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Foreword

Dear Reader,

I am happy to introduce to you the first bulletin of FAO's Forest Management and Sustainable Charcoal Value Chain project in Uganda.

Universal access to energy and achieving food security and zero hunger are intrinsically linked development goals. Energy is required at each step of the food value chain, from production to consumption. Agrifood systems alone consume about 30 percent of the world's energy. Improving quality and access to energy is therefore a key driver of economic and social development and improving people's wellbeing.

In Uganda and in most of sub-Saharan Africa, biomass energy (firewood and charcoal) remains the primary source of cooking energy for more than 80 percent of the population. Transition to cleaner energy alternatives remains a challenge for many due to technical, financial and logistical costs associated with commercialization, especially of renewable energy technologies.

Trends and evidence from several studies indicate that in the short to medium term, biomass-based fuels will remain the main sources of cooking energy for most people in sub-Saharan Africa, including Uganda.

Charcoal is a preferred cooking fuel for the urban population; yet its unsustainable production and utilization are highly linked to environmental degradation. If properly managed however, charcoal can provide a cheap, reliable and locally available renewable energy source, with the potential to become a sustainable transition fuel.

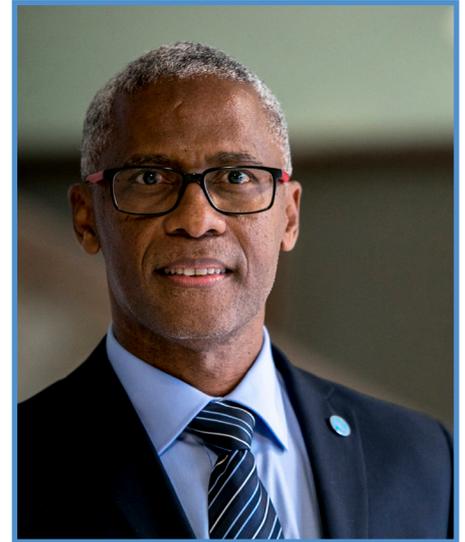
FAO is implementing the Forest Management and Sustainable Charcoal Value Chain project, whose overall goal is to address negative environmental, social and economic impacts of charcoal production. We are grateful to the European Union for funding this project, whose objective is to create incentives for the private sector and communities to invest in a sustainable charcoal sector, through approaches such as establishment of wood energy plantations, adoption of modern and improved technology for charcoal conversion, rehabilitation of degraded woodlands and access to cleaner energy alternatives. FAO is also thankful to the Government of the Republic of Uganda, for entrusting us with implementation of this important project.

Through this intervention, FAO is going beyond business-as-usual to help Uganda to reach its national aspirations and international commitments to tackle climate change and increase access to clean energy by greening the charcoal value chain. Charcoal produced using sustainably managed resources and improved technologies can be a low net emitter of greenhouse gases, with the potential to reduce emissions by more than 80 percent along the charcoal value chain, thereby helping to mitigate climate change. This intervention will contribute to offsetting nearly 2 million tonnes of carbon. You can read more in this issue.

In this project, we are working with the Government of the Republic of Uganda, district local governments, the private sector, communities and charcoal producer associations. The success of these partnerships will increase awareness and understanding of the important contribution of well-managed forests and a green charcoal value chain to healthier, wealthier populations and achievement of the Sustainable Development Goals.

Happy reading!

Antonio Querido
Representative, FAO Uganda



Preface: Why Uganda urgently needs green energy

We are living amidst numerous challenges like climate change, global warming, natural disasters and recently, a pandemic, global economic and food crises. Access to energy, for industrial and domestic consumption is one of the core drivers of a changing climate and a degraded environment. In Uganda, wood biomass is the main fuel for cooking. Although the woody biomass from which this fuel is derived regenerates continuously, making it renewable, the unsustainable extraction rate of firewood and charcoal leads to disastrous consequences such as forest degradation, loss of biodiversity, soil degradation, floods, low agroforestry productivity and less resilience against natural disasters, not to mention socio-economic consequences. This calls for promoting other sources of energy in order to gradually reduce the proportion of wood biomass in the total energy mix in the long term.



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Indeed, Uganda's national energy policy vision is to progressively shift from solid biomass to other cleaner sources of energy. Transition towards clean energy is one of the main pillars of the European Union's (EU) development policies. In fact, fighting climate change remains a top priority for the EU and our delegation in Uganda. The latter is reflected in the new EU Green Deal aimed amongst other things to accelerate the up-take of renewable energy to reach the goal of reducing net greenhouse gas emissions in Europe by at least 55 percent by 2030 compared to the levels in 1990 and reaching CO₂ emissions neutrality by 2050. The objective to move gradually to using clean forms of energy should be a global and collective effort to reduce the carbon footprint and mitigate the negative effects on our environment. The EU is committed as well to support partner countries in this endeavour.

For the case of Uganda, however, the transition to cleaner sources of energy will take some time and demand for firewood and charcoal will remain important in the coming years. It is therefore critical to also make effort to promote best practices for sustainable production of wood biomass. The EU Delegation to Uganda is honoured to work closely with the Government of Uganda and the Food and Agriculture Organization of the United Nations (FAO), to implement the Forest Management and Sustainable Charcoal Value Chain project. This Euro 5million project is an opportunity to regulate and improve efficiency of biomass fuel production in the short-term and even more importantly, facilitate the dialogue on promoting cleaner and renewable sources of energy with the relevant partners.

Our partnership with the Government of Uganda, to enhance natural resources management (including commercial forestry) and the related benefits, dates back about 30 years. With this long history of collaboration and experience in this field, we acknowledge the importance of biomass as a source of fuel for the majority of the population in Uganda and neighboring countries. Therefore, our current development programme for the next five years (2022–2027), will include further collaboration in forestry; this time aimed at tackling some of the drivers of deforestation and forest degradation while promoting an integrated approach to sustainable forestry development. In addition, the EU and the Government of Uganda are defining a Forest Partnership – a framework which will facilitate medium to long-term structured dialogue with government to set strategic priorities. The EU also complements these efforts on the sustainable use of biomass by contributing to the objective of universal access to clean energy by 2040 through last mile grid connection programmes and decentralized renewable energy solutions (mini-grids, solar home systems), as well as the promotion of clean cooking technologies and bio digesters.

With all the different efforts by the EU and other partners, we cannot emphasize enough, the role of governance in the sustainable management of all natural capital and the development of biomass energy as a renewable resource. Through this project, the EU looks forward to contributing to plugging the coordination and governance gaps in production and access to renewable bioenergy, and to help Uganda enhance its energy strategy and security.

While the European Union provides support to sustainable charcoal production to support the Government of Uganda in its efforts to balance the supply and affordability from different sources of energy, it has to be clear that more efforts are needed to promote other alternative sources of energy such as solar, electricity, briquettes and gas. Sustainable production of charcoal is only for transitioning to other cleaner sources of energy.

