average of 44,700/= per bag to vendors and users. About 837 Metric Tonnes of charcoal are supplied to Kampala per day in dry season and 1,017 Metric Tonnes of charcoal in the rainy season. The traffic survey and cross-border survey indicated that the charcoal trade across the border is two-way. The survey indicates that central (40.9%) and northern regions (39.5%) are the major sources of charcoal. Furthermore, central region is the main source of charcoal supplied to Kampala (63.4%), followed by northern region (21.8%). The leading supplier-districts of charcoal to Kampala comprise of Nakasongola, Nakaseke, Luwero, Kyakwanzi, Masindi, Kiboga, Gulu, Arua, Mukono, and Hoima. Interestingly, only 43% of the charcoal transporters had movement permits.

Charcoal is mainly consumed in urban areas while firewood is mostly used in rural areas. In the urban areas, 65.7% of the households use charcoal while 33.4% use firewood for cooking. On average, a household spends more (UGX 2,015/=) on the main cooking fuel per day during the wet season than in the dry season (UGX 1,942/=). Households in Kampala purchase a bag of charcoal at an average price of UGX. 56,600/=. Overall, about 4,961 metric tonnes of charcoal is used by households in Uganda per day. Important to note is that only 9.6% of the households enrolled

in the survey were using improved cookstoves (wood and charcoal), only 0.1% were using LPG while majority were using 'wasteful' traditional (three stones, clay and metallic) stoves.

Institutions use various fuels comprising of firewood, charcoal, LPG, electricity and others for heating and cooking. Specifically, 49% of the institutions in Uganda use charcoal as the main fuel for cooking during the dry and wet seasons. In addition, institutions consume a total of 887.3 metric tonnes of charcoal per day. 22.7% of the institutions use improved cookstoves (firewood or charcoal) and 11.9% use LPG. Laboratory tests indicated that the average moisture content of charcoal is 5.5 %, with an average fixed carbon content of 69.9%. The average heating value of charcoal was found to be 29.7 MJ/kg which is within the range of 27 - 33 MJ/kg for good quality charcoal. In conclusion, the charcoal is generally of acceptable quality irrespective of the wood species used and the charcoal produced from different areas of Uganda is of consistent quality.

Charcoal production is practiced in almost all the districts in Uganda, mainly from privately owned forests, following tree felling for construction or during land clearing for farming. The replenishment of trees is critically poor. The charcoal production process is wasteful and comprises of unskilled labourers with little or no attention given to the charcoal quality. Specifically, majority of the charcoal burners are not knowledgeable of the best production practices such as sorting wood prior to carbonization. Traditional earth mound kilns are predominant and the adoption of improved charcoal production kilns is majorly hindered by the producers ignorance of the available improved options. Moreover a permanent improved kiln is not feasible for most charcoal burners in Uganda, who engage in charcoal production as a part time activity. Charcoal production is commonly done on site (or near forests being cleared) to avoid the challenges of transporting wood to distant sites.

The supply of charcoal to Kampala is done throughout the year but is marred with poor transportation practices which compromise the quality of charcoal, such as, wetting of charcoal by rain, breaking of charcoal during transportation, compaction during loading and throwing charcoal bags during offloading. This culminates into a loss to the vendor and consumer. The vendors sell charcoal in volumes and not weight and sell both poor and good quality at the same price. Charcoal for domestic purposes alone consumes approximately 32% of the average household income. In general, the charcoal sector is poorly regulated and in its current form is unsustainable.

The report made the following recommendations: a) Sustainable production of quality charcoal that meets international standards for exportation and local consumption requires a multi stakeholder approach with significant contributions by key players at all stages of tree planting, harvesting, sorting, carbonization, packing, transportation, marketing and consumption: b) Dedicated fast-growing tree plantations of approximately 15,000 hectares per district for charcoal production should be established; c) The unutilized government land should be leased to investors to plant tree deliberately for charcoal production; d) The use of mobile improved kilns (portable metal kilns) should be promoted since charcoal producers move from place to place sourcing for feedstocks: e) The subsector value chain players should be organised into associations through which interventions such as trainings could be conducted to professionalize the industry: f) Importantly, the use of non-woody biomass feedstocks should be promoted for charcoal production; g) Investment in the use of alternative fuels such as biogas, briquettes and LPG should be made to reduce pressure on the available charcoal feedstock.

Output 1.3.1: Baseline report and functional biomass database established and hosted at MEMD and published in Uganda Bureau of Standards reports³⁷ and used for a sustainable charcoal NAMA: An update-able database was developed by the Ministry of Energy in collaboration with Uganda Bureau of Statistics in 2016/2017. Potential users from the districts and from national level were introduced to the website and taught how data shall be input and results collected from the system. However, the database is not yet online because of technical hiccups which are being addressed. To ensure continuous monitoring, a non-computer-based system is being utilised. In addition, data from the laboratory in Nyabyeya Forestry College established with support of the project is informing marketing and pricing strategies of charcoal producing associations in the project focus districts and beyond. The

³⁷ The database will be harmonized with the NFA biomass resource assessment

laboratory provides data on the quality of charcoal from different tree species and efficiencies of different technologies promoted by the charcoal producing associations.

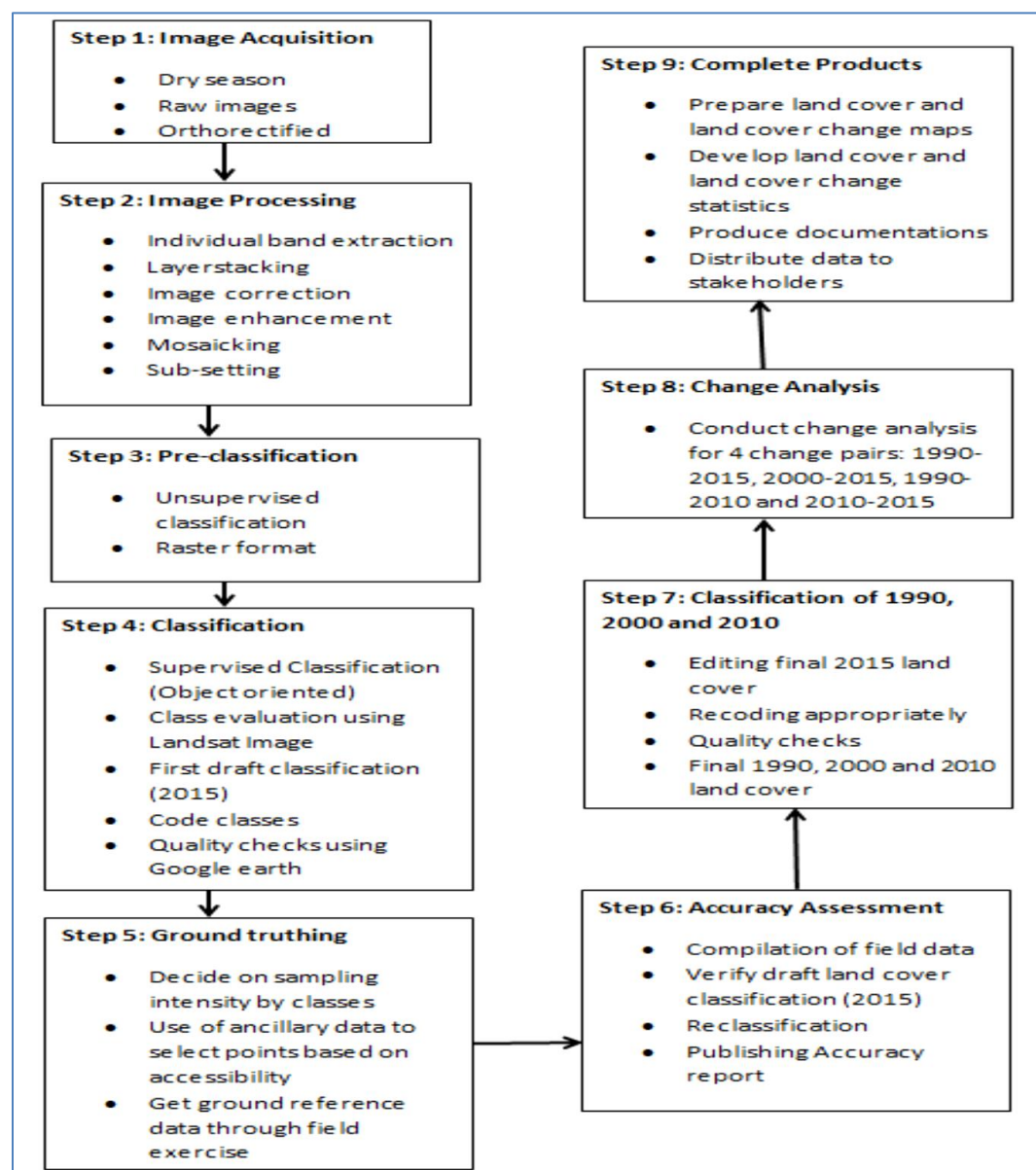
Output: Research facilities established and operationalized to support nationally-led research and training on sustainable charcoal. A Sustainable Charcoal Laboratory has been established at Nyabyeya Forestry College, which has supported both research and training on sustainable charcoal production. The laboratory has acquired the following equipment: bomb calorimeter for measuring energy content of fuels; laboratory emissions measurement system (LEMS) for measuring emissions; improved charcoal kilns for charcoal production and further refinement; briquetting system for production of charcoal briquettes; electric furnace for measuring fuel properties; gas chromatograph for separating gases and measuring various components in a sample; weighing scales for use in testing charcoal kilns.

The laboratory has generated data from and for the charcoal industry especially regarding kiln efficiency, suitability of tree biomass for charcoal and emissions related to various kilns. It has increased visibility and recognition of the Nyabyeya Forestry College, leading to its recognition by the GACC (Global Alliance on Clean Cooking) in 2017 as a Regional Testing and Knowledge Centre. It has also strengthened engagement with other players such as UNBS, MEMD and Other Test Labs. The college participated in the development of the Uganda Standard for Cookstoves (DUS 761: 2018) and the Uganda standard for charcoal and briquettes. It also participated in inter-laboratory tests with other labs (CREEC, CIRCODU).

Output 3.2.4: District Forestry and Land Use Planning staff trained in the use of techniques that support community planning, implementation processes and land degradation assessment. For the communities to capture and record the necessary data and information, the capacity to estimate standing biomass at the level of the household has to be created. The project organized training workshops and trained local council members at the Local Councils I (LC I) especially the secretaries for the environment, youth and women. The local council officials were provided with training on biomass estimation (for natural forests and plantations) and improved charcoal production techniques.

Output 3.2.5: Mapping completed of all targeted areas under sustainable forestry management as well as agricultural lands under SLM in collaboration with FAO and National Forestry Authority's new GIS/mapping platform. A consultant was hired to develop land use maps for Kiboga, Nakaseke, Kiryandongo and Mubende Districts using GIS and remote sensing applications followed by ground trothing. The mapping exercise followed the standard steps outlined in the figure below.

Figure 5: Flow chart showing the steps applied to produce land use maps



The following eleven classes were settled on for the mapping: Forestland; Bushland; Grassland; Woodland; Riverine Vegetation; Bare Area; Urban Area; Cropland Plantation; Cropland Small Scale; Waterbody; Wetland. The maps were produced in the last months of project implementation and it is not clear how they will be utilized.

Two outputs contributing to the use of knowledge in decision-making in sustainable charcoal processes were not implemented. These are: **Output 3.2.3:** Land use planning done in each target district using FAO-LADA-WOCAT outcomes.³⁸; and, **Output 1.5.2:** Updated guidelines for measuring biomass (CAI³⁹ & MAI⁴⁰) calculated using the biomass study technical manual. Annual Allowable Cut (AAC) targets established for all districts by year 2. These

³⁸ The Land Degradation Assessment in Drylands (LADA) is a tool of FAO and has as part of its objectives to assess land degradation at local, national and global scale. In order to do so, the project has developed guidelines for each assessment level. WOCAT (World Overview of Conservation Approaches and Technologies) is an established global network of Soil and Water Conservation (SWC) specialists, contributing to sustainable land management

³⁹ CAI – Current Annual Increment, i.e. the volumetric or biomass increment which a tree puts in a single year

⁴⁰ MAI – Mean Annual Increment, i.e. the total volumetric or biomass increment up to a given age divided by that age

are important for the sustainability of the project results. An exit strategy (recommended by MTR and the TE) should be prepared urgently (to be part of the Project Final Report and Management Response of the TE). It should explain how these outputs will be implemented and results disseminated.

Outcome 2: Institutional coordination and legal provisions established to mainstream sustainable charcoal production process into relevant district and national policies and programs (increasing funding for charcoal value chain).	Attainment of Outcome
	Satisfactory

The project has made significant progress in improving institutional coordination on charcoal; it has put in place a coordination mechanism for national level coordination, district charcoal actions plans as district level coordination mechanisms; it has facilitated development and approval of national standards for charcoal; it has formulated district level ordinances for regulating charcoal (although these are yet to be gazetted) and has drafted a NAMA for sustainable charcoal. The increased coordination (including with other players in the sub-sector) has led to additional USD 2.28 million, which was mobilized from GIZ to support investment in alternative and improved energy technologies in line with the 10-year Action Plan of the Biomass Energy Strategy (BEST). The District Charcoal Action Plans have been integrated into the District Development Plans allowing districts to allocate budget lines and budgetary resources for their implementation. Details of output delivery below:

Output 1.2.1: Framework for institutional coordination and resource mobilization developed between MEMD, local government authorities and the National Forest Authority to manage charcoal trade at district level. A mechanism for institutional coordination and resource mobilization was put in place in 2017, in the form of an Action Plan for actualizing provisions of the National Biomass Energy Strategy . The coordination mechanism spells out the roles of among others the districts’ forest officers in supervising the forest establishment, charcoal production and roles of other institutions such as ministries responsible for Transport and Trade in regulating the transportation and trade in charcoal respectively resulting in significant improvement in the management of the charcoal industry. The coordination mechanism coordinated stakeholder review of the Renewable Energy Policy. Coordination of stakeholders of the charcoal sector has also benefitted from the creation of the Renewable Energy Department, created from the former Biomass Unit in the Ministry. Increased collaboration amongst all the players (including donors) has increased funding available to address sustainable charcoal and renewable energy issues. The GiZ has contributed over USD 2.28 million to support investment in alternative and improved energy technologies in line with the 10-year Action Plan of the Biomass Energy Strategy (BEST). The new Renewable Energy Department is currently implementing USD \$3.2 million project for biogas generation from municipal solid waste, Euro 15 million project for improved cook stoves for all schools, and USD \$ 4 million project for grants for promoting biomass investments.

At the district level, the project has facilitated development of District Charcoal Action Plans, which have been integrated into the District Development Plans (DDPs) providing a mechanism for resources allocation at the district level. This has already been demonstrated in Nakaseke and Mubende districts, which have budget lines for priority interventions of the Action Plans. It is expected that the draft Charcoal Industry Ordinances and District Charcoal Action Plans will further enhance coordination, charcoal production and trade; and revenue collection at district level.

The District Leaders reported an increase in revenue collection from charcoal (although no records were availed to the TE). The increase could be from more people paying taxes as a result of the increased awareness of the charcoal regulations; from people joining charcoal producer associations and just increased charcoal production during the project implementation. The TE noticed that almost 40% of the members of the Mubende Umbrella Charcoal Association have been engaged in charcoal production for 4 years and below. This coincides with the onset of the project. Despite these advances, the natural resources sector still receives minimal budgetary allocation at the

district and national level; and annual budgets are often unfunded (it is common for a unit to receive as little as 25% of its annual budget request for the whole year). In addition, sustainable charcoal production has not been mainstreamed into the contracting system utilized by these districts to collect taxes from forest products. This will continue to be a challenge as long as districts have no information on annual allowable cuts based on an assessment of how much biomass is available.