Caroline Adriaensen
Delegation of the European Union to Uganda

Abbreviations

ABC	Africa Biodiversity Component
DFO	District Forest Officer
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GHG	Greenhouse Gas
IDF	International Day of Forests
IPCC	Intergovernmental Panel on Climate Change
LDCs	Least Developed Countries
LPG	Liquefied Petroleum Gas
MEMD	Ministry of Energy and Mineral Development
MWE	Ministry of Water and Environment
NDP	National Development Plan
NFA	National Forestry Authority
NREP	National Renewable Energy Platform
SDGs	Sustainable Development Goals
SME	Small and medium enterprise
SPGS	Sawlog Production Grant Scheme
UECCC	Uganda Energy Capitalization Company
UNCDF	United Nations Capital Development Fund
VC	Value Chain

About the Forest Management and Sustainable Charcoal Value Chain project



The Forest Management and Sustainable Charcoal Value Chain project seeks to address negative environmental, social and economic impacts of charcoal production by promoting sustainable charcoal production practices, including establishment of energy woodlots, adoption of more efficient charcoal production kilns and rehabilitation of degraded natural forests on private land.

FAO implements the project in partnership with the Ministry of Water and Environment (MWE) and the Ministry of Energy and Mineral Development (MEMD), with funding from the European Union. The project also aims to support improvements in institutional and policy frameworks to streamline the charcoal value chain, while at the same time promoting cleaner energy alternatives to reduce over reliance on charcoal in the long-term.

The project's specific objectives are to:

1. Contribute to climate change mitigation through reduced emissions, deforestation and forest degradation
2. Enhance incomes and livelihoods of rural populations through an improved charcoal value chain
3. Increase share of alternative sustainable energy sources in Uganda's energy mix.



KEY PROJECT ACTIVITIES

Establishment of wood energy plantations

The project supports small and medium scale private sector actors and communities to establish dedicated wood energy plantations, using relatively fast-growing, high calorific tree species such as bamboo species *Oxytenanthera abyssinica* and *Bambusa vulgaris*, *Eucalyptus camaldulensis* and *Eucalyptus* hybrid clones. Other tree types include *Albizia coriaria* (Mugavu), *Azadirachta indica* (Neem tree) and *Senna siamea* (kasiya). The project target is to subsidize establishment of 1 800 hectares. This activity is expected to create a critical mass of wood energy resource for the future, to reduce the pressure on natural woodlands that are currently the major source of wood for charcoal production.

Rehabilitation of natural forests on private land

Over the last three decades, Uganda has lost more than half of the country's forest cover, with the highest level of deforestation happening in forests on private land. According to the Ministry of Water and Environment, forests on private land reduced from 3.3 million hectares in 1990 to 0.7 million hectares in 2015. The loss in forest cover has exacerbated climate change and resulted in loss of biodiversity. Through the project, up to 500 hectares of natural forests on private land will be rehabilitated through a range of integrated and improved forest management practices such as enrichment planting, farmer-managed natural regeneration and forest protection and reforestation. The expected impact from this intervention is increased tree cover and improved biodiversity within these natural forests on private land.

Sustainable woodland harvesting and management

In Uganda, wood used for charcoal production is sourced mainly from natural woodlands. Harvesting of the wood resource is often unsustainable as more volumes are harvested than the annual allowable wood volumes for extraction. In addition to biomass-related carbon loss, unsustainable wood harvesting practices lead to biodiversity loss, especially when specific wood species are targeted for charcoal production. The project will work with private owners of woodlands having harvestable wood resources to develop forest management plans to provide prescriptive sustainable production and management practices, including determination of annual allowable wood volumes for extraction. The project target is to support sustainable management of 3 000 hectares of woodlands. This activity will improve sustainability in wood production; enhance regeneration, ecosystem functionality and biodiversity in sustainably managed woodlands.

Support to acquisition of improved charcoal production technology

Charcoal is predominantly produced using rudimentary technology (earth mound kilns) with very low conversion rate ranging from 10 to 15 percent. As a result, up to 90 percent of wood is lost during the conversion process. FAO will build on work done by the Ministry of Energy and Mineral Development to promote improved technologies for greater efficiency of conversion of wood to charcoal, by subsidizing acquisition of up to 200 casamance kilns

by charcoal producers. Using improved casamance kilns is expected to provide up to three times higher conversion of wood to charcoal than traditional earth-mound kilns; from 10 to 30–35 percent. The reduced wood requirement per unit of charcoal produced ultimately leads to less pressure on the wood resource.

Promoting clean energy alternatives

Access to clean energy such as solar, electricity and Liquefied Petroleum Gas (LPG) remains generally low (two percent) among Uganda's population. Logistical, technical challenges and limited awareness are some of the noticeable constraints. To support Uganda ensure universal access to clean energy, in line with SDG seven, the project will support initiatives to promote and create awareness about clean energy alternatives. Interventions will include supporting policy dialogues, conducting awareness campaigns and studies to generate knowledge and evidence to promote clean energy.

Enhanced coordination of players in the charcoal value chain

Multiple sectors are linked to the charcoal value chain, including forestry, energy, transport and local government administration. The core agencies are Ministry of Water and Environment and the Ministry of Energy and Mineral Development (MEMD). However, limited coordination among government agencies creates avenues for illegalities and malpractices in collection of revenues at both central and local government levels, resulting in significant loss of revenue to the government. UNDP estimates that the Government of Uganda loses up to USD 72.7 million in foregone taxes and licensing fees from charcoal production and trade. Cross-sector planning, collaboration and communication between the regulatory agencies for coordinated policy design and implementation will be vital for developing a sustainable charcoal regulatory system. Through MEMD, the project will support regular convening of inter-ministerial steering committee meetings to discuss and coordinate activities to improve the charcoal value chain.

The project's climate change mitigation potential

Through various activities such as promoting improved, more efficient charcoal production technologies and supporting establishment of wood energy plantations, the project is estimated to contribute to reduction of up to 2million tonnes of carbon (tCO₂-e) as GHG emissions. The highest GHG reduction benefits of the project would accrue from introduction of improved, more efficient charcoal production kilns, resulting in lower overall emissions and forest degradation. Other significant sources of mitigation are linked to the establishment of wood energy plantations.

Geographical coverage

The project is implement in 14 districts across in Uganda, namely: Adjumani, Yumbe, Obongi, Moyo, Amuru, Nwoya, Gulu, Kitgum, Lamwo, Kassanda, Kiboga, Luwero, Mubende and Nakaseke.

Environment Ministry champions sustainable charcoal value chain

Biomass is the main source of energy in Uganda. According to the National Charcoal Survey 2016, released by the Ministry of Energy and Mineral Development, wood fuel accounts for about 80 percent, charcoal 10 percent and crop residues four percent, with 9 out of 10 households using either firewood or charcoal for cooking. Firewood and crop residues are mainly consumed in rural areas while charcoal is consumed in urban areas. The demand for charcoal in Uganda is increasing rapidly at an annual rate of 3.3 percent (MEMD, 2020) as the national population increases. With the high rate of urbanization, rapidly increasing population and high cost of using electricity, especially for cooking and heating purposes, charcoal will continue to be a significant source of energy in Uganda in the near future. 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 preferred fuel over firewood in urban areas.



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Furthermore, the charcoal subsector provides employment to a large number of semi-skilled and unskilled workers at different stages of production, transportation and distribution. Firewood and charcoal contribute about USD 48 million and USD 26.8 million respectively to Uganda's national economy annually. Despite this significant contribution to the economy and national energy supply, the subsector is characterized by low interest from investors, inadequate enforcement of regulations, poor organization of players, use of inefficient technologies, absence of standards and unsustainable production practices. The current charcoal production and trade regime is also largely uncontrolled and unregulated, leading to undesirable socio-economic and environmental effects.

The Forest Management and Sustainable Charcoal Value Chain project is therefore a timely intervention because it will promote adoption of less wasteful charcoal conversion technologies and encourage collaboration with local authorities to enhance regulation and monitoring of activities related to charcoal production. The project will also promote adoption of clean energy alternatives and work with the private sector to improve harvesting regimes that ensure availability and replenishing of feedstock for charcoal production. The Ministry of Water and Environment is grateful to the European Union for funding this important intervention and FAO for implementing it. The Ministry is grateful for the support of the European Union and FAO, which has significantly transformed the commercial forestry industry and is now focusing on the charcoal value chain, whose raw materials are derived mainly from forests. We are confident that this project will also help to increase awareness among the different stakeholders, about the vitality of a sustainable and green charcoal value chain.

With support from Global Environmental Fund, through its Green Charcoal project at UNDP, the Ministry has developed draft National Guidelines for Sustainable Charcoal Production, Storage, Transportation and Trade in Uganda. The Guidelines will help to harmonize the varied policies and legislation concerning the subsector. Some of the policies and laws concerning the charcoal subsector are the Uganda Forestry Policy, 2001, the Energy Policy for Uganda, 2002, the Renewable Energy Policy, 2006, the Uganda National Forestry and Tree Planting Act, 2003 and the East African Community Customs Management Act, 2004.

The guidelines will support actors in the charcoal value chain, interested persons and organizations to ensure sustainable production, trade and utilization of charcoal. However, these guidelines will have minimal impact if not actively applied. Their implementation requires a concerted effort from many partners, particularly those involved in the charcoal value chain. The Ministry therefore welcomes the European Union, FAO, the Ministry of Energy and Mineral Development, development partners and donors, to support the completion of the draft Guidelines for charcoal production, transportation and distribution.

Charles Byaruhanga
Ministry of Water and Environment

Ministry of Energy and Mineral Development leads efforts towards adoption of clean energy

Over 88 percent of Uganda's population relies on solid biomass (charcoal, firewood and crop residues) as their primary source of energy. The demand for solid biomass is attributed to technological and logistical challenges associated with cleaner energy alternatives such as electricity, LPG and liquid biofuels. Therefore, solid biomass fuels will continue to be the main source of energy for cooking for many Ugandans in the short to medium term. In spite of the central role played by solid biomass in meeting the country's energy needs and its contribution to the national economy, its development and sustainability has not been prioritized. As a result, solid biomass has become a non-renewable source of energy. For example, the National Charcoal Survey for Uganda, 2015 indicates that whereas annual demand for charcoal was 1.8 million metric tonnes, 2.1 million metric tonnes was being produced annually. With increased urbanization and population growth, demand for charcoal was projected to be 2.1 million in 2020. With recurrent challenges such as lack of dedicated woodlots for energy crops, poor data management and planning, non-efficient technologies at production and utilization of wood fuels, poor adherence to existing standards, inadequate legal and regulatory framework especially at local governments, it is not expected that feedstock for charcoal production will be available in the long run.



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MEMD's position on the potential of solid biomass fuels to contribute to Uganda's energy development

Biomass is a diverse resource and is easy to harness because unlike some other forms of renewable energy, it is not site specific. Fortunately, Uganda has a comparative advantage in harnessing this resource because the soils and climatic conditions provide excellent growth conditions. Uganda's energy mix is dominated by biomass in the form of firewood, charcoal and wastes and these account for 87.8 percent of the total energy consumed ([Energy Balance, 2021](#)). The demand for biomass energy is growing on account of the population and urbanization rates. Biomass is projected to be the main form of energy used in Uganda within the short to medium term and hence plays a significant role in the energy sector. Biomass is a major source of livelihood for over 3 000 Ugandans involved in the production and trade of resources such as charcoal. In addition, the charcoal sector is estimated to have an annual turnover of UGX 1.2 trillion annually (USD 333 million). Therefore, planning for biomass is critical for the social economic development of Uganda.

Biomass is used in all sectors of the economy, and more importantly, close to 100 percent of rural households and 98 percent of urban households use biomass energy for cooking. It is used for industrial heating and also electricity generation (8.7 percent of Uganda's installed capacity). The over dependence on biomass to meet the country's energy needs has exerted immense pressure on natural and private forests and woodlands and this is eating into the country's natural stocks, setting a dangerous precedent for deforestation, environmental stability and indeed energy production in general. Furthermore, the use of three-stone fires and metallic charcoal stoves for cooking causes indoor air pollution that leads to respiratory illnesses among women and children. The management of biomass resources is therefore necessary to ensure its sustainable use.

The ministry's plan to harness the role of biomass fuels as renewable energy

Solid Biomass fuels are regarded as renewable fuels that provide the energy needed for cooking in households and institutions as well as heat needed in industrial processing and the brick making industry. The ministry's plan, therefore, is to promote the sustainable use of biomass, while reducing the over-dependence on this wood resource through promoting other alternative sources of energy.

The ministry, together with its partners such as FAO, is promoting the increase in biomass supply through initiatives such as the establishment of bioenergy woodlots with species such as bamboo, eucalyptus and other agroforestry species. The ministry is also exploiting, in conjunction with Uganda Wildlife Authority, the use of invasive species in game parks and reserves, forests as feedstock for briquettes and pellets production.

The ministry is also promoting the use of alternatives to wood and charcoal, such as pellets and briquettes from forest and agrowaste, biogas and Liquefied Petroleum Gas (LPG) for cooking and industrial heating. The ministry is also advancing the use of electricity for cooking (e-cooking) through the development of an e-cooking strategy and growing the supply chain of e-cooking appliances.

The Ministry is promoting private sector involvement in the biomass energy sector through the creation of a clean cooking fund that will provide seed financing (start-up capital) under Uganda Energy Capitalization Company Limited (UECCC).

Improved policy and coordination of actors in the biomass value chain through the National Renewable Energy Platform and Interministerial Committee on Clean Cooking. The ministry is also piloting the mainstreaming of energy services in district local governments in Lango and West Nile subregions for improved biomass management.

The project complements the ministry’s plans for developing and improving management of solid biomass fuels such as charcoal

The Charcoal Value Chain project is scaling up the use of casamance kilns for charcoal production (efficiency of 26 percent) against the prevalent traditional earth mound kiln (efficiency of 8 percent). This implies that for the same amount of wood, one can produce thrice the amount of charcoal. Under the project, trials will be conducted to further improve the performance of the casamance and pilot new efficient charcoal production models.