Output 1.4.1: Local ordinances and national standards for sustainable charcoal certification schemes developed, adopted and publicized in targeted pilot districts. National Charcoal Guidelines for sustainable charcoal production, storage, transportation and trade in Uganda have been developed. The Guidelines; a) provide a regulatory framework for sustainable charcoal production and trade; b) promote the adoption of appropriate charcoal production and harvesting technologies; c) establish standards for charcoal production, post-harvest handling, value addition and trade and; d) a certification mechanism for best practices in the charcoal value chain. In addition, the legal framework for regulating charcoal production and trade at the district level is in place in the form of district ordinance, which were developed in a consultative process and validated nationally. These ordinances are yet to be approved. The project exit strategy (recommended by the MTR and the TE) should provide resources to support the gazettement process. If this is not achieved, most of the gains from the project will not be sustained.

Output 1.5.1: Awareness and educational program on local ordinances and standards for sustainable charcoal completed in all targeted pilot districts: Awareness on improved charcoal production technologies was raised among close to 2.0 million people (32% women). This was realized through 96 live radio talk-shows (held monthly per district), community meetings, and multi-stakeholder dialogues. Draft messages were developed from the districts and reviewed during the Project Technical Committee meetings.

Output 2.3.1: Basic Program of Activities (PoA) project submitted for registration to appropriate authority under a VCS methodology and/or a ***Sustainable Charcoal NAMA Design Document developed and endorsed. The project opted to develop a sustainable charcoal NAMA.***

The NAMA is based on the fact that even though policies, strategies and plans in Uganda recognize the issues and challenges related to the charcoal value chain from the supply of biomass from forests to the end-use of charcoal for energy source, and provide frameworks in addressing them, there are still gaps. The development of policies, strategies and plans has progressed from tackling broad environmental issues to sector specific ones, in particular forest management and biomass energy development. Under forest management, indiscriminate cutting of forest trees continues in order to meet the demands for charcoal in spite of the existence of the national forestry policy. The continued practice of unsustainable harvesting of trees will lead to the depletion and destruction of Uganda's forest resources. Under charcoal production, in spite of the presence of the renewable energy policy and the biomass energy strategy which includes strategies to disseminate efficient technologies for charcoal production as well as introduce licensing and taxation for producers, the practice of inefficient and informal production of charcoal still prevails. Greater demand for wood contributes greatly to the degradation of forests. On charcoal traders, although there are existing regulations such as taxations, intermediaries find ways and means to bypass them which results in significant economic loss to the government. Existing policies and strategies do not address the disproportionate distribution of profits along the charcoal value chain wherein the intermediaries normally are the recipients of the most gains. On charcoal consumption, the use of improved and efficient cook stoves has been included in existing policies and strategies such as the renewable energy policy and biomass energy strategy, and several initiatives has been implemented. Improvement on just the end-use of charcoal will not be enough and the issues and concerns of the entire charcoal value chain must be addressed and taken into consideration.

The NAMA aims to address the identified gaps by providing a holistic gender and socially inclusive approach in transforming Uganda's charcoal sector towards green development by proposing a set of measures and interventions that would lead to the economic, social and environmental sustainability along the charcoal value chain. These transformations towards a sustainable charcoal value chain will result in GHG emission reductions and will contribute to the achievement of the sustainable development goals. The NAMA will therefore include

estimates of how much it is expected to contribute to achieving Uganda's mitigation targets under its nationally determined contribution (NDC) as well as achievements in meeting the sustainable development goals under the 2030 Agenda. It will contribute to both adaptation and mitigation.

Specifically, the NAMA will propose a set of measures and interventions along the charcoal value chain to address the sector's current dilemma of unsustainable harvesting of trees for charcoal production that leads to deforestation, and the increased charcoal consumption due to inefficient production and utilization. It will ensure that biomass supply for charcoal production is sourced sustainably thereby furthering sustained forest restoration efforts and that charcoal as a commodity is produced and utilized efficiently thereby increasing resilience of the energy sector.

The NAMA's proposed outcomes reflect the work of the project, and has a total cost of US\$ 66,716,000: out of which the donors are expected to contribute \$16,430,000, the GoU \$286,000 and the private sector \$ 50,000,000 (Table below). All the private sector contribution will support technical interventions which include establishment of tree plantations, energy efficient kilns, stoves, etc.

Theme	Outcomes
<u>Policy measures</u> (US\$ 756,000; 630,000 from donors; 126,000 from the GoU)	<ul style="list-style-type: none"> Regulatory Mechanism to Establish a Price on Forest Resources for Charcoal Production; Establishment of Standards, Certification and Labeling; Inter-Agency Steering Committee on Charcoal
<u>Technical Interventions</u> (\$63,300,000: 15,250,000 from donors, 50,000 from GoU; 50,000,000 from the private sector)	<ul style="list-style-type: none"> Dedicated Energy Plantations Efficient Technologies for Production and Consumption of Charcoal
<u>Capacity Building and Awareness Raising</u> (\$660,000: 550,000 from donors, 110,000 from GoU).	<ul style="list-style-type: none"> Support for the Establishment of Associations of Charcoal Producers Support for Organizational Development of the Sector Public Information and Awareness

Outcome 3: Adoption of technologies for sustainable charcoal production and climate smart agriculture, supported by local capacities and institutions	Attainment of Outcome
	Satisfactory

As detailed below, the project delivered significant results on this outcome. It distributed 337 casamance and 15 retort kilns and 5 briquetting units; it facilitated the formation of 42 Charcoal Producer Associations with 800 members (40% women), who all received training on sustainable charcoal production. Although this formation and registration of charcoal associations is at 67% of the target; with 33% membership compared to the end of project target, the TE Team believes the targets had been too ambitious to be achieved. 40% of the CPAs have signed MoUs with micro finance institutions, although there is no clear evidence that they are applying for loans or getting them. Seven CPAs in Kiryandongo had been linked to large wholesalers in urban areas for green charcoal; although the business linkages had led to 41% increase in price paid to Charcoal Producer Associations for green charcoal, they were unable to consistently meet the quantities required by the businesses. The exit strategy should provide clear guidance on how to undertake a detailed impact assessment of the MoUs on access to investment funds by the members, preferably via the Nyabyeya Forestry College, which has post graduate students. The use of casamance increases charcoal recovery to 30% (from 10-15%), yields heavier, higher quality charcoal that fetches US\$ 2 (28%) more than regular charcoal in the village markets.

Unfortunately, the project could not disseminate the standard retort kilns due to intellectual property right issues raised by the original designer, that could not be resolved. The project effort to modify the retort kiln has not been successful; dissemination was halted when the project realized the 15 constructed are not functional.

Sixty associations and small scale briquette making groups were trained on effective briquette production, entrepreneurship and sustainable business management. Unfortunately, the CleanStart funding is based on competitive bidding, open to the private sector nationally. None of the CPAs or the briquetting groups qualified. To mitigate this challenge, the project provided the groups with briquetting units, which are unfortunately rather small for commercial production. Twelve groups are currently producing but they are challenged by access to markets for briquettes. The groups are in rural areas where accessing materials for making briquettes is a challenge, and where there is very low demand for briquettes; yet it is not cost effective to transport them to the cities due to the small quantities produced.

The project facilitated a study tour to Namibia and brought back a sample of the Namibian kiln for trialling. However, this kiln has proven not to be suitable for Uganda; it is designed to utilize smaller trees and twigs of wood grown under much drier conditions than Uganda.

The target for land put under conservation and climate smart farming practices has been exceeded with over 100% increase in yields of annual crops and 28% for perennial crops. Both men and women have benefitted equally, with more women (61%) adopting CSA practices.

It is noted that members of CPAs are using pyrolysis oil produced during charcoal making process by Casamance kiln. The oil is used to repel agricultural pests such as termites that destroy crops and trees. Others use it for cosmetic purposes; while others claim that it has curative properties for example treating of simple skin wounds. There is however no scientific basis to promote the use of this oil. Its use should be discouraged until it has been tested /analysed to confirm or dispel the myths.

The impacts of the formation, training and capitalization of the CPAs and Conservation Agriculture groups is best illustrated by the story of one Luciano Donga, narrated in the 2018 Project Implementation Report , which is worth reproducing (Annex 9).

Outcome 4: Sustainable forest management and tree cropping support sustainable charcoal production	Attainment of Outcome Satisfactory
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The project has delivered significant results under this outcome. About 6,208 hectares of well grown planted sustainable charcoal woodlots of mainly eucalyptus tree species have been established in the four pilot districts. This acreage is determined after factoring in the seedling survival rate of 72% and considering farmer practices. A total of 6,898,000 seedlings have been planted by about 1,800 tree planters, 18% of whom are women. This translates into about 581,595 metric tons of renewable biomass by year five. However, no contracts have been signed between tree farmers and sustainable charcoal producers. Although the target for woodlots establishment was almost met (6,208 versus 5,900), over 90% of it is eucalyptus rather than the three indigenous species identified as suitable for charcoal production. Eucalyptus is a multi-use species with high demand for timber, building and electricity poles. There is no certainty that these trees have been planted for charcoal production. This is especially in the absence of contracted farmers to supply sustainable charcoal producers with trees.

30,621 hectares of forest land (natural and planted forest lands) across four pilot districts have been brought under improved multi-functional forest management leading to enhanced carbon sequestration of 1,310,872 metric tons of carbon. This is 84.2% of target forestlands have been put under improved management, delivering 84.2% of the target tCO₂eq so far. However, the target of 2,100,000 tCO₂eq is to be realized over a twenty-year period.

3.5.2 Effectiveness:

Effectiveness is rated as: Satisfactory. As described above and demonstrated by Table 8, the project has achieved its reconstructed objective of putting in place enabling conditions (institutional, policies and legislation, skills and technologies, incentives) for the widespread uptake of sustainable charcoal production processes nationally. This has been achieved through improving coordination amongst the charcoal and biomass energy, providing up to date information on charcoal value chain that has been recognized internationally (accepted by UNCCD) and used at the national level to influence the BEST and NAMA on sustainable charcoal; established capacity for nationally-led research on sustainable charcoal and biomass; provided approved national charcoal standards and guidelines; provided the tools for mainstreaming sustainable charcoal in the District Development Plans (District Charcoal Action Plans); demonstrated the value of energy plantations and provided capacity at the local level for the uptake of sustainable charcoal production as a respectable, profitable tax paying business. Most importantly, the project has demonstrated the complexity of formalizing the charcoal value chain, and created awareness of the necessity of this formalization as well as the instrument for its advancement – the NAMA on sustainable charcoal, which, if successful, will mobilize over US\$ 60,000,000; 50 million of which will be from the private sector.

It has contributed significant global environment benefits. The TE used the following indicators to assess contribution to securing/delivering multiple environmental benefits as a result of the project: i) metric tons of wood saved as a result of the use of casamance kilns; ii) tons of carbon equivalents mitigated; iii) Hectares of avoided deforestation; iv) number of men, women and youth benefiting from the project results. 120,741 metric tons of wood have been saved from the adoption of the casamance kiln and skills. This translates to 6,674 ha of avoided deforestation. Although both achievements are at 84.2% of the target, the TE Team concurs with the MTR that these targets were too ambitious. 30,621 hectares of forest land (natural and planted forest lands) (84.2% of target) have been put under improved management, enhancing carbon sequestration of 1,310,872 metric tons of carbon equivalent, delivering 84.2% of the target tCO₂eq so far. However, the target of 2,100,000 tCO₂eq is to be realized over a twenty-year period. A total of 800 beneficiaries including 240 women in the pilot districts have been equipped with skills to efficiently utilize the improved charcoal production technologies and conservation agriculture practices. Adoption of climate smart agriculture (61% women) has led to over 100% increase in yields of annual crops and 28% for perennial crops. Approximately 300,000 households (2.5 million persons – M:1,700,00; F:800,000) have been sensitized on charcoal regulatory frameworks and guidelines through 116 live radio talk-shows and radio spot messages, community meetings and multi-stakeholder dialogues facilitated by the project.

Table 8: Evidence showing effective delivery of the objective level indicators and targets⁴¹

Indicator	Selected ⁴² end-of-the project target	Cumulative progress to date	TE assessment
Knowledge systems established and used to provide up to date information for planning for the charcoal sub-sector;	Number of national policies and strategies formulated using up to date information on charcoal value chain; Sustainable charcoal research laboratory with capacity to spearhead	National charcoal assessment completed. Both BEST and NAMA have utilized the information provided; The sustainable charcoal research laboratory has been established and equipped; it is undertaking research using staff and graduate students.	Achieved

⁴¹ Detailed analysis in Annex 5

⁴² Selected indicators are used here to align the results framework indicators with the reconstructed results chain and to avoid activity-level indicators set at project design. This is in line with the TE and MTR findings that the project design was weakened by having too many outcomes (12) and indicators.

Indicator	Selected ⁴² end-of-the project target	Cumulative progress to date	TE assessment
	research on the charcoal value chain	Analogue database in place (needs to be digitized); land use maps completed.	
Institutional coordination and legal provisions established to mainstream sustainable charcoal production process into relevant district and national policies and programs (and increasing funding for charcoal value chain).	<p>Number of functional coordination mechanisms for fostering collaboration amongst the sustainable charcoal stakeholders;</p> <p>Amount of additional funds realized for financing various aspects of the sustainable charcoal and biomass energy;</p> <p>Changes in policies (number of legal frameworks supporting sustainability long the charcoal value chain)</p>	National level stakeholder coordination put in place; District Charcoal Action Plans in place and mainstreamed into District Development Plans (sustainable charcoal is recognized in the District budgets of these four districts); national charcoal standards have been approved and district charcoal ordinances have been finalized; more than 30 million US dollars have been raised to support the work of the new Renewable Energy department and priorities of BEST; NAMA completed which is likely to add over 60 million USD when funded.	Achieved
Technologies for sustainable charcoal production and climate smart agriculture disseminated, supported by local capacities and institutions.	<p>400 casamance and 200 retort kilns disseminated;</p> <p>60 charcoal producer associations with over 2400 members established and registered (15 in each district)</p> <p>Percentage increase in profits for CPA as a result of improved kilns;</p> <p>Percentage increase in crop yield for adopters of conservation agriculture.</p>	<p>337 casamance and 15 retort kilns disseminated; dissemination of the Adam retort kiln rightly stopped after the first 15 failed to function fully;</p> <p>Forty two Charcoal Associations with over 800 members (40% women) have been established and registered across the 4 project districts.</p> <p>28% increase in income per bag of charcoal produced via casamance</p> <p>100% increase in yields of annual crops and 28% in perennial crops.</p>	Achieved
Sustainable forest management and tree cropping support sustainable charcoal production	<p>5,900 hectares of woodlands established to provide biomass for improved kilns;</p> <p>At least 1,100 private woodlot owners in the four</p>	About 6,208 hectares of well grown planted sustainable charcoal woodlots of mainly eucalyptus tree species have been established in the four pilot districts. This acreage is determined after planting 6,898,000 seedlings and factoring in the seedling survival rate of 72% and considering farmer practices.	Not fully achieved. This is largely because the tree farmers have not been contracted to supply biomass to charcoal

Indicator	Selected ⁴² end-of-the project target	Cumulative progress to date	TE assessment
	<p>pilot districts identified, trained and contracted to make land available for woodlot establishment (minimum set-aside).</p> <p>50,000 ha of forestlands across four pilot districts brought under improved multifunctional forest management</p>	<p>About 1,800 tree planters growing trees, 18% of whom are women.</p> <p>30,621 hectares of forest land (natural and planted forest lands) across four pilot districts have been brought under improved multi-functional forest management</p>	<p>producers and over 90% of the trees planted are eucalyptus which are in high demand by the building industry (timber, poles).</p>

3.6 Relevance

The issues addressed by the project were highly relevant to the country's development agenda at design and they remain highly relevant at TE. Uganda's Vision 2040 laid out plans and strategies towards expanding electrification to rural areas and promoting the use of alternative energy sources as part of its long term energy development strategy. It however does not address the challenges and needs specific to the charcoal sector and its value chain. The Uganda Green Growth Development Strategy, which supports the transformation of the Ugandan economy to a green growth path recognizes the greening of charcoal as a crucial element in the greening of the energy sector, although it does not provide guidelines for the transformation of the charcoal sector. The Energy Policy of Uganda recognizes the importance of biomass resources for the country's development and promotes wide scale adoption of improved stoves and afforestation. The Renewable Energy Policy of Uganda classifies charcoal as a renewable energy resource and includes strategies to improve the charcoal value chain mainly on production, transportation and use. It also recognizes the need to catalyse efficient use of biomass energy through regulation by licensing and scale up of adoption of efficient charcoal stoves. The Biomass Energy Strategy contains strategies to address issues relevant to the charcoal value chain including policy and regulation, supply management interventions, demand management interventions, as well as cross-cutting issues. It also covers the whole spectrum of the charcoal value chain and proposes possible financing mechanisms to scale up technologies in the biomass sector.