The project will also support the establishment of a labelling and certification scheme for sustainably produced charcoal according to national standards and best practices of charcoal production. The project will also support the development of a monitoring, reporting and verification mechanism for the charcoal value chain given that charcoal production is a main source of methane emissions in the energy sector. This will support the ministry to set up a system of periodic data collection and reporting of emissions accruing from the charcoal value chain.

The project is promoting an enabling environment for sustainable charcoal production through establishment of charcoal ordinances to regulate its production at the district local government level and will strengthen the charcoal associations with organizational and business skills in charcoal trade. The project will also provide a technical officer to strengthen the secretariat of the Uganda National Charcoal Traders Association to promote self-regulation in the charcoal industry.

The project will also support the production and use of briquettes as an alternative to charcoal production, through supporting at least five women and youth owned briquette producers to acquire the standards mark for their products.

Key challenges along the charcoal value chain and interventions and plans to better manage the sub-sector in Uganda

The key challenges in the charcoal value chain include the lack of reliable and up-to date data on charcoal production and consumption which is a barrier to proper planning at the national and district levels. There is also a weak regulatory framework at the national and local government level for charcoal management. This is causing over-harvesting of wood beyond the allowable levels and leakage of charcoal into neighbouring countries. There is uncoordinated planning between the Ministries of Energy and Mineral Development, Water and Environment and Local Government who are responsible for managing charcoal as a resource. The planned interventions therefore include improving the coordination between Ministries responsible for management charcoal and development of national regulations and charcoal ordinances for the regulation of charcoal production and consumption.

Brian E. Isabirye
Ministry of Energy and Mineral Development

Project launch, steering committee advance case for greening charcoal value chain

The inaugural project steering committee meeting was held in Gulu District in November 2021. During the meeting, stakeholders pledged to tackle deforestation and forest degradation by addressing irregularities in charcoal production, a major cause of deforestation and land degradation in Uganda, where about 90 per cent of the population depends on biomass energy.

Alfred Okot Okidi- Permanent Secretary of the Ministry of Water and Environment (MWE), called for enhanced governance and awareness creation about sustainable charcoal production. He noted that greater sensitization and increased use of improved conversion efficiency kilns for charcoal production would result in a significantly lower wood biomass demand from woodlands, for charcoal production.

“I appeal to local leaders, especially in Gulu City where illegal charcoal production is rampant, to increase their vigilance and take serious action or else all these efforts will come to naught”, he said.

Brian Isabirye- Commissioner for Renewable Energy at the Ministry of Energy and Mineral Development, commended the steering committee for providing the space to discuss sustainable management of energy resources, especially charcoal, which forms a major part of Uganda’s energy mix.

“Charcoal will be a major energy source in the short and medium term. We therefore have a learning and innovation platform that is already increasing awareness, knowledge and research about better technologies for charcoal production. We need local leaders, rural populations, national level actors and the private sector to work collectively to increase advocacy, governance, markets, research, data and finances to promote sustainable natural resources management in Uganda”, he said.

Members of the steering committee, who included officials from MWE, Ministry of Energy and Mineral Development, the European Union, Ministry of Finance, Planning and Economic Development and FAO, visited Kijani Forestry Limited- a social enterprise focused on combatting deforestation by promoting climate-smart agricultural practices among farmers in northern Uganda. Kijani Forestry is currently rolling out sustainable charcoal farming using innovative technologies such as improved charcoal production kilns (Casamance), supporting communities to plant trees for charcoal, building skills and capacity of the locals to restore the degraded woodlands.

The meeting was also attended by officials from Uganda Government agencies, Gulu District Local Government the European Union Delegation in Kampala and FAO. They included Tom Okello Obong- Executive Director of the National Forestry Authority, Gulu District Resident District Commissioner- Odong Latek Steven, Gulu Resident City Commissioner- Dennis Odongpiny and Christopher Opiyo Ateker- Gulu District Chairman.

In December 2021, Alfred Okot Okidi- Permanent Secretary, Ministry of Water and Environment, Caroline Adriaensen- Head of Cooperation at the European Union Delegation in Uganda and Priya Gujadhur- FAO Uganda Deputy Representative, officially launched the project. Okot Okidi commended FAO for implementing the project and urged more effort to protect the environment. The European Union’s Head of Cooperation reiterated the organization’s commitment to supporting sustainable forestry sector in Uganda.



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Steering committee members follow demonstration of charcoal burning using a casamance kiln.



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Alfred Okot Okidi (left)- Permanent Secretary, Ministry of Water and Environment launches the project.

District local governments embrace Sustainable Charcoal Value Chain project

Uganda District Local Governments (DLGs) in the districts where FAO is implementing the Forest Management and Sustainable Charcoal Value Chain project have shown great interest and overwhelming support for the intervention, which will transform environmental and socio-economic outcomes of the people. Through the project, FAO recognizes DLGs as critical partners in implementation of activities to green the charcoal value chain. DLGs are decentralized authorities responsible for coordinating and supporting government interventions, ensuring efficient and sustainable service delivery to the people, for socio-economic transformation. DLGs monitor and regulate activities related to forest management and charcoal production, especially on private lands, where most charcoal production happens.

Through a series of consultative meetings, district authorities provided input into project design, clarified roles and responsibilities for successful project implementation and discussed procedures for selecting project beneficiaries. District Forest Officers (DFOs), for instance, will endorse applications of those interested in receiving grants for sustainable woodland harvesting.

Speaking at a meeting in March 2022, Solomon Semujju, DFO of Nakaseke District commended FAO for the intervention. He appealed for a close working relationship and increased awareness about the project, to empower the people.

According to Zainabu Kakungulu- Programme Officer at FAO, the DFOs will also take part in awareness activities, join FAO to verify sites of applicants, participate in training of project beneficiaries and engage in joint monitoring missions.

In May 2022, FAO and the DLGs of the participating 14 districts embarked on a sensitization campaign and meetings with local authorities, to enhance project awareness and procedures for financial and technical support. FAO is confident that this partnership will be a winning formula for creating lasting change in the forest and charcoal value chain in Uganda.



FAO staff and the District Forest Officer of Gulu District during a sensitization talk show on Mega FM, Gulu.

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FAO staff making a presentation to subcounty staff of Moyo District Local Government.

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Vallence Turyamureba, Nelly Bedijo and Andrew Akasiibayo from FAO joined by Ovuga Haruna, Yumbe District Forest Guard and FAO, on Ribat FM, Yumbe District.

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Views from District Forest Officers



©Courtesy

Kiboga is experiencing great demand and low supply for forest products, timber and wood for charcoal burning, resulting in rampant deforestation and illegal harvesting. I believe that this intervention will help us increase our wood fuel resources, rehabilitate some of the degraded existing woodlands and assist the people to adopt better technology for charcoal burning. The district has technical staff that are ready to work alongside FAO and partners, and our charcoal ordinance, which will regulate the business, is due for approval. Furthermore, Kiboga District has communities and associations involved in tree planting and charcoal production, for example Kyamukyuya Community Tree Planting Group, that are ready to embrace this intervention.

Margeret Nanyonga
District Forest Officer, Kiboga District



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Adjumani's landscape is about 31 000 square kilometers, with a forest cover accounting for about 25 percent of this land area. We have one state forest – Zoka forest and many private natural forests and woodlands. But as the district local government, it is not so easy to manage the use and rehabilitation of private forests in order to control the rampant deforestation. Furthermore, the district has a growing population, with a big number of refugees, all of whom heavily rely on the existing woodlands for firewood and charcoal for energy. Charcoal from Adjumani District is sold mainly in Kampala and neighbouring districts and there is no shortage in demand.

This intervention will therefore help us to identify and work with the owners and users of private woodlands that are suitable for sustainable harvesting for charcoal, hence fostering production today and in the future.

Francis Ojja
District Forest Officer, Adjumani District



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Kitgum District is privileged to be one of the beneficiaries of this project. For years, we have suffered the effects of rampant deforestation of existing woodlands for charcoal production. Utilization of these natural resources has been haphazard and charcoal production has been going on in "the wilderness". Through this project, the people of Kitgum will move away from producing charcoal in a *laissez-faire* manner, to establishing and maintaining bioenergy woodlands, on farm, where it will be easier for the authorities and regulators to monitor and support good practices for sustainability.

The project will also help us to gradually abandon the wasteful traditional charcoal burning method using the earth-mounds and adopt improved technology, particularly the casamance kiln. However, the casamance is suited to production of small production quantities and we hope that future interventions will encourage investment in commercial-scale technologies, to match available wood supply.

The District has the political and technical readiness to make this intervention a success. We have a charcoal ordinance (since 2019) to regulate charcoal production and so this project will help us to identify the entities involved in charcoal production in Kitgum, which was difficult before. We shall then only issue charcoal production licenses to those using sustainable processes like using improved technology and with known sustainable wood sources.

Martin Anywar
District Forest Officer, Kitgum District

One thousand apply for grant support for forest management and improved charcoal value chain

In response to FAO's call for individuals, associations and organizations to submit expressions of interest for grants and technical assistance towards forest management and sustainable charcoal value chain, more than 1 000 applications were received, physically and online. Submissions were made for support in four interventions of the project, namely: 1- sustainable woodland harvesting and management, 2- establishment of woodlots for charcoal production, 3- rehabilitation of degraded natural forests and 4- acquisition of improved charcoal kilns (casamance). Applicants were from the 14 project intervention districts: Mubende, Kassanda, Kiboga, Nakaseke, Luwero, Nwoya, Amuru, Gulu, Lamwo, Kitgum, Adjumani, Obongi, Moyo and Yumbe. A radio sensitization campaign carried out in each of these districts contributed to increasing the potential applicants understanding of the project, application requirements and the different interventions, hence the high number of applications. After preliminary evaluation, 924 applications were considered for site inspection, to confirm the physical presence of the woodlands and areas in the applications. Of these 924 applicants, 412 were females and youths, constituting 46 percent.

The northern region had the highest number of applications across all intervention areas, with 48 percent of all submissions. The high level of submissions is an indication of high level of degradation and also because the northern region has the highest level of charcoal production in Uganda.

After a successful month of on-site assessments in all the districts, the project team will conduct a meeting with all successful applicants, to support their signing of contractual agreements ahead of implementing the interventions and receiving grant and technical support.

Below is a summary of submissions:

INTERVENTION	NO. OF SUCCESSFUL APPLICANTS	TOTAL LAND AREA (HECTARES)
Grant support for sustainable woodland harvesting and management	62	5 319
Grant support for establishment of woodlots for charcoal production	242 (small scale)	12 880
468 (medium scale)	70	2 020
Grant support for rehabilitation of degraded natural forests	60	118 kilns



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A female charcoal producer stands next to bags of charcoal from her business in Yumbe District.



© FAO/ Max Oloya

FAO staff Vallenge Turyamureba and Nelly Grace Bedijo during a site inspection in Adjumani.

Beneficiaries' agreement signing and sensitization meetings firm-up collaboration for sustainable charcoal value chain



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Nelson Kabanda (left)- GIS Expert at FAO, guides one of the beneficiaries during agreement signing in Kampala.

After the successful selection of suitable beneficiaries out of 1 000 applications received for support under the Forest Management and Sustainable Charcoal Value Chain project, the project organized a series of meetings with the beneficiaries, ahead of signing contractual agreements to formalize their collaboration with FAO.

In November, the 2022 round of meetings was held in Kampala, Gulu, Yumbe, Moyo, Adjumani, Kitgum, Mubende and Kassanda (virtually) Districts, for prospective beneficiaries of the component: Establishment of wood energy plantations. Through this component, FAO will support small and medium-scale private sector actors and communities to establish wood energy plantations of relatively fast maturing, high-calorific (have high amounts of energy released as heat) tree species for charcoal production. The project target is to subsidize the establishment of 1 800 hectares (ha) to contribute to a critical mass of a wood energy resource and subsequently ease pressure on the natural woodlands that are currently the major source of wood for charcoal production.

The meetings, therefore, served to clarify the roles of prospective beneficiaries and FAO, and appraise beneficiaries on the method of implementation of the grant support (retrospective financial contribution and on-site routine technical assistance and training) as well as the recommended forest establishment standards. Adherence to the latter is a prerequisite for payment of the financial contribution from FAO.

Speaking at the meeting in Gulu District, Christopher Opiyo- Gulu District Chairman and a beneficiary, said he applied to participate and become an example to the community, after realizing that the rate of forest destruction in the district was escalating.

“Since I assumed office, Gulu District has been a highway for charcoal business. This has now reduced from 60 percent to 45 percent; but, we are still struggling to eliminate the illegalities in charcoal production in the district”, he said.

Patrick Musasizi- District Natural Resources Officer of Kiboga District, called on the project implementers to help tree growers to make bankable business plans that can support their forest investments and help them reap the intended benefits. He also cautioned beneficiaries to ensure timely planting and adhere to recommended standards.

Committed to greening the charcoal value chain

Through the project, FAO will also support a charcoal certification initiative that would pave way for the export of charcoal to regional and international markets. Additional support will be in form of the development of charcoal ordinances for districts currently having none, to reinforce the regulation of charcoal production.

Speaking at the meeting in Kampala on 15 November, Zainab Kakungulu- Programme Officer at FAO said that the project will encourage charcoal producers to adopt better production techniques and improve the business environment for charcoal producers, helping them to legitimize the charcoal production business. Promoting certification of charcoal and briquettes will help to strengthen charcoal associations and raise consumer awareness to identify and prefer the purchase of sustainably produced charcoal. Kakungulu made a presentation on the recommended tree species and advised beneficiaries to follow their forest management plans to ensure they comply with the grant support requirements.