The project remains relevant to the Climate Change Mitigation (CCM), Land and Sustainable Forest Management (LD and SFM) Focal Area Objectives of the GEF 6 work programme. It contributes to CCM 2, CCM 5, SFM/REDD+ and LD 2, as outlined in the Table below.

Table 9: Focal Area Strategy Framework

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs
CCM 2: Promote investment in energy efficiency technologies	2.1 Investment in market transformation for energy efficiency increased	<ul style="list-style-type: none"> Energy Savings achieved
CCM 5: Promote conservation and enhancement of carbon stocks through sustainable management of land use, land-use change, and forestry	5.1 Good management practices in LULUCF adopted both within the forest land and in the wider landscape	<ul style="list-style-type: none"> Forests and non- forest lands under good management practices Carbon stock monitoring systems established

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs
SFM / REDD+ 1: Reduce pressures on forest resources and generate sustainable flows of forest ecosystem services	1.2: Good management practices applied in existing forests 1.3: Good management practices adopted by relevant economic actors	<ul style="list-style-type: none"> • Forest area under sustainable management, separated by forest type • Types and quantity of services generated through SFM
LD-2: Forest Landscapes: Generate sustainable flows of forest ecosystem services in drylands, including sustaining livelihoods of forest dependant people	2.1: An enhanced enabling environment within the forest sector in dryland dominated countries 2.2: Improved forest management in drylands 2.3: Sustained flow of services in forest ecosystems in drylands 2.4: Increased investments in SFM in dryland forests ecosystems	<ul style="list-style-type: none"> • Types of innovative SFM practices introduced at field level • Suitable SFM interventions to increase/maintain natural forest cover in dryland production landscapes • Appropriate actions to diversify the financial resource base • Information on SFM technologies and good practice guidelines disseminated

The project was relevant to the UN and UNDPs 2010-2014 Strategic Programmes. It contributed to Outcome 2 of the UN Development Assistance Framework (UNDAF) for 2012-2014 - Vulnerable segments of the population increasingly benefit from sustainable livelihoods and in particular improved agricultural systems and employment opportunities to cope with the population dynamics, increasing economic disparities, economic impact of HIV&AIDS, environment shocks and recovery challenges by 2014. Notably: Outcome 2.2 Vulnerable communities, Government, civil society and the private sector are sustainably managing and using the environment and natural resources for improved livelihoods and to cope with the impact of climate change. It also contributed to outcome 2.3 of the 2010-2014 UNDP CPAP (Capacity of Selected Institutions Strengthened for Sustainable Environment and Natural Resources Management (ENRM) as well as Climate Change (CC) Adaptation/ Mitigation and Disaster Risk Management).

The project also contributed to the post-2015 development agenda and the Sustainable Development Goals; specifically SDG 7 and 15. On SDG 7 (Ensure access to affordable, reliable, sustainable and modern energy for all), the project specifically contributes to targets 7.2 and 7.3 (respectively, by 2030, increase substantially the share of renewable energy in the global energy mix; by 2030, double the global rate of improvement in energy efficiency). On SDG 15 (Life on land: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss), it contributes to target 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world; and to the achievement of a "land degradation-neutral world", which can be reached by restoring degraded forests and land lost to drought and flood.

3.7 Efficiency

Efficiency is rated as: Satisfactory. Details in Table 10.

Table 10: Project Efficiency

Evidence	Measure
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The GEF funding addressed the key barriers that were hindering the formalization of the charcoal sub-sector in order to address the twin challenges of unsustainable utilisation of biomass for charcoal and poor land management practices common in Uganda's Woodlands, threatening ecosystems services.	+
The project has delivered significant global environmental benefits	+
The Project implemented most of the activities, produced most of the outputs and delivered satisfactorily on the majority of intended outcomes within the allocated budget.	+
District and local governments' capacity was efficiently utilized and strengthened in implementation of the project.	+
The project has mobilized significant co-finance (three times of expected at CEOR) and the proposed NAMA for sustainable charcoal is likely to raise more than US\$ 60 million; with considerable private sector engagement.	+
The timely completion of the project was not possible since the project experienced some delay and was extended by a year.	-

Based on the above mostly positive evidence the project has been implemented in a cost effective manner achieving its goal, objective, outcomes and most of the outputs although some results might take time to show their impacts. After the initial delays, the project has successfully accomplished the main (reconstructed) objective of putting in place enabling conditions (institutional, policies and legislation, skills and technologies, incentives) for the widespread uptake of sustainable charcoal production processes nationally. This will, in time, go a long way towards addressing the twin challenges of unsustainable utilisation of biomass for charcoal and poor land management practices common in Uganda's Woodlands, thereby securing ecosystems services. Indeed, the project has delivered global environmental benefits in the form of 6,674 ha of avoided deforestation; 30,621 hectares of better managed forest land and 6,208 hectares of newly planted woodlots; collectively leading to mitigation of 1,310,872 metric tons of carbon equivalent. It has benefited both men and women including the youth.

The Project Management Office, including the Project Coordination and PMU units struggled with bureaucratic procedures as the PMU had no executive powers under the NIM. However, stakeholders adapted flexible and efficient management system and procedures, to minimize delays. In order to address the initial delay in implementing the work on schedule, the project required an additional year. This practice is common among projects of similar magnitude, and the TE concludes that a project tackling sustainable production of charcoal, especially planting woodlots for supply of biomass should cover at least two cycles of harvesting such biomass (minimum ten years). In general, technical oversight and guidance has been good.

3.8 Country ownership

As already indicated the project adopted a NIM modality whereby it was implemented using the national government structures and systems. In this case the key Implementing Partner was the MEMD as well as other government responsible agencies such as the MWE, NFA, FSSD and District Local governments. This in a way ensured ownership on the part of government and local governments, however, as highlighted in the sustainability sections, the ownership was not well anchored as a result of the short implementation period as well as adoption of technologies that seemed to be costly and not sustainable. The use of Ministries and PMU filled with local and national staffs was also a good indication of country ownership that would result in some levels of national capacity enhancement. The National Charcoal Dialogue that was organized by the President's Office also demonstrated political ownership and buy-in.

3.9 Mainstreaming

As outlined in Sections 3.5, 3.6 and 3.10, the project achievements have advanced the agenda of mainstreaming sustainable natural resources management and energy efficiency in the following ways:

- Increasing investments in market transformation for energy efficiency, which has been mainstreamed in three important ways: i) It provided an understanding of the requirements for doing this effectively; ii) The completion of the NAMA, which when funded will target market transformation for energy efficiency, among other things. The NAMA is set to mobilize \$60 million, 50 million of it from the private sector; iii) The creation of the Renewable Energy Department during the lifetime of the project is a critical co-finance achievement for mainstreaming the work of renewable energy along the whole value chain.
- Good management practices in LULUCF adopted both within the forestland and in the wider landscape: as reported previously, the project has created capacity (skills, information, knowledge and networks) to enhance the uptake of sustainable forest and land management practices in the four pilot districts. This has improved good management practices in existing forests and trees in the productive landscape (under agricultural land);
- Vulnerable communities, Government, civil society and the private sector are sustainably managing and using the environment and natural resources for improved livelihoods and to cope with the impact of climate change: In addition to institutional support to the government structures (Ministries and District authorities), the project supported the adoption of climate smart agriculture at the local level and the creation of sustainable charcoal producer associations. These measures not only led to increase in food production for participating farmers, they also created social capital at the local level, necessary for sustaining the results. Over 40 charcoal producers groups, 15% of led by women were established following the recognition of sustainable charcoal as a viable business in the targeted districts. Consequently, women have more incomes, contributing to household resilience. The project facilitated the formation of 42 Charcoal Producer Associations with 800 members (40% women), who all received training on sustainable charcoal production, reforestation and afforestation with both indigenous and exotic growing tree species. The various activities from improved technology charcoal production to those groups involved in retailing and wholesaling as well as intercropping all provided opportunities to men and women as well as the youth in realising incomes and employment from the project. These results contribute directly to the agreed priorities in the UNDP country programme document (CPD) and other country programme documents. They also addressed directly the poverty-environment nexus by linking sustainable charcoal production, improved land and forest management to creation of jobs and household incomes;
- Gender mainstreaming: During the project design gender concerns were keenly incorporated. Whereas there was no deliberate gender strategy guiding the mainstreaming of gender during the implementation, there was evidence that women were brought on board as a result of introduction of the improved charcoal technologies as opposed to the traditional method that is more manual hence favoring men. Women were also reported to have benefitted to some extent like their male counterparts by being involved in the entire value chain of charcoal production and marketing as a result of the project. For instance, in Kiboga district in Alinyikira group women testified that the project has united families as decisions and economic gains accruing from the participation of both women and men has led to the stabilization of families. The majority of women were also registered in charcoal associations and groups – a situation that has lifted their income and poverty levels.

3.10 Sustainability

For this project, sustainability is the likelihood of continued production of sustainable charcoal and application of sustainable land and forest management practices, in order to continue delivering ecosystems services and benefits to households after the project ends. Overall risk to sustainability is rated Moderate. The details are below.

Financial risk to sustainability – Moderately Likely. In order for the project to continue delivering benefits, it will be necessary to sustain the processes that promote collaboration at national and district levels, as well as provide financial incentives for charcoal producers. It will be necessary to finance continued cross-sectorial coordination on charcoal issues, provide budgets and fund them for the implementation of the District Charcoal Action plans, provide casamance kilns in the market so members of the CPAs can increase the number of kilns per group. Currently, there are few kilns per group and they are not available in the market, although several technicians have been trained to fabricate them. While there is political will for the project at national, district and community levels, the financial allocation for the natural resources sector is still miniscule compared to needs. Even though charcoal has a budget line in the district development plans (in the four districts), financing the budget is likely to suffer in the regular budget shortfalls. In addition, there is still no significant price differentiation for the various types of charcoal in the larger market. Charcoal is still sold by volume, not weight or quality. The project document noted that work on charcoal is largely project funded; this project has shifted some barriers, but the work on charcoal still remains largely project funded. The absence of an exit strategy for the project is particularly worrying, given that many initiatives are just starting and will need continued support – e.g. the CPA. The charcoal NAMA, if funded, will provide continuity; thus the current effort to raise funds for its implementation must be sustained.

Socio-economic risks: There is a very high level of awareness of the necessity of adoption of sustainable charcoal production at all levels in Uganda, largely attributable to the awareness raising initiative of the project. This was boosted by the Office of the President holding a National Dialogue on Charcoal in 2018, prompted by the realization that huge volumes of Uganda charcoal were being exported to Kenya, following a national ban on charcoal production in that country in 2017. The project has demonstrated the value of technologies in improving productivity of labour for the charcoal producers and conservation agriculture practitioners. It has also improved the image of charcoal production from largely negative to an accepted business. There is need to manage this shift in attitude and expectation, to ensure continued access to the improved kilns to new entrants into the charcoal value chain. In addition, although demand for seedlings outstrips supply, over 90% is for eucalyptus. As reported earlier, eucalyptus is highly valuable in the building sector. The question still remains – whether these trees are being planted to support sustainable charcoal production or meet other household economic objectives. This is especially pertinent given that there are no contracted farmers to supply sustainably produced biomass to charcoal producers.

Institutional framework and governance risks: **Likely:** The creation of the Renewable Energy Department at the MEMD, the approval of the national charcoal standards, the formulation of the District Charcoal Ordinances and the formation of the Charcoal and Conservation Farmers Associations will all go a long way in sustaining institutional arrangements for sustainable charcoal production. The District Charcoal Action Plans have provided the four districts a strategy to increase the capacity of the Natural Resources/Forestry Units at the district level. However, the sustainable charcoal discourse must be mainstreamed into the district revenue collection from forest products. Currently, taxes on charcoal constitute a large percentage of the districts' revenues. The collection of these taxes is contracted to independent contractors, without any evidence of consideration for sustainability issues in the process.

Environmental risk to sustainability: **Moderately Likely.** The conservation agriculture benefits are likely to continue delivering benefits in soil conservation and increased yields. The SFM practices (woodlots and tree planting) are likely to be sustained. However, the trees being planted are largely not the indigenous species recommended for charcoal. Sequestration is likely to be sustained, but there is a probability that charcoal

production is likely to continue independently of the thriving woodlands. Combined with the stationary charcoal producer associations, there is likely to be leakage within the districts and neighbouring regions. However, these lessons are likely to be taken up by the NAMA, if it is funded.

4 Conclusions, Recommendations and Lessons

4.1 Conclusions

Although the theory of change of the project on sustainable charcoal was weak, the project sought to put in place enabling conditions (institutional, policies and legislation, skills and technologies, incentives) for the widespread uptake of sustainable charcoal production processes nationally, which it effectively piloted in four districts. At TE, the project has delivered significant outcomes and contributed to the goal, by delivering some environmental benefits.

On advancing the use of knowledge and current information in decision-making on charcoal value chain, the national charcoal assessment was completed and has provided up to date information on the charcoal value chain. Both the BEST and NAMA have utilized the information provided. A data base has been established and an equipped sustainable charcoal research laboratory is spearheading research on sustainable charcoal. Land use maps have been completed.

On improving institutional coordination and legal provisions to mainstream sustainable charcoal production process into relevant district and national policies and programs (and increasing funding for charcoal value chain), the project has established a national level stakeholder coordination; it has produced District Charcoal Action Plans which have been mainstreamed into District Development Plans; thus sustainable charcoal is now recognized in the District budgets of these four districts. National charcoal standards have been approved and district charcoal ordinances have been finalized; more than 30 million US dollars have been raised to support the work of the new Renewable Energy Department and priorities of BEST; a NAMA on sustainable charcoal was drafted which is likely to add over 60 million USD when funded.

On dissemination of technologies for sustainable charcoal production and climate smart agriculture, Forty two Charcoal Producer Associations have been facilitated and registered, with over 800 members (40% women) across the 4 project districts. 337 casamance and 15 retort kilns disseminated; dissemination of the Adam retort kiln was rightly stopped after the first 15 failed to function fully. There is a 28% increase in income per bag of charcoal produced via casamance. In addition, there is 100% increase in yields of annual crops and 28% in perennial crops.

It has contributed to environmental benefits. 120,741 metric tons of wood have been saved from the adoption of the casamance kiln and skills. This translates to 6,674 ha of avoided deforestation. Although both achievements are at 84.2% of the target, the TE Team concurs with the MTR that these targets were too ambitious. 30,621 hectares of forest land (natural and planted forest lands) (84.2% of target) have been put under improved management, enhancing carbon sequestration of 1,310,872 metric tons of carbon equivalent, delivering 84.2% of the target tCO₂eq so far. However, the target of 2,100,000 tCO₂eq is to be realized over a twenty year period. A total of 800 beneficiaries including 240 women in the pilot districts have been equipped with skills to efficiently utilize the improved charcoal production technologies and conservation agriculture practices. Adoption of climate smart agriculture (61% women) has led to over 100% increase in yields of annual crops and 28% for perennial crops. Approximately 300,000 households (2.5 million persons – M:1,700,00; F:800,000) have been sensitized on charcoal regulatory frameworks and guidelines through 116 live radio talk-shows and radio spot messages, community meetings and multi-stakeholder dialogues facilitated by the project.