Beneficiaries speak out

Moses Onono, an environment activist from Gulu District opined that the intervention will encourage the local population to invest in tree growing. He appealed to the project to empower the contracted tree farmers with the skills to raise their own seedlings. He noted that many commercial nursery operators are expensive and subpar, which could affect the quality of plantations. He also urged the project to link the farmers to international markets.



Some of the participants at the meeting in Kampala.

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Rose Margaret Opeli- the Executive Director of Nutrifarm, a community-based organization in Adjumani District and is one of the contracted beneficiaries of the project, noted that with the high rate of charcoal burning in Adjumani District, the intervention is timely and will help in regenerating the depleted forests. She said that the rampant destruction of trees for charcoal production prompted Nutrifarm to promote tree growing. She noted that her enterprise is committed to helping to mitigate the negative social and economic impacts of charcoal burning caused by the increased demands locally and internationally.

According to Robert Komakech from Amuru District, as the project kicks off, it is crucial to use research to advise on the most suitable charcoal tree species that produce the best charcoal for both local and international markets.



©FAO/ Marko Taibot

A beneficiary of the woodlot support speaks during the sensitization meeting in Gulu City.

Steps for a successful forest plantation/woodlot

1. Site selection/ Site-species matching: Match the species to the location for tree planting, ensure deep, well-drained and fertile soils, and avoid wetlands
2. Plant trees species that can be used for charcoal production e.g. bamboo species *Oxytenanthera abyssinica* and *Bambusa vulgaris*, *Eucalyptus camaldulensis* and Eucalyptus hybrid clones, *Albizia coriaria* (Mugavu), *Azadirachta indica* (Neem tree) and *Senna siamea* (kasiya).
3. Land clearing and preparation: Ensure that residual stumps are lower than 20cm and the correct spacing of 2m x 2m and pit depth are used.
4. Planting material: Use quality and healthy seedlings/cuttings should for active growth. After one month, replace all dead seedlings (beating up)
5. Protect seedlings and trees from pests, disease and fire
6. Seek professional advice from FAO, District Forest Office or District Natural Resources Office

Ministries receive mobility and IT equipment to facilitate charcoal value chain work

In October 2022, the Ministry of Water and Environment (MWE) and the Ministry of Energy and Mineral Development (MEMD) received motor vehicles, motorbikes and laptops to support activities of the Forest Management and Sustainable Charcoal Value Chain project, for which the two ministries are counterpart implementers on behalf of the Government of the Republic of Uganda.

Priya Gujadhur- FAO's Deputy Representative, handed over five vehicles to representatives from the two ministries, thanking them for being "excellent partners of FAO". She reiterated FAO's commitment to supporting the forestry subsector in Uganda and greening the charcoal value chain.

The mobility and IT equipment were donated under the framework of the European Union (EU)-funded Sawlog Production Grant Scheme (SPGS) III and the Forest Management and Sustainable Charcoal Value Chain project, also funded by the European Union.

Charles Byaruhanga- Acting Commissioner for Forestry at MWE, appreciated FAO for the support and pledged the Ministry's prudent use of the items for sustainability of the project.

On behalf of MEMD, Justine Akumu, Energy Officer in the Renewable Energy Department, noted that the items will facilitate and help to improve field work, data collection and interaction with those involved in charcoal production and trade.



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Forest Management and Sustainable Charcoal Value Chain project to offset 2 million tonnes of carbon



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Ecosystems are critical in the global carbon cycle; absorbing atmospheric carbon dioxide and delaying the effects of climate change. Forests contribute to a carbon balance – the net result of carbon uptake by photosynthesis and losses by respiration. As an initiative that will encourage tree growing and adoption of modern and more environmentally friendly charcoal production methods, it is projected that the forest management and sustainable charcoal value chain project will offset about 2 million tonnes of carbon dioxide equivalent over a 20-year period. This analysis was conducted using the EX- Ante Carbon-balance Tool (EX-ACT) used for estimating and tracking GHG flux inventories for Agriculture Forestry and Land Use Change (AFOLU) interventions. The tool is based on the 2016 Intergovernmental Panel on Climate Change (IPCC) Methodology for monitoring and reporting Greenhouse Gas Emissions (GHG).

To promote the tool, FAO organized consultative and training sessions in GHG reporting, with key stakeholders. The meetings helped to enhance understanding of institutional arrangements related to GHG reporting and align the project's reporting tool to the existing national tool. Meeting participants included officials from Ministry of Energy and Mineral Development (MEMD), Ministry of Water and Environment's Climate Change Department (CCD) and Forest Sector Support Department, as well as National Forest Authority (NFA) and District Local Government.

Wood energy plantations have potential to relieve pressure on natural forests and woodlands as energy sources

According to Uganda's Draft National Energy Policy, biomass energy (derived from firewood, charcoal and crop residues) accounts for 88 percent of the country's total energy consumption. Furthermore, the total annual demand for wood fuel is about 53 million tonnes, exceeding the sustainable annual supply of 26 million tonnes. This is expected to increase at an annual rate of 4.2 percent due to population growth and rapid urbanization. Extreme dependency on wood biomass is exerting a lot of pressure on forest resulting into deforestation and forest degradation.

Whereas plantations have the potential to supply wood for charcoal production, planting trees dedicated for wood energy is limited. This is partly because Uganda has for long enjoyed sufficient wood resource from natural forests and woodlands. Nevertheless, this resource is dwindling and dedicated wood energy plantations are needed urgently. Investment in forest plantations, even those dedicated for wood energy, is costly for many small holders (average cost is UGX 2 700 000/ USD 720 to establish and maintain one hectare of plantation for about two years), with a relatively long rotation period (five to eight years). As a result, investment in plantations seems like an unattractive business venture.

To encourage investment in wood energy plantations, FAO will provide technical input and financial assistance in the form of grants to subsidize establishment of 1 800 hectares of wood energy plantations (woodlots) by communities as well as small and medium scale private sector land owners. The subsidy will be a matching grant and therefore prospective recipients must be willing and capable to investment in plantation establishment. Although these woodlots will not have reached maturity within the duration of the project, it is expected that they will provide a future wood resource for charcoal production and consequently reduce reliance on natural forests.



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Gmelina arborea /white teak /Oywelo munu woodlot in Kotido District, established with support from FAO.

Based on recommendations by several studies, the project has carefully selected suitable tree species, particularly those with high calorific value, fast growth, high yields and can perform well in plantation settings. Below is a table of the wood energy species to be promoted by the project.