Criteria	Rating of this project	Remarks
IA&EA Execution: Satisfactory (S)		

Criteria	Rating of this project	Remarks
Overall quality of project implementation/execution	Satisfactory	There was strong management by the Board, which provided adequate oversight role and policy direction and included representatives from key stakeholders. However, coordination roles and responsibilities were not sufficient, especially between upstream national Implementing Partners with downstream Local governments.
Implementing Agency execution	Satisfactory	
Executing Agency execution	Satisfactory	
Monitoring and Evaluation (M&E):		
Overall quality of monitoring and evaluation	Moderately Satisfactory	Whereas monitoring and evaluation endeavored to follow the UNDP GEF guidelines, the management hiccups as a result of National Implementation Modality (NIM) weakened the effectiveness of the M&E function. Whereas there was a Project Management Unit (PMU), decisions on project processes followed government structures and systems, which is often too slow for a project with a tight deadline. Combined with the fact that there was no M&E Officer for the project, this weakened effectiveness of the M&E system. However, provision of an M&E tool by the PMU mitigated some of the weakness, and became an innovative step that augmented the M&E systems.
M&E design at project start up	Moderately Unsatisfactory	The design of the project M&E system fell short of the requirements as per GEF guidelines. This is because it had too many indicators with weak links between indicators, baseline values and targets. In addition, there was no provision for a project-specific M&E officer who would have refined the M&E system during the project implementation or consolidated the knowledge management for the project.
M&E plan implementation	Satisfactory	Various Stakeholders were involved UNDP, MEMD, MWE, NFA, DLGs and Political arm (Office of the President). Notwithstanding the inadequacies in M&E, the project management and Board were able to mitigate the weaknesses and risks, to deliver the project results in a Satisfactory manner.
Relevance: Relevant (R), Not Relevant (NR)		
Overall relevance of the project	Relevant	The Green Charcoal project was highly relevant to the development needs of Uganda, given the importance of charcoal as a source of energy and the need to reduce deforestation from the charcoal value chain, through a managed process combining adoption of efficient technologies and inclusion of energy plantations as part of natural resources management at the household and forestry sector levels.
GEF and UNDP strategic alignment	Relevant	The Green Charcoal project is highly relevant to GEF and UNDP strategic objectives. It contributed to three GEF Focal Areas (Climate Change Mitigation, Sustainable Forest and Land Management), contributing to four Focal Area Objectives and seven outcomes (Table 9). It contributed to Outcome 2 of the UN Development Assistance Framework (UNDAF) for 2012-2014 ⁴³ and outcome 2.3 of the 2010-2014 UNDP CPAP ⁴⁴
National policy frameworks and ownership	Relevant	The Green Charcoal project as indicated extensively in the prodoc is relevant to various national regulatory, policy, strategic and development plans such as the National constitution, NDP, National Environment Act, National forestry act, Local government Act, Land act, National Forestry and Tree planting, National forest plan as well as all relevant policies etc.

⁴³ Vulnerable segments of the population increasingly benefit from sustainable livelihoods and in particular improved agricultural systems and employment opportunities to cope with the population dynamics, increasing economic disparities, economic impact of HIV&AIDS, environment shocks and recovery challenges by 2014. Notably: Outcome 2.2 Vulnerable communities, Government, civil society and the private sector are sustainably managing and using the environment and natural resources for improved livelihoods and to cope with the impact of climate change.

⁴⁴ CPAP Outcome 2.3: Capacity of Selected Institutions Strengthened for Sustainable Environment and Natural Resources Management (ENRM) as well as Climate Change (CC) Adaptation/ Mitigation and Disaster Risk Management

Criteria	Rating of this project	Remarks
3. Assessment of Outcomes		
Overall Quality of Project Outputs and Outcomes	Satisfactory	To overcome the challenge of evaluating the twelve outcomes of the project, the TE reconfigured 4 core outcomes, which it used to assess performance (Table 6). The project has delivered on all the majority of outputs (75% implementation level) and delivered satisfactorily on outcomes. As a result, 120,741 metric tons of wood have been saved from the adoption of the casamance kiln and skills. This translates to 6,674 ha of avoided deforestation. Although both achievements are at 84.2% of the target, the TE Team concurs with the MTR that these targets were too ambitious. 30,621 hectares of forest land (natural and planted forest lands) (84.2% of target) have been put under improved management, enhancing carbon sequestration of 1,310,872 metric tons of carbon equivalent, delivering 84.2% of the target tCO ₂ eq so far. A total of 800 beneficiaries including 240 women in the pilot districts have been equipped with skills to efficiently utilize the improved charcoal production technologies and conservation agriculture practices. Adoption of climate smart agriculture (61% women) has led to over 100% increase in yields of annual crops and 28% for perennial crops. Approximately 300,000 households (2.5 million persons – M:1,700,00; F:800,000) have been sensitized on charcoal regulatory frameworks and guidelines through 116 live radio talk-shows and radio spot messages, community meetings and multi-stakeholder dialogues facilitated by the project.
Outcome 1: Knowledge systems established and used to provide up to date information for planning for the charcoal sub-sector	Satisfactory	<p>National charcoal assessment completed. Both BEST and NAMA have utilized the information provided;</p> <p>The sustainable charcoal research laboratory has been established and equipped; it is undertaking research using staff and graduate students.</p> <p>Analogue database in place (needs to be digitized); land cover maps have been provided; but they need to be converted to land use maps.</p>
Outcome 2: Institutional coordination and legal provisions established to mainstream sustainable charcoal production process into relevant district and national policies and programs (increasing funding for charcoal value chain).	Satisfactory	National level stakeholder coordination put in place; District Charcoal Action Plans in place and mainstreamed into District Development Plans (sustainable charcoal is recognized in the District budgets of the four districts); national charcoal standards have been approved and district charcoal ordinances have been finalized; more than 30 million US dollars have been raised to support the work of the new Renewable Energy department and priorities of BEST; NAMA completed which is likely to add over 60 million USD when funded, \$50 million from the private sector.
Outcome 3: Adoption of technologies for sustainable charcoal production and climate smart agriculture, supported by local capacities and institutions	Moderately Satisfactory	<p>337 casamance and 15 retort kilns disseminated; dissemination of the Adam retort kiln rightly stopped after the first 15 failed to function fully;</p> <p>Forty Charcoal Associations with over 800 members (40% women) have been established and registered across the 4 project districts.</p> <p>28% increase in income per bag of charcoal produced via casamance</p> <p>100% increase in yields of annual crops and 28% in perennial crops.</p>
Outcome 4: Sustainable forest management and tree cropping support sustainable charcoal production	Moderately Satisfactory	About 5,888 hectares of well grown planted sustainable charcoal woodlots of mainly eucalyptus tree species have been established in the four pilot

Criteria	Rating of this project	Remarks
		<p>districts. This acreage is determined after planting 6,542,000 seedlings and factoring in the seedling survival rate of 72% and considering farmer practices.</p> <p>About 1,800 tree planters growing trees, 18% of whom are women.</p> <p>30,621 hectares of forest land (natural and planted forest lands) across four pilot districts have been brought under improved multi-functional forest management</p>
Effective and efficiency:		
Effectiveness	Satisfactory	At the output levels a number of indicators and targets were realized all above 75%
Efficiency	Satisfactory	The project having used output/activity based budgeting was able to institute control measures but this was bogged down by the bureaucracies that were brought about by NIM modality which experienced delays in disbursement of funds and approvals. However, with use of government and DLG structures and systems the project was able to mitigate the negative impacts of the government bureaucratic processes.
Partnership:		
Overall partnerships built	Satisfactory	Partnerships were forged between national and district levels as well as with both private and Civil society. These were both formal and informal in nature. At the upstream national level government ministries and semi-autonomous agencies were brought on board such as MEMD, MWE, NFA, FSSD while at the downstream the DLGs and civil society organizations also formed a strong partnership well community level beneficiaries. A key partnership with the CleanStart did not function as envisaged at project design, impacting delivery of some activities.
Overall stakeholders participation	Highly Satisfactory	As intimated above stakeholder engagement involved Government, Development Partners, CSOs, Private sector and communities
Sustainability: Likely (L) Moderate Likely (ML), Moderately Unlikely (MU), Unlikely (U)		
Overall likelihood of Sustainability	ML – Moderately Likely	Sustainability of the production of charcoal by improved technologies is threatened by the fact that neither the casamance nor the retort kilns are available in the markets (can only be obtained via the project); the modified retort kiln is not yet functional; although completed, the district ordinances and not yet approved; charcoal is still sold by volume in significant markets (hence no real reward for sustainably produced charcoal); and 90% of the seedlings planted are eucalyptus, which is in high demand for timber and poles. However, if the NAMA takes off, it will tackle these challenges.
Financial resources	ML – Moderately Likely	Even though charcoal has a budget line in the district development plans (in the four districts), financing the budget is likely to suffer in the regular budget shortfalls. District revenues continue to be dominated by forest products, yet sustainable charcoal discourse has not been in part of the revenue collection by contractors. Work on charcoal continues to be largely project funded; the absence of an exit strategy for the project is particularly worrying, given that many initiatives are just starting and will need continued support.
Socio-economic and Environmental aspects	Moderately Likely	There is need to closely monitor and follow up the socio economic aspects so far realized since they are likely to vanish if the relevant improved charcoal and SLM/SFM activities are not up scaled.
Institutional systems	Likely	The creation of the Renewable Energy Department at the MEMD, the approval of the national charcoal standards, the formulation of the District

Criteria	Rating of this project	Remarks
		Charcoal Ordinances and the formation of the Charcoal and Conservation Farmers Associations will all go a long way in sustaining institutional arrangements for sustainable charcoal production.
Impact: Significant (S), Minimal (M), Negligible (N) There are clear indicators that would lead to great impact over time through mentioned best practices		
Environmental improvement status	Significant	The Green Charcoal project highlighted and showcased improved charcoal and SLM/SFM practices which addressed the environmental concerns as well as sustainable charcoal production measures.
Social-economic improvement status	Minimum	The Green charcoal project was positive in directly addressing social and economic aspects especially with the direct beneficiaries including tackling gender issues in sustainable charcoal production by bringing women on board in the entire value chain. However short implementation period will render them hanging without being consolidated.
Overall Project Results	Satisfactory	The Green Charcoal project delivered over 75% of the outputs; delivered close to 80% of the reconstructed impact indicators. However, the sustainability of these results will only be secured if the proposed NAMA materializes to tackle the considerable threats to sustainability.

4.2 Corrective actions for the design, implementation, monitoring and evaluation of the project

Project stage	Corrective actions recommended for the future
Design	<p>In-depth analysis is good as a basis of project design. However, too detailed analysis of too many issues crowded the theory of change of the project, especially because the project did not address all of the issues raised in the threats and barriers section. It is recommended to keep the project document short and sharp, tightly linking analysis to issues the project can actually address.</p> <p>There should be clearer linkages between the components, outcomes and outputs. The project had 12 outcomes which meant that some of them were outputs. This also led to too many indicators. There was weak links between the indicators, baselines and targets.</p> <p>Four years is too short for a project that sought to establish woodlots for biomass supply to sustainable charcoal producers. A longer period – up to ten years – is necessary to allow at least two cycles of harvesting of the woodlots, in a staggered planting system. This would ensure that adequate biomass is produced each year.</p>
Implementation	The NIM modality is effective for sustainability and drawing in partner capacities for project implementation. However, given the short timeline of the project (four years at design), this should have been supported by a PMU with executive powers, supported by adequate controls. The weak PMU was unable to overcome the bureaucratic delays caused by the government and UNDP systems, particularly on procurements, processing allowances for field work, payment for consultants, etc.

Project stage	Corrective actions recommended for the future
	<p>Two important outputs were not delivered, without a credible explanation: Output 3.2.3: Land use planning done in each target district using FAO-LADA-WOCAT outcomes⁴⁵; and, Output 1.5.2: Updated guidelines for measuring biomass (CAI⁴⁶ & MAI⁴⁷) calculated using the biomass study technical manual. Annual Allowable Cut (AAC) targets established for all districts by year 2. Both outputs would have contributed to the planning of biomass supply for the sustainable charcoal production and highlighting land degradation and sustainable management issues. It is not clear why the two were dropped.</p> <p>The project used existing community groups as the Charcoal Producer and Conservation Farmers Associations. While this is good for sustainability, it is likely to introduce new entrants into the charcoal production while not integrating the migrant charcoal producers. This needs to be investigated further, to ensure that introduction of sustainable charcoal processes in the four districts do not cause leakage in other districts (where the migrant charcoal producers could move to).</p>
M&E	The M&E system and function should in future be strengthened by recruiting a substantive M&E specialist who would ensure that M&E/knowledge management is adequately catered for as well as follow the standard GEF reporting protocols.

4.3 Actions to follow up or reinforce initial benefits from the project

The following actions should be undertaken to reinforce initial benefits from the project;

- h. Develop an exit strategy: there are many project initiated activities that need funding to take root, deliver and/or sustain the benefits already manifesting. They include the gazettment of the District Charcoal Ordinances; funding the priority actions of the District Charcoal Action Plans; mainstreaming the sustainable charcoal production recommendations/discourse into the district revenue collection from forest products; continuing the amendments of the Adam retort kiln, providing the casamance on the market, continuing research in the Sustainable Charcoal Laboratory. While the NAMA may eventually provide the required funding, such funding has not yet been secured. The MTR recommended that the project produce an exit strategy before the TE. This is still pending, and is urgently required. **Responsible Party - PSC**
- i. Although the four Districts report political support and willingness to mainstream sustainable charcoal production, the budgetary allocation to the Natural Resources and Forestry Units need to be increased and prioritized. Although the districts derive considerable revenue from forest products and levies on charcoal, budget allocation for these sectors and implementation of the district charcoal action plans may not necessarily increase financial availability. This is because the low priority Natural Resources and Forestry Units will likely be the ones to suffer when there is a budget shortfall, which happens regularly. In addition, capacities for these units need to be built at the Parish levels where the services of the extension service is required. **Responsible Party – District Authority and the Forestry Department, with support from the NAMA PSC**
- j. The district revenue collection system (contracting) should take on board sustainable charcoal production principles. Currently, the sustainable charcoal project is being implemented in parallel with these revenue collection activities. **Responsible Party – District Councils and the Forestry Department**

⁴⁵ The Land Degradation Assessment in Drylands (LADA) is a tool of FAO and has as part of its objectives to assess land degradation at local, national and global scale. In order to do so, the project has developed guidelines for each assessment level. WOCAT (World Overview of Conservation Approaches and Technologies) is an established global network of Soil and Water Conservation (SWC) specialists, contributing to sustainable land management (SLM).