SCIENTIFIC NAME	COMMON/LOCAL NAME	ACHOLI LOCAL NAME
<i>Albizia coriaria</i>	Mugavu	Ayek ayek
<i>Azadirachta indica</i>	Neem tree	Neem
<i>Gmelina arborea</i>	Gmelina (White teak)	Oywelo gwok
<i>Grevillea robusta</i>	Grevillea (Silver oak)	Grivelia
<i>Markhemia lutea</i>	Musambya	Sambya
<i>Melia azedarach</i>	Giant Lira	Lira
<i>Melia volkensii</i>	Giant Lira	Lira munu
<i>Senna siamea</i>	Cassia omuzungu	Casia
<i>Eucalyptus camaldulensis</i>	Kalitunsi	Kalatuc ma tar
<i>Eucalyptus hybrid clones</i>	Kalitunsi	Kalatuc ma ki kubu/ Kalatuc akuba
<i>Corymbia citrodora</i>	Kalitunsi	kalatuc ma bote ngwee calo ngwec lemun
<i>Corymbia maculate</i>	Kalitunsi	Kalatuc
<i>Bambusa vulgaris</i>	Bamboo	Kor
<i>Dendrocalamus asper</i>	Bamboo	Kor
<i>Oxytenanthera abyssinica</i>	Bamboo	Kor
<i>Terminali brownie</i>	Museta (Runyoro/Rutoro)	Opok

Silvicultural aspects

During the establishment phase, it is critical to care for the young trees, for successful establishment of woodlots. Success factor to consider are planning, choice of tree species, seed or seedling quality, spacing, correct planting, timing of operations, initial weed control and forest protection.

International Day of Forests shines spotlight on sustainable energy production

Every year on 21 March, FAO joins the rest of the world to commemorate International Day of Forests (IDF). This year's theme was "Forests and sustainable production and consumption: Choose sustainable wood for people and the planet". To commemorate the day (part of celebrations for Uganda Water and Environment Week), FAO, the European Union and Embassy of Sweden in Kampala organized a field mission to some of the districts where the three agencies are supporting interventions to promote adoption of clean energy and sustainable forest management.

The mission also aimed to increase awareness of the media fraternity, about the different interventions to protect the environment. Under the Forest Management and Sustainable Charcoal Value Chain project, the mission visited Adjumani district. Richard Kaijuka- Adjumani District Vice Chairperson expressed gratitude that Adjumani was selected to benefit from the project. He pledged the district's support to the project's success.

"We are grateful for this project because tree cutting for charcoal is rampant in Adjumani, particularly in Pakelle and Adobi subcounties, where people are migrating to and clearing land for farming. I believe that this project will

help us to restore our degraded forests, protect our existing forests and together, ensure that our ordinances are effective and can foster sustainable environment", he said.

He noted that Adjumani district has ordinances that guide charcoal production but awareness creation and enforcement are weak.

During the mission, Bashir Nkono, a charcoal producer who migrated from Buyende District in eastern Uganda to Pakelle subcounty in Adjumani District, regretted that although his line of business and source of income is charcoal production and marketing, the techniques he and his associates use to source wood and burn charcoal are detrimental to the environment.

"We rent land in areas where we identify suitable trees for charcoal production. We then pile the trees and create a mound with soil and grass, under which we place fire to make a furnace that burns the wood into charcoal. But this method emits a lot of smoke and sometimes the charcoal produced is poor", he says.

However, we are interested in learning from FAO and adopting modern methods that can give us quality charcoal and will be less of a nuisance to the environment



Vallence Turyamureba- Programme Assistant at FAO, points at an earth-mound kiln in Adjumani District.



Vianney Aryatusasira (left)- Plantation Manager at Besepo Limited, talks about the biomass briquettes.

and the people in surrounding areas”, he adds. Currently, Nkono produces about 150 bags of charcoal from trees sourced in one acre of forest. Nkono and his fellow businesspersons involved in wood conversion for charcoal have made strides to protect their businesses, including possessing identification cards recognised by the district, for charcoal producers and traders. Through the intervention, FAO will encourage formation of and strengthening on associations of charcoal producers, grading of charcoal and better sourcing of wood to improve the charcoal value chain.

Biomass briquettes: diamond in the rough

The national celebrations were held at Besepo Limited, Mubende District. The company is involved in commercial forestry, timber business and briquette making. Under the leadership of its Chief Executive- Ponsiano Besesa, the company is a pioneer investor in commercial tree growing in Uganda, supported the European Union, through the Sawlog Production Grant Scheme (SPGS). Besesa conceived the briquette making factory idea after noticing that during tree harvesting, only 35 percent of the tree is utilized and the rest wasted.

To make the briquettes, the company uses off-cuts and other “waste” from trees harvested from his 1 200 hectare pine and Eucalyptus plantation, planted in 2004, in Kasana-Kasambya in Mubende District. He also uses timber rejects or sawdust, which he collects from as far as Kampala. The raw materials are fed into a crushing machine, which turns the tree waste into sawdust, which is dried in a kiln and compacted into uniform solid briquettes. The briquettes are packaged into 50kg poly sacks, ready for the market. Besepo Limited sells the briquettes to big prisons and schools but the uptake is still low. According to Besesa, the main hindrance to Ugandans embracing briquettes in their homes and factories is the absence of special facilities

like energy saving cook stoves. Besepo Limited’s factory comprises two lines that can produce at least five tonnes of briquettes per hour. The briquettes save energy and forests in the long run.

During the national celebrations in Mubende, Antonio Querido- FAO Representative in Uganda thanked the Government of Uganda through the Ministry of Water and Environment, the Ministry of Energy and Mineral Development, the European Union and the Embassy of Sweden for bringing forestry and sustainable energy to the fore of the development discourse. At the same event, youth groups led by Youth Go Green, made a declaration to plant 20 million trees by 2030 and reduce deforestation through campaigns, education, and tree planting initiatives.





Enhancing the role of women in greening the charcoal value chain

Although both men and women are involved in various nodes of the charcoal value chain, there are clearly defined roles and responsibilities. Men are predominantly engaged in activities that generate higher monetary benefits; while women are primarily involved in activities with very low economic returns.

FAO conducted a gender analysis to identify gender gaps in the charcoal value chain. Results of this study informed strategies to minimize gender gaps and mobilize women and youth participation in the project.

Study findings highlighted significant gender gaps; with men dominating the key value chain segments/nodes; particularly feed stock production (owners of wood resource and land), charcoal production (conversion of wood to charcoal) as well as transport and wholesale trade. Women (over 90 percent of actors) were majorly involved in retail trade. In all other segments, women form less than 20 percent of the actors playing different roles. Relatedly, there's a high level of disparity in terms of benefits derived at the various nodes/segments of the value chain, with men deriving higher benefits from their operations, compared to women. In the districts sampled, men had higher access to and control rights over required resources such as land, finances, time and technologies. As a result, unlike men, women are constrained from engaging in the different segments of the value chain that derive higher benefits. For instance, women's participation is generally constrained in tree planting because it requires larger parcels of land.

Women are also constrained in charcoal production processes, which require travelling long distances in search of feedstock, and spending about two to three weeks in the forest during the process of carbonizing wood to charcoal, at the expense of their domestic responsibilities. It is therefore no wonder that most women prefer engaging in retail trade/charcoal vending. They can do this activity in the vicinity of their homesteads or near the homestead, despite retail trade being less profitable than other nodes of the charcoal value chain.

Project affirmative action for women and youth

Informed by the findings of the gender analysis, the project developed a gender action plan, including an affirmative action policy for women and youth, to enable their meaningful participation in and benefit from the project. The affirmative action policy includes requirement of a minimum area of two hectares (ha) to benefit from the tree planting support (other applicants must have at least 5 hectares).