⁴⁶ CAI – Current Annual Increment, i.e. the volumetric or biomass increment which a tree puts in a single year

⁴⁷ MAI – Mean Annual Increment, i.e. the total volumetric or biomass increment up to a given age divided by that age

- k. Work on market transformation should be prioritized. Although Charcoal Producer Associations report US\$ 10,000 pricing difference between casamance produced and earth mound produced charcoal, this is not evident beyond the local markets. The charcoal certification and national standards are now in place; but implementation needs to be prioritized to move to labeling. Proposals for future directions underlining main objectives. **Responsible Party – the Renewable Energy Department at the MEMD, with support for the NAMA PSC**
- l. The District Councils, Forest Sector Support Department (FSSD) and the MEMD should investigate further which parts of the eucalyptus woodlots will provide sustainable biomass for charcoal production versus timber and poles to the building industry. They should use this information to plan. **Responsible Party – The District Councils, Forest Sector Support Department (FSSD) and the MEMD**
- m. Ensure NAMA funding is mobilized/realized. **Responsible Party – the Renewable Energy Department at the MEMD**
- n. Knowledge Management: Produce KM products such as documentaries, videos, technical publications summarizing knowledge products/messages, to capture best practices and lessons for the future replication. **Responsible Party – the Renewable Energy Department with support from the PSC partners.**

Best and worst practices in addressing issues relating to relevance, performance and success

Best practice	Relevance	Performance	Success
Highly participatory project design process	✓	✓	✓
Building on existing community associations, which had a history of being groups that have worked together to implement joint activities		✓	✓
Engaging District Authorities in the project implementation	✓	✓	✓
Introduction of improved charcoal production technologies like the casamances	✓	✓	✓
Dropping the dissemination of retort kiln after discovering that it was not effective	✓	✓	✓
Worst Practices			
Highly complex project document with too much information, some not relevant to the project strategy	✓	✓	✓
Weak indicators and M&E system – which was not addressed, even after the MTR pointed it out and recommended that indicators be strengthened	✓	✓	✓
Lack of an exit strategy, despite the MTR recommendation to formulate one urgently.	✓	✓	✓
Incomplete modification of the retort kiln; a stationary kiln is still necessary for charcoal production in plantations	✓	✓	✓

5 Annexes

5.1 Annex 1: Terms of Reference

Terms of Reference

General Information

Programme /Project Title: Addressing barriers to the adoption of improved charcoal production technologies and sustainable land management practices through an integrated approach in Uganda

Post Title: International Consultant

Duty Station: Home-based with mission travel

Expected Areas of Travel: Kampala, Kiboga, Kiryandongo, Mubende and Nakaseke

Type of Contract: Individual Consultant

Languages: English

Duration of Contract: 30 working days spread over a period of two calendar months

Start Date: 1 May 2019

Introduction

In accordance with UNDP and GEF M&E policies and procedures, all full-size UNDP supported GEF financed projects are required to undergo a terminal evaluation upon completion of implementation. These terms of reference (TOR) sets out the expectations for a Terminal Evaluation (TE) of the Addressing Barriers to Adoption of Improved Charcoal Production Technologies and Sustainable Land Practices through an Integrated Approach (PIMS #4493).

Project Summary Table

Project Title	Addressing Barriers to Adoption of Improved Charcoal Production Technologies and Sustainable Land Practices through an Integrated Approach			
GEF Project ID:	4644		at endorsement (Million US\$)	at completion (Million US\$)
UNDP Project ID:	00086931	GEF financing:	3,480,000	
Country:	Uganda	IA/EA own:		
Region:	Africa	Government:	6,928,246	
Focal Area:	CCM & LD	Other:		
FA Objectives, (OP/SP)		Total co-financing:		
Executing Agency:	Ministry of Energy and Mineral Development (MEMD)	Total Project Cost:	18,065,808	
Other Partners involved:	MWE, NFA, District Local Governments of Kiboga, Kiryandongo, Mubende and Nakaseke	ProDoc Signature (date project began):		20 May 2014
		(Operational) Closing Date:	Proposed: 20 May 2018	Actual: 20 November 2019

Background

Biomass is the main source of energy in Uganda, contributing about 94% of all energy consumed. Of the total biomass consumed, wood fuel accounts for about 80%, charcoal 10% and crop residues 4%. Firewood and crop residues are majorly consumed in rural areas while charcoal is consumed in urban areas. Limited storage space in urban areas, high standards of living, higher calorific value of charcoal than for wood and easier handling by vendors makes charcoal the favoured fuel over firewood in urban areas.

Recent estimates indicate that the demand for charcoal has been increasing steadily at an estimated 6% per annum. This demand is attributed to a high rate of urbanization coupled with a rapidly increasing population, as well as high cost of using electricity especially for cooking and heating purposes. 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.

To address the barriers that impede sustainable charcoal production, the Ministry of Energy and Mineral Development (MEMD) on behalf of Government of Uganda is, with support from UNDP Green Environment Facility (UNDP-GEF) implementing a project: Addressing Barriers to Adoption of Improved Charcoal Production Technologies and Sustainable Land Practices through an Integrated Approach (Green Charcoal Project).

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 woodlands through technology transfer, enhancement of the national policy framework and promotion of Sustainable Land Management (SLM) and Sustainable Forest Management (SFM) practices.

The project implemented since May 2014 involves piloting low carbon emission sustainable charcoal technologies and broader sustainable land and forest management practices in four districts: Mubende, Kiboga, Nakaseke and Kiryandongo.

Objective and Scope

The TE will be conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects. The objectives of the evaluation are to: assess the achievement of project results, and draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming

Evaluation Approach and Method

An overall approach and method for conducting project terminal evaluations of UNDP supported GEF financed projects has developed over time. The evaluator is expected to frame the evaluation effort using the criteria of relevance, effectiveness, efficiency, sustainability, and impact, as defined and explained in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects.

A set of questions covering each of these criteria have been drafted and are included with this TOR (fill in Annex C) The evaluator is expected to amend, complete and submit this matrix as part of an evaluation inception report, and shall include it as an annex to the final report.

The evaluation must provide evidence-based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. The evaluator is expected to conduct a field mission to Uganda, including the following project sites (Mubende, Kiboga, Nakaseke and Kiryandongo). Interviews will be held with the following organizations and individuals at a minimum:

- Leadership of the Ministry of Energy and Mineral Development
- Officials of the Renewable Energy Department in Ministry of Energy and Mineral Development
- Select officials from the Ministry of Water and Environment
- Select officials of the Ministry of Agriculture, Animal Industry and Fisheries

- Select officials of the National Forestry Authority
- Select officials of the Nyabyeya Forestry College
- Leadership of Kiboga District Local Government
- Kiboga District Natural Resources department
- Leadership of Kiryandogo District Local Government
- Kiryandogo District Natural Resources department
- Leadership of Mubende District Local Government
- Mubende District Natural Resources department
- Leadership of Nakaseke District Local Government
- Nakaseke District Natural Resources department
- Officials of UNDP RSCA and UNDP Uganda

The evaluator will review all relevant sources of information, such as the project document, project reports – including Annual APR/PIR, project budget revisions, midterm review, progress reports, GEF focal area tracking tools, project files, national strategic and legal documents, and any other materials that the evaluator considers useful for this evidence-based assessment. A list of documents that the project team will provide to the evaluator for review is included in Annex B of this Terms of Reference.

Evaluation Criteria and Ratings

An assessment of project performance will be carried out, based against expectations set out in the Project Logical Framework/Results Framework (see [Annex A](#)), which provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation will at a minimum cover the criteria of: relevance, effectiveness, efficiency, sustainability and impact. Ratings must be provided on the following performance criteria. The completed table must be included in the evaluation executive summary. The obligatory rating scales are included in [Annex D](#).

Evaluation Ratings:			
1. Monitoring and Evaluation	rating	2. IA& EA Execution	rating
M&E design at entry		Quality of UNDP Implementation	
M&E Plan Implementation		Quality of Execution - Executing Agency	
Overall quality of M&E		Overall quality of Implementation / Execution	
3. Assessment of Outcomes	rating	4. Sustainability	rating
Relevance		Financial resources:	
Effectiveness		Socio-political:	
Efficiency		Institutional framework and governance:	
Overall Project Outcome Rating		Environmental:	
		Overall likelihood of sustainability:	

Project Finance/ Cofinance

The Evaluation will assess the key financial aspects of the project, including the extent of co-financing planned and realized. Project cost and funding data will be required, including annual expenditures. Variances between planned and actual expenditures will need to be assessed and explained. Results from recent financial audits, as available, should be taken into consideration. The evaluator(s) will receive assistance from the Country Office (CO) and Project Team to obtain financial data in order to complete the co-financing table below, which will be included in the terminal evaluation report.

Co-financing (type/source)	UNDP own financing (mill. US\$)		Government (mill. US\$)		Partner Agency (mill. US\$)		Total (mill. US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Actual	Actual
Grants								

Loans/Concessions								
In-kind support								
Other								
Totals								

Mainstreaming

UNDP supported GEF financed projects are key components in UNDP country programming, as well as regional and global programmes. The evaluation will assess the extent to which the project was successfully mainstreamed with other UNDP priorities, including poverty alleviation, improved governance, the prevention and recovery from natural disasters, and gender.

Impact

The evaluators will assess the extent to which the project is achieving impacts or progressing towards the achievement of impacts. Key findings that should be brought out in the evaluations include whether the project has demonstrated: a) verifiable improvements in ecological status, b) verifiable reductions in stress on ecological systems, and/or c) demonstrated progress towards these impact achievements.

Conclusions, recommendations & lessons

The evaluation report must include a chapter providing a set of conclusions, recommendations and lessons.

Implementation arrangements

The principal responsibility for managing this evaluation resides with the UNDP CO in Uganda. The UNDP CO will contract the evaluators and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team. The Project Team will be responsible for liaising with the Evaluators team to set up stakeholder interviews, arrange field visits, coordinate with the Government etc.

Evaluation timeframe

The total duration of the evaluation will be 30 days (spread over two calendar months) according to the following plan:

Activity	Timing	Completion Date
Preparation	04 days	10 May 2019
Evaluation Mission	15 days	31 May 2019
Draft Evaluation Report	09 days	14 June 2019
Final Report	02 days	28 June 2019

Evaluation deliverables

The evaluation team is expected to deliver the following:

Deliverable	Content	Timing	Responsibilities
Inception Report	Evaluator provides clarifications on timing and method	No later than 2 weeks before the evaluation mission.	Evaluator submits to UNDP CO
Presentation	Initial Findings	End of evaluation mission	To project management, UNDP CO
Draft Final Report	Full report, (per annexed template) with annexes	Within 3 weeks of the evaluation mission	Sent to CO, reviewed by RTA, PCU, GEF OFPs
Final Report*	Revised report	Within 1 week of receiving UNDP comments on draft	Sent to CO for uploading to UNDP ERC.

*When submitting the final evaluation report, the evaluator is required also to provide an 'audit trail', detailing how all received comments have (and have not) been addressed in the final evaluation report.

Team Composition

The evaluation team will be composed of 1 international evaluator and 1 national evaluator. The consultants shall have prior experience in evaluating similar projects. Experience with GEF financed projects is an advantage.

The international evaluator will be designated as the team leader and will be responsible for finalizing the report. The evaluators selected should not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities.

The Team members must present the following qualifications:

International Lead Consultant

Advanced University Degree (Masters or equivalent) in an environmental-related field such as environmental science or Natural resources Management or other closely related fields (15%);

Minimum 10 years of relevant professional experience in relevant technical areas (20%)

Minimum of 5 years proven track record of application of results-based approaches to evaluation of projects focusing on renewable energy and biomass energy. Demonstrated knowledge of and recent experience in applying UNDP and GEF M&E policies and procedures is an added advantage (20%);

Highly knowledgeable of participatory monitoring and evaluation processes (5%);

Demonstrated understanding of issues related to gender and climate change response (5%);

Excellent English writing and communication skills (5%)

National Consultant

Advanced University Degree (Masters or equivalent) in an environmental-related field such as environmental science or Natural resources Management or other closely related fields (15%);

Minimum 8 years of relevant professional experience in relevant technical areas (15%);

Minimum of 4 years proven track record of application of results-based approaches to evaluation of projects focusing on renewable energy and biomass energy (20%);

Highly knowledgeable of participatory monitoring and evaluation processes (5%);

Familiarity with Uganda's development, environment, biomass and other relevant policy frameworks (5%);

Demonstrated understanding of issues related to gender and climate change response (5%);

Excellent English writing and communication skills (5%)

Selection Criteria

Qualified Individual Consultant is expected to submit both the Technical and Financial Proposals. Only those applications which are responsive and compliant will be evaluated. Individual Consultants will be evaluated based on Combined Scoring method where the educational background and experience on similar assignments will be weighted at 70% and the price proposal will weigh as 30% of the total scoring.

The applicant receiving the Highest Combined Score that has also accepted UNDP's General Terms and Conditions will be awarded the contract. Only candidates obtaining a minimum of 50% of the total technical points will be considered for the Financial Evaluation.

Evaluator Ethics

Evaluation consultants will be held to the highest ethical standards and are required to sign a Code of Conduct (Annex E) upon acceptance of the assignment. UNDP evaluations are conducted in accordance with the principles outlined in the [UNEG 'Ethical Guidelines for Evaluations'](#)

Payment modalities and specifications

%	Milestone
25%	Upon submission and approval of inception report and work plan
35%	Following submission and approval of the 1st draft terminal evaluation report
40%	Following submission and approval (UNDP-CO and UNDP RTA) of the final terminal evaluation report

Application process

Applicants are requested to apply online at <http://jobs.undp.org> by Tuesday 30 April 2019. Individual consultants are invited to submit applications together with their CV for these positions. The application should contain a current and complete C.V. in English with indication of the e-mail and phone contact. Shortlisted candidates will be requested to submit a price offer indicating the total cost of the assignment (including daily fee, per diem and travel costs).

UNDP applies a fair and transparent selection process that will take into account the competencies/skills of the applicants as well as their financial proposals. Qualified women and members of social minorities are encouraged to apply.

Interested individual consultants are requested to apply online at <http://jobs.undp.org> by Friday 12 April 2019 must submit the following documents/information to demonstrate their qualifications:

Letter of Confirmation of Interest and Availability using the template 3 provided by UNDP;

Curriculum Vitae (CV) indicating all past experience from similar projects; as well as the contact details (email and telephone number) of the candidate and at least three (3) professional references;

Brief description of approach to work/technical proposal of why the individual considers him/herself as the most suitable for the assignment, and a proposed methodology on how they will approach and complete the assignment; (max 3 pages);

Financial Proposal that indicates the all-inclusive fixed total contract price and all other travel related costs (such as flight ticket, per diem, etc), supported by a breakdown of costs, as per template attached to the Letter of Confirmation of Interest template.

If an applicant is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the applicant must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.

Applicants are requested to group the requested documents into one (1) single PDF document as the application only allows to upload maximum one document: All application materials should be submitted to UNDP by 12 April 2019. Incomplete applications will be excluded from further consideration.

5.2 Annex 2: Itinerary

Date	Time	Activity	Location
13 August 2019	-	International Consultant – Nyawira Muthui – arrives in Uganda	-
14 August 2019	09:00 am	Briefing meeting with UNDP	11 Yusuf Lule Road, Nakasero
	11:00 am	Meeting with UNDP Project Focal Point (s)	11 Yusuf Lule Road, Nakasero
	02:30 pm	Briefing meeting with MEMD	Amber House, Kampala Road
	03:30 pm	Meeting with Project Manager and Finance and Administration Associate	Amber House, Kampala Road
15 August 2019	09:00 am	Inception meeting	Amber House, Kampala Road
	11:00 am	Meeting with Project Coordinator and Management Team	Amber House, Kampala Road
	02:30 pm	Meeting with Project Board Chairperson	Amber House, Kampala Road
16 August 2019	09:00 am	Meeting with Forestry Sector Support Department, Ministry of Water and Environment	Bugolobi, Kampala
	10:30 am	Meeting with National Forestry Authority	Bugolobi, Kampala
	02:30 pm	Meeting with GIZ Uganda	Amber House, Kampala Road
18 August 2019	03:00 pm	Travel to Kiryandongo	
19 August 2019	09:00 am	Meeting with Kiryandongo District Leadership (LCV and CAO)	Kiryandongo District Headquarters
	10:00 am	Meeting with Kiryandongo District Forestry Officer	Kiryandongo District Headquarters
	11:30 pm	Visit to beneficiary: Charcoal Producer Group – Casamance kiln - and Sustainable Forestry Management Group	Kiryandongo District
	04:00 pm	Travel to Masindi	
20 August 2019	09:00 am	Visit to Nyabyeya Forestry College	Masindi
	11:30 am	Travel to Nakaseke	
	03:00 pm	Meeting with Nakaseke District Leadership (LCV and CAO)	Nakaseke District Headquarters
	04:00 pm	Meeting with Nakaseke District Forestry Officer	Nakaseke District Headquarters
21 August 2019	09:00 am	Visit to beneficiary: Sustainable Land Management Group	Nakaseke District
	11:00 am	Travel to Kiboga	
	03:00 pm	Meeting with Kiboga District Leadership (LCV and CAO)	Kiboga District Headquarters
	04:00 pm	Meeting with Kiboga District Natural Resources Officer	Kiboga District Headquarters
22 August 2019	09:00 am	Visit to beneficiary: Sustainable Forestry Management Group (Woodlots); Improved charcoal production technologies - retorts	Kiboga District
	11:30 am	Travel to Mubende	
	03:00 pm	Meeting with Mubende District Leadership (LCV and CAO)	Mubende District Headquarters
	04:00 pm	Meeting with Mubende District Environment Officer	Mubende District Headquarters
23 August 2019	09:00 am	Visit to briquetting group; charcoal producer group and private sector	Mubende
	02:00 pm	Travel to Kampala	
26 August 2019	08:30 am	Meeting with Civil Society (TBD)	TBD
	10:30 am	Meeting with academia (Makerere University and Uganda Martyrs University)	TBD
	03:00 pm	Debriefing meeting with UNDP	11 Yusuf Lule Road, Nakasero

5.3 Annex 3: List of persons interviewed

NO	NAME	ORGANISATION	CONTACT
01	Wafula Wilson	Ag.c/RED/MEMD	0772807054
02	Justine Akumu	E.O/RED/MEMD	0789784613
03	Arthur Mugisha	PM GCD	0776613982
04	Micheal Ahimbisibwe	Ag PEO/MEMD	0752996710
05	Kirimut Godfrey	SEO/RED-MEMD	0772956832
06	Oketch Lazarus Mark	Graduate Trainee/MEMD Support staff	0701049855
07	Omar Senyonjo	FAA	0772289215
08	Nakalema Christine	GCP/Support Staff	0782583855
09	Ssemujju Solomon	Forest Officer Nakaseke D2G	0773012559
10	Kasangaki Fred	Forest Officer	0782577238
11	Musasizi Patrick	DNRO Kiboga	0783338794
12	Mununuzi David	NFA	0772466498
13	Kabi Maxwell	NFA	0782453853
14	Ssekitto Rashid	NFA	0776733377
15	Galima Stephen	CVFM	0772925762
16	Hope Asimwe	MWE/FSSD	0775218118
17	Bob Kazungu	MWE/FSSD	0782712196

ALINYIKIRA FARMERS CONSERVATION

NO	NAME	TITLE	CONTACT
01	Nassaka Cabe	Member	0789787635
02	Nakintu Margaret	Member	0752315789
03	Ssebuliba Robert	Member	-
04	Walukiru Sella	Member	0784932825
05	Sekimpi Muhammed	Member	0773909765
06	Sserunjogi John	Member	0781592221
07	Lutaaya John	Member	0774308167
08	Ziragoora Charles	Member	0777927525
09	Mutebi Saul	Member	0782723245
10	Kasirye R	Member	0776831991
11	Lwanyaga C	Secretary	0772337536
12	Kasule Andrew	Member	0757971882
13	Kihobe Moses	C/P	0772647734
14	Minaani o	Member	0772716395

MUBENDE ENVIROSAVE CHARCOAL PROCESSERS

NO	NAME	ASSOCIATION/SUB COUNTY	CONTACT
01	Kahuki Muhammad	Envirosave charcoal processor Mubende	0702249978
02	Mponye Robert	Envirosave charcoal processor Mubende	078846955
03	Namugerere Jah	Kalembe	0706196739

04	Nambowa Rose	Madudu	0753883797
05	Katongole Juma	Kyenda c/ business	0754030235
06	Muhonja Grace	c/p Kyenda	0759249906
07	Nambuya. S	Member buterevu	0703889639
08	Bagunje Andrew	c/p Kayinja	0785099038
09	Komugisha Olivia	c/p Kalambe	0704321196
10	Nakate Beatrice	Kinembe	079913622
11	Zikusooka Erya	Kutinga	0756076116
12	Wani Ibrarhem	Kitinga	0758846644
13	Nakachwa Violet	Kiyuni Envirosave charcoal group	0775638040
14	Kasirye Muhammad	Madudu	0786410882
15	Asiima Kusemererwa	Mubende	077950146
16	Pimako Senki	Kalembe	0785567621
17	Bisaso Godfrey	Kyenda	0706259835
18	Nabanyindo Suma	Buterenvu	0757504307
19	Waitale J	Madudu	-
20	Namuddu Amina	Mubende Envirosave charcoal	0705987457
21	Musiyeno	Kisindizi	07085083
22	Nakyanzi Mager	Kyenda c/business	0751357138
23	Kabayaga Asha	Kyenda c/business	0702424439
24	Namusoke Marg	Kyenda	-
25	Kafefero	Kaskanina	0788432879
26	Ssekindi Fred	Kinina	0708476491
27	Ssekaddu Jjoph	Kiyanina	-
28	Kamoga Deo	West division	0774873612
29	Nsubuga Charles	Kitenga luggala	0706543331
30	Jjumba Ronald	Kiyanina	0785120530
31	Rwanga Ruka	Kijumba wet	0772994215
32	Magara Richard	Kiyuni s/c	0779844876
33	Luteisire Peter	Kitenga s/c	0757240859
34	Rwahwire Leonald	Kiyuni s/c	0773375822
35	Najjemba Annet	Kalembe	-
36	Ssali Fahad.M	Kitenga s/c	0752412407
37	Happy Expendotus	Kitenga s/c	0700132660
38	Kasuku Lorence	Kitenga s/c	0750207081
39	Katongole Wirisa	Kitenga s/c	0776641939
40	Nsubuga J	Kibaringa s/c	0775053967
41	Kalyammagwa Augustino	Kisindizi	0783002687
42	Ssenyonga Mathias	Kitenga s/c	0704871668
43	Galabuzi Moses	Kitenga	0705653969
44	Nankinga Sanyu	Madudu	0751887903
45	G.W Kakooza	Madudu	0757057144
46	Nakate Topista	Madudu	0757782397
47	Ssekitoreko Godfrey	Kibalinga	0786134389
48	Ssemaliro Richard	Kibalinga	0701590936
49	Musisi Dan	Madudu	0702266370
50	Ssesazi Tadeo	Madudu	0700599528

51	Nakanbirwa Mary Jesca	Principal Assistant Secretary	0772658463
52	Lotet Ronald	Senior Environment Officer Mubende District	0706339611 0782083756
53	Nantume Justine	Assistant Forestry Officer Mubende District	0753565202 0773796220
54	Kadumye Jackson	Communication Officer Mubende District	0706877903 0774504252
55	Balongo Fred	Secretary production &Marketing Mubende District	0774738887
56	Hon Magezi Shek Nsereko	Vice chairman LCV Mubende	0784852140 0752577508

BAGEZA YOUTH ASSOCIATION MUBENDE

NO	NAME	DESIGNATION	CONTACT
01	Tumwujukye James	Advisor	0772373898
02	Kwihahangana Nestoli	Secretary	0755020338
03	Niwabiine Patience	Member	-
04	Tumuhaibise Pafura	Publicity	0783182147
05	Muhereeza Augustus	V.C/Person	0701832236
06	Begumiisa Abert	Member	-
07	Bihimiyiki Elisa	Member	0771972131
08	Muhindo Milton	Member	0753223096
09	Kasibante	Member	0784921858
10	Twahurira Joseph	Member	0781909878
11	Nuwamanya Steven	C/Person	0773024527

KIBOGA CHARCOAL GROUP

NO	NAME	DESIGNATION	CONTACT
01	Damalira Ziliwulamu	Member	0789583397
02	Joyce Kyambade	Member	0788084293
03	Namanda Robinah	Member	0784341629
04	Ssemengo Stone	Member	0786581514
05	Ssebulima John	C/man	0786366584
06	Kalema samuel	Member	0782475235
07	Tumusiime John	Member	0754113500
08	Kawuma Santo	Member	0753803816
09	Byamukama Davida	Member	0773714855
10	Biniwo Beno Amosi	Member	0757416831
11	Kasozzi Aminibu	Member	0758943909
12	Yiga Israel	LCV chairman	0772544730
13	Nakazibwe Ratifah	District secretary for finance planning &ADMN	0782954771
14	Nkurunziza Geoffrey	Deputy CAO	0784585237
15	Nanyonga Margaret	District forest officer Kiboga	0781503825
16	Male Ivan	Ag Environment officer	0788142104
17	Musasizi Patrick	DNRO	0783338794

18	Naluyange Salah	Member	0758943909
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5.4 Annex 4: List of documents reviewed

- a. **Relevant background documentation** including the UNDP Development Assistance Framework (UNDAF), UNDP Country Programme Document (CPD), UNDP Country Programme Action Plan (CPAP), GEF focal area strategic program objectives, national strategic documents including the National Forestry Plan (NFP), National Development Plan (NDP), National Action Plan (NAP), Renewable Energy Policy and other relevant documents.
- b. **Project design documents** including the Project Identification Form, GEF project information form, project document, log frame analysis, UNDP Initiation Plan and project implementation plan.
- c. **Project reporting documents** including project inception report, mid-term review, annual project implementation reports, project budget and financial data, project tracking tool, progress reports form collaboration partners, lessons learnt, meeting minutes, relevant correspondence revisions to the project and any other documents deemed relevant
- d. GCP AWP 2019
- e. Environmental and Social Screening report
- f. Green Charcoal MT Report
- g. MEMD Action Plan
- h. National Charcoal Survey Report 2016
- i. PIR 2018, 2017, 2015
- j. Project Document Green charcoal project
- k. Project Identification form 2011
- l. Suitable Charcoal value chain NAMA Uganda Documents, 2019
- m. GCP Inception Report January 2015
- n. Financial Statements PWC Jan - Dec 2016
- o. TCAF Preliminary Program Information Note (PRE - PIN) May 2018
- p. Summary of NAMA Validation workshop Notes Feb 2019
- q. CDR 2014, 2015, 2016, 2017, 2018, and Jan - June 2019

5.5 Annex 5: Evaluation Question Matrix

Evaluation Subject	Evaluation Questions
Project Strategy	Relevance: <ul style="list-style-type: none"> • Are barriers and threats well described? • Do the proposed solutions address the barriers? • Are they relevant to the conditions needing to be addressed? • Were underlying assumptions correctly identified? • What is the effect of any incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document? • Did lessons from other relevant projects inform project design and implementation arrangements? • Was the logframe logic and ToC clear and adequate?

Results Framework/ Logframe	Project Strategy <ul style="list-style-type: none"> • Are the project's objectives and outcomes or components clear, practical, and feasible within its time frame? • Are the log---frame indicators and targets "SMART" and gender disaggregated? • Has progress made so far led to, or could in the future catalyse beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis. • How are the catalysing effect of the project results being monitored?
Project Implementation and Adaptive Management	<ul style="list-style-type: none"> • What is the current project management arrangement? • What are the SWOT of the current project management arrangements? • Has it been effective? • Are responsibilities and reporting lines clear? • Is decision---making transparent and undertaken in a timely manner? • Has the Executing Agency/Implementing Partner(s) facilitated project execution adequately? • What are the recommendations for improvement? • What lessons can be drawn from this arrangement? • Has the Partner Agency (UNDP) supported project execution effectively? • What are the key challenges of project execution? • What recommendations?
Work Planning	<ul style="list-style-type: none"> • Is project implementation in line with the timeline set in the Prodoc? • If there were delays what caused them? • What is the likely implication of any delays on the rest of the project timeline? • Has adaptive management effectively resolved any issues of delays? If no, why not? • Are work---planning processes results---based? • Has the results framework/ log---frame been used as a management tool? • To what end? Has it worked well and if not why not? • What recommendations?
Finance and co-finance	<ul style="list-style-type: none"> • What is the level of expenditure to---date? • Is this level in line with the original plans in the project budget? • If not, why have changes occurred? And what are the exact changes? • Have the appropriate approvals been sort and provided for these changes? • Has the project been cost effective and what criteria can we use to determine this? • Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds? • Has the project mobilized extra funding? • Has it accessed any co---finance? • Is co---finance being monitored to confirm the expected situation at project design stage?
Project level monitoring and review systems	<ul style="list-style-type: none"> • Does the project use an M&E system? • Does it involve key partners in M&E? • Is the M&E linked to partner institutions' systems? • Does M&E provide the necessary information efficiently/effectively? • Is it considered cost---effective? • Are additional tools required to make M&E more participatory and inclusive? • Are sufficient resources being allocated to monitoring and review? • Are these resources being allocated effectively?
Stakeholder engagement	<ul style="list-style-type: none"> • Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders? • Do local and national government stakeholders support the objectives of the project?

	<ul style="list-style-type: none"> Do they continue to have an active role in project decision-making that supports efficient and effective project implementation? To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives
Reporting and communication	<ul style="list-style-type: none"> Have changes made via adaptive management been reported by the project management and approved by the Project Board? How well do the Project Team and partners understand and undertake UNDP reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?) Have lessons derived from the adaptive management process been documented, shared with key partners and internalized by partners? How is internal project communication with stakeholders done? Is it regular and perceived to be effective? What is the evidence of that? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results? How does the project communicate with the broader stakeholders? Via a project website?

5.6 Annex 6: Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Consultant: _____ Veronica Nyawira Muthui _____

Name of Consultancy Organization (where relevant): ___ N/A _____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at *Leverkusen, Germany*, on 2nd August 2019 -- Signature: _____

I also approve this MTR report

Signed at _____ *Leverkusen, Germany* on 7th Oct 2019 --- Signature: _____

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Consultant: _____ Cliff Bernard Nawukora _____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at ----- Signature: _____

I also approve this MTR report

Signed at _____ on 7th Oct 2019 --- Signature: _____

5.7 Annex 7: Updated GEF Tracking Tool

Available in a separate file, upon request from UNDP Country Office.

5.8 Annex 8: Detailed Project Components, Outcomes and Outputs

Project Component	Expected Outcomes	Expected Outputs
Component 1: Data collection and improved coordination and enforcement of regulations governing the biomass energy sector, in particular those related to sustainable charcoal	<p>Outcome 1.1: Existing & ongoing policy, regulatory and institutional work on sustainable charcoal and land tenure security integrated with recommendation from the new biomass energy strategy (BEST)</p> <p>Outcome 1.2: Improved coordination of institutions managing sustainable charcoal production at district level</p> <p>Outcome 1.3: Improved data collection and monitoring of biomass energy and charcoal production and use (integrated into national database and for use as baseline information in a possible NAMA)</p> <p>Outcome 1.4: Improved charcoal and biomass guidelines and ordinances at district level</p> <p>Outcome 1.5: Heightened awareness of new institutional frameworks and ordinances, guidelines and certification schemes at district level</p>	<p>Output 1.1.1: National charcoal survey and updated standardized baseline reports completed based on latest data⁴⁸</p> <p>Output 1.2.1: Framework for institutional coordination and resource mobilization developed between MEMD, local government authorities and the National Forest Authority to manage charcoal trade at district level</p> <p>Output 1.3.1: Baseline report and functional biomass database established and hosted at MEMD and published in Uganda Bureau of Standards reports⁴⁹ and used for a sustainable charcoal NAMA (see Output 2.3.1)</p> <p>Output 1.4.1: Local ordinances and standards for sustainable charcoal certification schemes developed, adopted and publicized in targeted pilot districts</p> <p>Output 1.5.1: Awareness and educational program on local ordinances and standards for sustainable charcoal completed in all targeted pilot districts</p> <p>Output 1.5.2: Updated guidelines for measuring biomass calculated using the biomass study technical manual. Annual Allowable Cut (AAC) targets established for all districts by year 2.</p>
Component 2: Dissemination of appropriate technologies for sustainable charcoal production in selected (4) charcoal-producing districts (Mubende, Kiboga, Nakaseke and Kiryandongo)	<p>Outcome 2.1: Low-carbon charcoal production technologies have successfully replaced inefficient systems in targeted pilot districts leading to:</p> <ul style="list-style-type: none"> - Wood usage is reduced by 723,000 MT over the asset lifetimes (15 years) from use of improved kilns compared to BAU scenario <p>Lifetime⁵⁰ energy savings (compared to BAU scenario) of : - 1,843,200,000 MJ for</p>	<p>Output 2.1.1: 60 sustainable charcoal producer groups organized, trained and operational⁵¹ comprised of a minimum 2,400 charcoal champions⁵² spread across pilot districts. Activities under this output would include:</p> <ul style="list-style-type: none"> • Developing ranking criteria for categorizing types of charcoal producers or entrepreneurs with specific focus on ensuring gender equity among groups • Conducting surveys to rank different actors into pre-determined categories based on capacity analyses and technology needs • Training of all groups on local ordinances and standards for sustainable charcoal certification schemes as well as improved kiln technologies

⁴⁸ Project would update the proposal for a new standardised baseline for charcoal projects in the Clean Development Mechanism prepared by Perspective GmbH and the Ugandan DNA (2011) Zurich, Switzerland.

⁴⁹ The database would be harmonized with the NFA biomass resource assessment

⁵⁰ Casamance kilns have an estimated lifetime of 5 years; retort kilns have an estimated lifetime of 15 years

⁵¹ The charcoal cooperatives would likely be drawn from existing FAO APFS and FFS in districts where FAO is operational such as Nakaseke, Kiboga and Mubende; in Kiryandongo they would be formed in consultation with existing projects and structures already on the ground

⁵² Disaggregated by gender

Project Component	Expected Outcomes	Expected Outputs
	<p>Casamance kilns (avoided emissions of 210,816 tCO₂eq) ; and</p> <p>- 9,737,142,857 MJ for retort kilns (avoided emissions of 1,113,686 tCO₂eq)</p> <p>- additional lifetime avoided methane emissions for all retort kilns introduced of 252,000 tCO₂ eq</p> <p>Total direct lifetime emissions avoided of 1,576,502 tCO₂eq</p> <p>Outcome 2.2: Sustainable charcoal recognized as a viable SME in pilot districts by end of project and for post-project sustainability</p> <p>Outcome 2.3: Carbon finance is integrated into sustainable charcoal practice in targeted areas</p> <p>Outcome 2.4: Increased incomes for all charcoal cooperatives involved in project</p> <p>Outcome 2.5: Technical support for charcoal briquetting producers enhanced</p>	<ul style="list-style-type: none"> • Demonstration of Casamance kiln operation and viability to target groups (total of 400 Casamance kilns disseminated) • Demonstration of retort kiln operation and viability to target groups (total of 200 retort kilns disseminated) • MRV, tracking and licensing system established for all improved kilns piloted⁵³ • All groups in compliance with certification standards (as per Output 1.4.1) <p>Output 2.2.1: Model scheme to support consumer financing schemes for charcoal producing groups (with local financial institutions) proposed by end of project.</p> <p>Output 2.3.1: Basic Program of Activities (PoA) project submitted for registration to appropriate authority under a VCS methodology and/or a Sustainable Charcoal NAMA Design Document developed and endorsed⁵⁴</p> <p>Output 2.4.1: Profit margin per output unit of charcoal produced with new technologies increased by at least 20% per group (with new kilns) as compared to baseline scenario for all participating charcoal cooperatives</p> <p>Output 2.5.1: Training and technical assistance provided to all briquetting businesses that are receiving loans for briquetting machines from Micro-Finance Institutions (in conjunction with <i>CleanStart</i>)</p>
<p>Component 3. Strengthening the capacity of key stakeholders in SFM and SLM best practices and establishment of sustainable woodlots</p>	<p>Outcome 3.1: Improved capacities of stakeholders in targeted districts to establish and manage dedicated sustainable woodlots leading to:</p> <ul style="list-style-type: none"> - Accumulated yields of 368,770 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 <p>Outcome 3.2: Best practice SLM/SFM knowledge effectively transferred from successful SLM projects in</p>	<p>Output 3.1.1: At least 1,100 private woodlot owners in the four pilot districts identified, trained and contracted to make land available for woodlot establishment (minimum 5,900 hectares set-aside). Activities under this output involved:</p> <ul style="list-style-type: none"> • Training all communities/woodlot managers on new charcoal regulations and SFM best practices, including use of specified tree species and optimal ecological yield from such species. • Technical support provided to all woodlot owners on tree nursery management as an entrepreneurial activity with target to plant over 17.4 million seedlings⁵⁶ • Dissemination of over 17.4 million tree seedlings to woodlot owners • Establishment of land use and forest management plans (including zoning and mapping of forest areas) for all targeted woodlot areas • Contracts signed between woodlots owners and charcoal producer groups for feedstock supply

⁵³ The MRV system would be compliant with NAMA requirements developed under the LECB Project

⁵⁴ Direct support for the potential development of a Sustainable Charcoal NAMA under the project will be discussed with government during the first year of the project and a decision made based on those discussions.

⁵⁶ 3,000 tree seedlings would be planted per hectare at the recommended spacing of 1.5 x 1.5 metres bringing a total of 17.4 million seedlings to be planted across 5,800 hectares

Project Component	Expected Outcomes	Expected Outputs
	<p>neighboring districts to four pilot districts for this project leading to:</p> <ul style="list-style-type: none"> - 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 lifetime⁵⁵ - 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 	<p>Output 3.1.2: Sustainable woodlots (out-grower schemes) successfully established to supply improved kilns with renewable biomass established (5,900 ha).</p> <p>Output 3.2.1: Targeted communities indigenous knowledge of SLM enhanced using the “Stimulating Community Innovations (SCI–SLM) approach⁵⁷” to generate local solutions to land degradation</p> <p>Output 3.2.2: Conservation Agriculture (CA) practices introduced to 400 farming households (50 in each district) over 400 ha</p> <p>Output 3.2.3: Land use planning done in each target district using FAO-LADA-WOCAT outcomes.⁵⁸</p> <p>Output 3.2.4: District Forestry and Land Use Planning staff trained in the use of techniques that support community planning, implementation processes and land degradation assessment.</p> <p>Output 3.2.5: Mapping completed of all targeted areas under sustainable forestry management as well as agricultural lands under SLM in collaboration with FAO and National Forestry Authority’s new GIS/mapping platform</p>

Table 11: Rating Project Achievements by Indicators and Assessment of Delivery on Outputs

GOAL/OBJECTIVE/ Outcome	Performance Indicator	Baseline Level in 2014	End of project target in 2018	Level at 30 July 2019	TE comments	Rating
Outcome 1.1: Existing & ongoing policy, regulatory and institutional work on sustainable charcoal and land tenure security integrated with recommendation from	1.1) Biomass Energy Strategy (BEST) developed, validated, approved and in use. National charcoal survey and updated standardized baseline	BEST still in design form	1.1) Investment mobilized to implement BEST recommendations (1.1) Standardized baseline accepted by UNFCCC	BEST was formulated and approved. Over USD 2 million has been mobilized from inter alia World Bank and German Development Agency (GIZ) to support investment in alternative and improved energy technologies in line with the 10-year	Fully achieved. The standardized baseline informed the preparation of the draft Charcoal NAMA for Uganda as well as the draft National Renewable Energy Policy 2018.	S

⁵⁵ As per GEF guidelines the lifetime is 20 years

⁵⁷ SCI-SLM stands for Stimulating Community Innovations centred on identifying innovative forms of land management within communities themselves (community generated solutions to land degradation). This included characterizing communities, validating their innovations, and improving them through joint experimentation with researchers and scientists and stimulating the communities to go forward with their efforts through farmer-to-farmer cross visits

⁵⁸ The Land Degradation Assessment in Drylands (LADA) is a tool of FAO and has as part of its objectives to assess land degradation at local, national and global scale. In order to do so, the project has developed guidelines for each assessment level. WOCAT (World Overview of Conservation Approaches and Technologies) is an established global network of Soil and Water Conservation (SWC) specialists, contributing to sustainable land management (SLM).

GOAL/OBJECTIVE/ Outcome	Performance Indicator	Baseline Level in 2014	End of project target in 2018	Level at 30 July 2019	TE comments	Rating
the new biomass energy strategy (BEST)	reports completed based on current data			Action Plan of the Biomass Energy Strategy (BEST). The National Charcoal Standardized Baseline was developed in partnership with GIZ, and was approved and registered with UNFCCC.		
Outcome 1.2: Improved coordination of institutions managing sustainable charcoal production at district level	1.2: Framework for institutional coordination and resource mobilization developed between MEMD, local government authorities and the National Forest Authority to manage charcoal trade at district level	Biomass energy mandate is distributed across many government agency with no focal point	Biomass Unit funded in proportion to revenue collected from the sector & central government budget by year 3	A Renewable Energy Department was recently created from the former Biomass Unit in the Ministry of Energy and Mineral Development. This has created avenues for increased government funding including development partners. A US\$ 3.2 million for biogas generation from municipal solid waste is under implementation; others under development include: the Euro 15 million for improved cook stoves for all schools, and USD \$ 4 million for grants for promoting biomass investments. District Charcoal Action Plans were formulated for the four project districts; priority actions are integrated into the District Development Plans (DDPs) so they have entered districts' budgeting processes.	Even though there was no quantified baseline funding or target, the formation of the Renewable Energy Department and the projects either under development or implementation is considerable achievement. Priority actions of the four district charcoal action plans were allocated budgets. The challenge remains that the natural resources management units often receive less than half of their annual budget requests.	S
	Charcoal by-laws including licensing procedures standardized and strengthened	License fees not standardized	Higher revenue collection by local administration from charcoal by the district by year 2			
Outcome 1.3: Improved data collection and	1.3) Baseline report and functional biomass	Current database is uncoordinated,	Updateable baseline and functional database	A analogue database has been established. At MEMD. Additional	There were technical issues that prevented the database	MS

GOAL/OBJECTIVE/ Outcome	Performance Indicator	Baseline Level in 2014	End of project target in 2018	Level at 30 July 2019	TE comments	Rating
monitoring of biomass energy and charcoal production and use (integrated into national database and for use as baseline information in a possible NAMA)	database established and hosted at MEMD and published in Uganda Bureau of Standards reports	inadequate and unreliable	established at MEMD and UBS by end of year 1	data on charcoal quality is being provided by the Sustainable Charcoal Laboratory established at Nyabyeya College of Forestry.	from being fully functional that remain unresolved.	
Outcome 1.4: Improved charcoal and biomass guidelines and ordinances at district level	1.4) Local guidelines and standards for certification schemes developed, adopted and publicized in targeted pilot districts	1.4) Guidelines and standards non-existent	Guidelines and certification schemes developed and operational by end of year 2.	National Charcoal Guidelines for sustainable charcoal production, storage, transportation and trade in Uganda have been developed. The Guidelines; a) provide a regulatory framework for sustainable charcoal production and trade; b) promote the adoption of appropriate charcoal production and harvesting technologies; c) establish standards for charcoal production, post-harvest handling, value addition and trade and; d) a certification mechanism for best practices in the charcoal value chain Standards have also been approved. Briquette Legal framework for regulating charcoal production and trade at the district level is in place in the form of district ordinance developed in a consultative process and validated nationally. A mechanism for labelling and certification is under development.	Fully delivered	S
Outcome 1.5: Heightened awareness of new institutional frameworks and	(1.5) Awareness and educational program on local guidelines and	(1.5) Inadequate and uncoordinated individual /NGO	(1.5) Coordinated awareness campaigns completed in each district by end of year 3	Approximately 300,000 households (2.5 million persons – M:1,700,00; F:800,000) have been sensitized on charcoal regulatory frameworks and	There is heightened awareness of regulatory frameworks and guidelines in the project focus districts as well as	S

GOAL/OBJECTIVE/ Outcome	Performance Indicator	Baseline Level in 2014	End of project target in 2018	Level at 30 July 2019	TE comments	Rating
ordnances, guidelines and certification schemes at district level	standards completed in all targeted pilot districts	driven and project based programs		guidelines through 116 live radio talk-shows and radio spot messages, community meetings and multi-stakeholder dialogues facilitated by the project.	neighbouring districts of Luwero, Nakasongola, Amulata, Kibaale and Kyegegwa	
	1.5) Updated guidelines for measuring biomass (CAI & MAI) calculated using the biomass study technical manual. The technical manual will be updated and revised by year 2	1.5) Biomass measurement guidelines and technical manual are not in use. The technical manual is out-dated	(1.5) Biomass technical manual is updated and available for use by year 2. Updated guidelines developed and in use by year	This has not been completed	This has not been completed	HU
Outcome 2.1: Low-carbon charcoal production technologies have successfully replaced inefficient systems in targeted pilot districts	2.1) 60 sustainable charcoal cooperatives organized and operational with 2,400 charcoal champions in pilot districts.	2.1) BAU Carbonization Technologies = Earthmound Kilns @ 10% efficiency conversion	2.1) 143,314 metric tons of wood saved over project lifetime from improved kilns compared to BAU scenario (14,431 hectares of avoided deforestation)	400 units of Casamance and 15 retort kilns distributed to charcoal associations. 120,741 metric tons of wood have been saved as a result of the use of casamance kilns, translates to The estimated 6,674 hectares of avoided deforestation.	120,741 is 84.2% of the set target (143,314) metric tons of wood; 6,674 ha is also 84.2% of the target (14,431) ha of avoided deforestation	MS
		2.1) Biomass Sources = non-renewable; (2.1) No widespread use of improved kiln technologies and those that are in use are not licensed or monitored	2.1) Lifetime energy savings (compared to BAU scenario) of 1,843,200,000 MJ for Casamance kilns (avoided emissions of 210,816 tCO ₂ eq); and 9,737,142,857 MJ for retort kilns (avoided emissions of 1,113,686 tCO ₂ eq). An additional lifetime avoided methane emissions for all retort kilns introduced of 252,000 tCO ₂ eq	MJ of energy saved for casamance yet to be estimated Retort kilns are not yet functional	Lifetime energy savings (compared to BAU scenario) of 1,552,896,000 MJ for Casamance kilns (avoided emissions of 177,613 tCO ₂ eq. this is 84.25% of the target.	
Outcome 2.2: Sustainable charcoal recognized as a viable SME in pilot districts by end of project and for	(2.2) Delivery model to support consumer financing schemes for charcoal producing groups with local	No recognized charcoal production SMEs in target areas and no organized charcoal	60 charcoal producer associations with over 2400 members established and registered (15 in each district) and operating sustainable	Forty two Charcoal Associations with over 800 members (40% women) have been established and registered across the 4 project districts.	Formation and registration of charcoal associations at 67%; with 33% membership compared to the end of project target.	MS

GOAL/OBJECTIVE/ Outcome	Performance Indicator	Baseline Level in 2014	End of project target in 2018	Level at 30 July 2019	TE comments	Rating
post-project sustainability	financial institutions established	producer organizations	charcoal businesses by end of project Consumer financing schemes available for registered charcoal producing (CPA) associations by end of project. By end of project 20% of the registered CPA qualify for credit facilities from local financial institutions	According to the report by Good Fire Limited two Micro Finance Institutions in Kiryandongo district have signed MOU with 7 Charcoal Producer groups while In Kiboga, 4 MOUs have been signed between the 9 charcoal producer groups and local financing institution Kiffi. About 40% of the registered charcoal producer associations are able to access credit facilities from local financial institutions	Although MOUs have been signed and 40% of CPA members reportedly qualify for credit, all respondents to the TE discussions reported that access to finance was still a challenge. The most effective use of loans from micro-finance institutions would be to purchase casamance kilns; however, although the project trained some technicians on fabricating the kilns, they are not available in the market yet.	
Outcome 2.3: Carbon finance is integrated into sustainable charcoal practice in targeted areas	(2.3) A Sustainable Charcoal NAMA Design Document developed and endorsed	(2.3) No charcoal NAMA Design Document developed or submitted	2.3) NAMA Design Document developed and endorsed by end of year 3	A draft NAMA for the charcoal value chain has been developed with the support of the project. It seeks to address issues and challenges hindering the sustainable transformation of the charcoal value chain towards a green and clean path.	Fully achieved	HS
Outcome 2.4: Increased incomes for all charcoal cooperatives involved in project	(2.4) Profit margin per output unit of charcoal produced with new technologies increased by at least 20% per group (with new kilns) as compared to baseline scenario for all participating charcoal cooperatives	Average income of a typical itinerant charcoal producer in target districts was to be established as baseline during year 1. This is not yet done.	At least 5 CPAs in each district supply charcoal directly to large wholesalers in urban areas	7 CPAs in Kiryandongo had been linked to large wholesalers in urban areas for green charcoal; although the business linkages had led to 41% increase in price paid to Charcoal Producer Associations for green charcoal, they were unable to consistently meet the quantities required by the businesses. Other CPAs report a US\$ 2 increment in price of charcoal produced with the casamance kiln (The price of a bag of charcoal from local kilns is Ugx 25,000 (USD 7); the same bag fetches	7 CPAs is 35% of the target of 20 (5 per district); although CPA members reported the US\$ 2 increase in price of casamance charcoal, this price difference is not demonstrated in larger charcoal markets such as the district headquarters or Kampala. It is difficult to sustain this price difference since there is no labelling of sustainably produced charcoal.	MS

GOAL/OBJECTIVE/ Outcome	Performance Indicator	Baseline Level in 2014	End of project target in 2018	Level at 30 July 2019	TE comments	Rating
				Ugx 35,000 (USD 9.2) if produced by casamance.		
Outcome 2.5: Technical support for charcoal briquetting producers enhanced	(2.5) Training and technical assistance provided to all briquetting businesses that are receiving loans from Micro-Finance Institutions in conjunction with CleanStart	A CleanStart scoping mission documented that by 2014 there were about 17 formal briquette makers in Uganda, receiving limited training and financial assistance. A detailed baseline was to be done as part of the CleanStart operations.	The CleanStart business plan noted that the opportunity exists for the number of briquette producers to increase to at least 50 and daily production can easily be raised 8 tons to 50 tons per day. If confirmed the target would then be to provide training and TA to at least 50 charcoal briquetting enterprises by the end of the project. A detailed baseline will be done as part of the CleanStart start-up and call for proposals with FSPs Emission reductions from TA for the briquetting enterprises will be developed once its confirmed whether the relevant FSPs will indeed provide loans for the improved machines	Sixty associations and small scale briquette making groups enrolled and sensitized on effective briquette production. Twelve groups are currently producing hence additional income from the activity. Arrangements have been completed to provide further training on entrepreneurship and sustainable business management for all the groups. A total of 800 beneficiaries including 240 women in the pilot districts have been equipped with skills to efficiently utilize the improved charcoal production technologies. In addition, following a learning visit to Namibia, the project has piloted a Namibian kiln at the sustainable charcoal laboratory Forestry College	Unfortunately, the CleanStart funding is based on competitive bidding, open to the private sector nationally. None of the CPAs or the briquetting groups qualified. The project issued a few briquetting machines to some groups, but these are challenged by access to markets for briquettes. This is because the groups are in rural areas where accessing materials for making briquettes is a challenge. There are also very limited consumers for briquettes and it is not cost effective to transport them to the cities due to the small quantities produced. The Namibian kiln has proven not to be suitable for Uganda; it is designed to utilize smaller trees and twigs of wood grown under much drier conditions than Uganda.	MU
Outcome 3.1: Improved capacities of stakeholders in targeted districts to establish and manage dedicated sustainable woodlots	(3.1) Improved capacities of stakeholders in targeted districts to manage SFM and establish dedicated renewable biomass feed stocks. More specifically: - At least 1,100 private woodlot owners in the	No community or private woodlots for charcoal production in targeted districts Degraded forests and agricultural	Accumulated yields of 368,770 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.	About 6,208 hectares of well grown planted sustainable charcoal woodlots of mainly eucalyptus tree species have been established in the four pilot districts. This acreage is determined after factoring in the seedling survival rate of 72% and considering farmer practices.	The target for woodlots establishment was almost met (6,208 versus 5,900). However, over 90% of it is eucalyptus rather than the three indigenous species identified as suitable for charcoal production. Eucalyptus is a multi-use	

GOAL/OBJECTIVE/ Outcome	Performance Indicator	Baseline Level in 2014	End of project target in 2018	Level at 30 July 2019	TE comments	Rating
	<p>four pilot districts identified, trained and contracted to make land available for woodlot establishment (minimum 5,900 hectares set-aside).</p> <ul style="list-style-type: none"> - Training all communities/woodlot managers on new charcoal regulations and SFM best practices, including use of specified tree species and optimal ecological yield from such species -Technical support provided to all woodlot owners on tree nursery management as an entrepreneurial activity with target to plant over 17.4 million seedlings - Dissemination of over 17.4 million tree seedlings to woodlot owners - Establishment of land use and forest management plans (including zoning and mapping of forest areas) for all targeted woodlot areas - Contracts signed between woodlots owners and charcoal producer groups for feedstock supply 	land in the four districts	- Net avoided lifetime emission reductions of 2,699,402 tCO ₂ of avoided deforestation compared to the BAU scenario from use of this renewable biomass in kilns compared to a BAU scenario	A total of 6,898,000seedlings have been planted by about 1,800 tree planters, 18% of whom are women. This translates into about 581,595metric tons of renewable biomass by year five. However, no contracts have been signed between tree farmers and sustainable charcoal producers.	species with high demand for timber, building and electricity poles. There is no certainty that these trees have been planted for charcoal production. This is especially in the absence of contracted farmers to supply sustainable charcoal producers with trees.	

GOAL/OBJECTIVE/ Outcome	Performance Indicator	Baseline Level in 2014	End of project target in 2018	Level at 30 July 2019	TE comments	Rating
Outcome 3.2: Best practice SLM/SFM knowledge effectively transferred from ongoing successful SLM projects ⁵⁹ in neighboring districts to four pilot districts	(3.2) SLM/SFM knowledge effectively transferred from ongoing SLM projects in neighboring districts to four pilot districts for this project.	Limited amount of land in targeted districts under SFM regimes or benefiting from SFM practices (baseline to be established during year 1) * 4,800 ha of land across four districts deforested each year for charcoal production * Conservation farming practices not widely practiced across targeted districts * Communities in targeted districts have not had exposure to the SCI-SLM approach or LADA tool * District Land Use Planning staff have little knowledge of techniques that support community planning, implementation	50,000 ha of forestlands across four pilot districts brought under improved multifunctional forest management leading to enhanced carbon sequestration of 2,100,000 tCO ₂ eq 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 - Community's indigenous knowledge of SLM enhanced using the "Stimulating Community Innovations (SCI-SLM) approach" to generate local solutions to land degradation - Land use planning (one each target district) done using FAO-LADA-WOCAT developed. - District Land Use Planning staff trained in the use of techniques that support community planning, implementation processes	30,621 hectares of forest land (natural and planted forest lands) across four pilot districts have been brought under improved multifunctional forest management leading to enhanced carbon sequestration of 1,310,872 metric tons of carbon There has also been reduced land degradation and increased soil fertility. As a result, vegetation cover and crop yields have increased. Over 100% increase in crop yields have been recorded among seasonal crops such as maize, beans, vegetables and ground nuts. Farmers who adopted the 'fanya chini /fanya juu' practices, application of organic manure and inter-cropping of trees with crops (taungya) have recorded a 28% increase in yields of perennial crops such as coffee and bananas. Building on community indigenous knowledge on water and soil conservation, 420 hectares of garden area in the four pilot districts are under Climate Smart Agriculture practices. About 61% of women are involved in CSA compared to 39% of men. In addition, farmers are using indigenous knowledge in control of pests such as army worm using hydro-carbon repellents and	84.2% of target forestlands have been put under improved management, delivering 84.2% of the target tCO ₂ eq so far. However, the target of 2,100,000 tCO ₂ eq is to be realized over a twenty year period. The target for land put under conservation and climate smart farming practices has been exceeded with over 100% increase in yields of annual crops and 28% for perennial crops. Both men and women have benefitted equally, with more women (61%) adopting CSA practices. It is noted that members of CPA are using pyrolysis oil produced during charcoal making process by Casamance kiln. The oil is used to repel agricultural pests such as termites that destroy crops and trees. Others use it for cosmetic purposes; while others claim that it has curative properties for example treating of simple skin wounds. There is however no scientific basis to promote the use of this oil. Its use	S

⁵⁹ The best practices to be transferred will be those from FAO and two other SLM projects operating in neighboring districts, namely the "Sustainable Land Management in the Cattle Corridor Districts of Uganda" and the UNDP/GEF "Enabling Environment for SLM to overcome land degradation in the cattle corridor of Uganda" – for a description of best practices please see Sections A.5

GOAL/OBJECTIVE/ Outcome	Performance Indicator	Baseline Level in 2014	End of project target in 2018	Level at 30 July 2019	TE comments	Rating
		<p>processes and land degradation assessment</p> <p>* No detailed mapping of biomass stocks (both forestry and agricultural areas) done in targeted districts</p> <p>* No method in place to accurately measure and monitor land use change and deforestation in targeted districts</p>	<p>and land degradation assessment</p> <p>- Mapping completed of all targeted areas under sustainable forestry management as well as agricultural lands under SLM in collaboration with FAO and National Forestry Authority's new GIS/mapping platform</p>	<p>ensuring efficacy by spraying at night to target the nocturnal pest. Also, indigenous knowledge has been used in trapping problem animals such as squirrels.</p> <p>A baseline land use map has been produced for each district.</p>	<p>should be discouraged until it has been tested /analysed to confirm or dispel the myths.</p>	

Table 2 of Annex 5: Assessment of Delivery by Outputs

Output	Estimated % delivery
Output 1.1.1: National charcoal survey and updated standardized baseline reports completed based on latest data	100
Output 1.2.1: Framework for institutional coordination and resource mobilization developed between MEMD, local government authorities and the National Forest Authority to manage charcoal trade at district level	80
Output 1.3.1: Baseline report and functional biomass database established and hosted at MEMD and published in Uganda Bureau of Standards reports and used for a sustainable charcoal NAMA	80
Output 1.4.1: Local ordinances and standards for sustainable charcoal certification schemes developed, adopted and publicized in targeted pilot districts	80
Output 1.5.1: Awareness and educational program on local ordinances and standards for sustainable charcoal completed in all targeted pilot districts	90
Output 1.5.2: Guidelines for measuring biomass updated in biomass technical manual. Annual Allowable Cut (AAC) targets established for all districts by year 2	0

Output 2.1.1: 60 sustainable charcoal producer groups organized, trained and operational comprised of a minimum 2,400 charcoal champions	100
Output 2.2.1: Model scheme to support consumer financing schemes for charcoal producing groups (with local financial institutions) proposed by end of project	20
Output 2.3.1: Sustainable Charcoal NAMA Design Document developed and endorsed	100
Output 2.4.1: Profit margin per output unit of charcoal produced with new technologies increased by at least 20% per group	32
Output 2.5.1. Training and technical assistance provided to all briquetting businesses that are receiving loans for briquetting machines from Micro- Finance Institutions (in conjunction with CleanStart42)	50
Output 3.1.1: At least 1,100 private woodlot owners identified, trained and contracted to make land available for woodlot establishment (minimum 5,900)	50?
Output 3.1.2: Sustainable woodlots (out-grower schemes) successfully established to supply improved kilns with renewable biomass established (5,900 ha).	50?
Output 3.2.1: Indigenous knowledge of SLM enhanced using the “Stimulating Community Innovations (SCI–SLM) approach to generate local solutions to LD	40
Output 3.2.2: CA introduced to 400 farming households - over 400 ha	100
Output 3.2.3: Land use planning done using FAO-LADA-WOCAT	0
Output 3.2.4: District Forestry and Land Use Planning staff trained on community planning, implementation processes and land degradation assessment	90
Output 3.2.5: Mapping completed of all areas under SFM and agricultural lands under SLM in collaboration with FAO and National Forestry Authority’s new GIS/mapping platform	95?

5.9 Annex 9: Impacts of the Sustainable Charcoal Production and Conservation Agriculture on Livelihoods

For the 48-year-old Luciano Donga, life in Kololo village, Nyamahasa Parish, Mutunda sub-county, Kiryandongo District had always been a hand to mouth affair. Fending for himself, his 2 wives and six children was always a challenge. Daily, Luciano would set off for his garden with his wives and children to eke out a living from an exhausted soil. They practiced rain-fed agriculture without fertilizer, which meant that their agricultural produce depended on how much rain they got during that productive season.

To supplement his income, Luciano made charcoal from select trees which he cut into logs, piled, covered them with soil and burned in a controlled environment to make charcoal. After 7 days of continuous monitoring, Luciano would recover about 10% of the wood in the form of charcoal, which he would sell at a price of UgX 50,000 (US\$13) per bag. Luciano never kept records of his farming and charcoal making activities. He therefore could never tell if he made any profits or not. He never saved for bad days and was always in debt – hence the hand to mouth way of life. In 2015, when the Green Charcoal Project’s implementation began in Kiryandongo district, Luciano was one of its trainee participants. The overall objective of supporting local people to produce charcoal in a sustainable manner, promoting improved charcoal producing technologies, tree planting and conservation agriculture practices all tied into Luciano’s daily livelihood activities.

Today, Luciano’s family like other Association members in Mutunda Parish live a different lifestyle. They joined the Ber-Bedo Charcoal Producing and Agricultural Association, where they received training, worked in groups and received initial capital to start improved charcoal business and climate smart agriculture. They learnt how to use Casamance kilns to make charcoal, in addition, they were trained in climate smart agricultural methods which involve digging semi-permanent holes to plant seeds as well as mulching – these minimize the amount of tillage and promote soil and water conservation. Through good governance principles such as user-friendly constitution and regular elections of their leaders, association members trust each other and have started a Village Saving and Loans Association (VSLA) where members save UgX 10,000 (\$2.6) from their income on a weekly basis. These savings earn members interest and the VSLA can afford low rate interest loans to their members.

With more efficient charcoal production technologies that take less than 7 days, use less wood and produce better quality charcoal which is heavier and more solid than the charcoal Luciano used to produce using the traditional kiln, hence fetches better prices, the group’s revenues have increased. This way, Luciano and the entire community are able to protect their environment since the number of trees used in this process reduces significantly. Productivity of their gardens has also improved enabling them to sell the excess for extra income. “Now we can pay school fees for all our children,” Luciano’s wife shares during a visit to her home.

The group’s success and organization has attracted various other entities to work with them. They no longer have to stealthily produce charcoal. In fact, they have been given access to the nearby Karuma Wildlife Reserve, to remove some of the unwanted trees – invasive Acacia species. This has also improved the community’s relationship with the Reserve’s management. In Luciano’s words, ‘making charcoal has never been so enjoyable and profitable.’

Now, as a proud owner of 10 acres of trees which the project supported him to plant, like others in Mutunda community, Luciano believes he now has insurance for his old age since his woodlot will provide an income from timber and offcuts for charcoal.

5.10 Annex 10: Terminal Evaluation Inception Report

Available in a separate document, upon request to UNDP Uganda Country Office

5.11 Annex 11: Terminal Evaluation Audit Trail

Available in a separate document. Available upon request from UNDP Country Office