Unlike other applicants who will contribute UGX 200 000 towards acquiring the improved casamance charcoal production kilns, women will contribute half the cost (UGX 100 000). The project activity for subsidizing LPG kits will be exclusively for women, particularly in Luwero and Arua Districts. Through the Ministry of Energy and Mineral Development, women groups involved in briquette production will receive training and technical support to enhance their product and market development. Overall, the project targets 50 percent participation of women in all project activities, with special emphasis on capacity development.

Greening the humanitarian response through access to clean energy

FAO, in partnership with private renewable energy development company- Mandulis Energy, and with funding from Innovation Norway, is implementing a two-year project on greening the humanitarian response by promoting access to sustainable and affordable energy solutions. The project is providing 7 500 refugees and host community households in Kiryandongo and Lamwo Districts in Uganda with cash vouchers to enable them access biomass briquettes for cooking. The vouchers give the beneficiaries 30 percent discount on purchase of a kilo of briquettes, making the latter affordable and increasing the users' awareness of the technology and its associated benefits. Vouchers can be redeemed at biomass briquettes retail points that have been created within the refugee settlements and host communities. Additionally, 7 500 beneficiaries will receive improved biomass cook stoves to substitute the traditional three-stone cook stoves that majority of the beneficiaries use for cooking.

Through the Farmer Field Schools network, this intervention is helping to increase awareness about the importance of using biomass briquettes and improved cook stoves to curb environmental degradation and climate change resulting from over exploitation of woodlands and forests for energy forms like firewood.

Access to sustainable and affordable energy solutions like briquettes is reducing the negative impacts the traditional



Women carry bags of biomass briquettes for cooking, received from FAO.



Some of the improved biomass cook stoves.

cooking solutions on users' health and the health of the environment. Women now have more time to engage in more productive activities such as farming and operating small businesses while children especially girls will have time to play, due to the time saved from collecting firewood.

Through Mandulis Energy, the intervention will also support establishment of four multipurpose collection hubs in Kiryandongo and Lamwo Districts, where beneficiaries can access crop milling, threshing and drying services powered by solar equipment.

SOME FACTS ABOUT UGANDA'S CHARCOAL VALUE CHAIN

1. To illustrate its economic value, many traders in Kampala refer to charcoal as "black gold".
2. Charcoal is an important source of energy, especially for cooking, for 65 percent of urban households. Many urban households consider it a reliable, convenient and accessible source of cooking fuel available at a stable price.
3. Charcoal demand in Uganda is growing at yearly rate of +6 percent. However, without interventions to green the charcoal value chain, forecasts reveal that charcoal production will significantly contribute to depletion of forest resources by 2050.
4. Demand for charcoal is about 2.3 million tonnes annually and could increase at a rate of 4.2 percent annually.
5. Unsustainable charcoal production practices and technologies are among the key causes of deforestation and forest degradation.
6. In Uganda, like in many other countries in the region, charcoal production is mainly undertaken by rural populations (individuals or unorganized group) and overall the sector employs over 20 000 people.
7. Greenhouse Gas (GHG) emissions from the charcoal value chain account for 6.7 percent of national GHG emissions. By 2030, emissions from the charcoal value chain may account for up to 35 percent of Uganda's total GHG emissions if no action is taken to improve the charcoal value chain.
8. Government of Uganda loses up to USD 72.7 million in foregone taxes and licensing fees from charcoal production and trade.

Source: [Nationally Appropriate Mitigation Action Study on Sustainable Charcoal in Uganda](#)



A charcoal retailer in Rubirizi District places a kettle on her charcoal stove. Charcoal is a preferred source of energy for the majority of households in Uganda.

Highlights from Uganda's renewable energy sector

Renewable Energy Conference 2022 and expo

The Ministry of Energy and Mineral Development (MEMD), through the National Renewable Energy Platform (NREP), organized the Renewable Energy Conference 2022 and expo, from 3 to 5 November 2022 at Kololo Independence Grounds.

The conference theme was: Renewable energy for sustainable industrialization, inclusive growth and economic recovery. It was attended by over 2 000 local and international stakeholders, including investors, innovators, researchers, manufacturers, development partners, government agencies, academia and the private sector.

NREP is a platform that brings together all renewable energy sector actors, from government (ministries, departments and agencies) and development partners to the private sector and civil society. NREP seeks to unify the sector, strengthen and sustain efforts and support coordination, planning, implementation and monitor developments to solve common challenges, harness opportunities and common goals to advance the sector. For more about NREP or the conference, please visit www.nrep.ug or www.re-conf.com.

Equity Bank Uganda launches equi-green loan financing for renewable clean technologies

Households, learning institutions and commercial enterprises are set to benefit from a new clean energy financing product at Equity Bank Uganda that will enable them to acquire clean energy technologies for lighting, cooking, and practicing climate-smart agriculture. The affordable financing facility dubbed Equi-Green Loan, with support

from the Uganda Energy Credit Capitalisation Company (UECCC), will enable low and middle-income households to access clean energy for lighting, cooking and climate-smart agriculture.

Equity Bank customers will be able to buy improved cooking systems, solar lighting and heating systems, irrigation systems and water storage tanks through affordable and simplified loan product that allows for instalment payments. An Equity customer can access loans from as low as UGX 200 000. The clean energy loan is available at all Equity Bank branches and a customer can pick the product from the nearest appointed Equi-Green Loan agent.

UNCDF's energy access work

In partnership with the Embassy of Sweden in Uganda, the UN Capital Development Fund (UNCDF) is managing the Renewable Energy Challenge Fund (RECF) in Uganda. RECF aims to fill in the "missing middle" in renewable energy SME financing by investing in early stage, high-risk ideas to set energy SMEs on a pathway for larger, more commercial-oriented capital. Through RECF, UNCDF is working with energy companies and organizations in Uganda to increase access to clean energy alternatives such as LPG, through innovative financing mechanisms. Some of these small-medium size companies are helping to graduate a large population of Ugandans using wood and charcoal to LPG, which is clean and thermally efficient. Some companies have introduced technology to help customers acquire loans to access LPG throughout the country – reducing upfront costs and use customers' credit scores to acquire locally made efficient clean cook stoves. The cook stoves are bundled together with affordable solar home systems, which reduces the overall energy spend for customers.

UNCDF makes public and private finance work for the

poor in the world's 46 least developed countries (LDCs). UNCDF offers "last mile" finance models that unlock public and private resources, especially at the domestic level, to reduce poverty and support local economic development. Through RECF, UNCDF aims to improve access to clean energy finance for poor and low-income households. To date, the Programme has registered some of the following milestones: 566 salaried jobs created (43 percent women and 44 percent youth), 8 100 tonnes of briquettes sold, 1.49 million tonnes of carbon emissions offset and 4 200 000 people benefited from clean energy products.

Ministry of Energy and SNV launch project to commercialize the biodigester sector in Uganda

In June, the Ministry of Energy and Mineral Development (MEMD) and SNV Uganda launched the African Biodigester Component (ABC) project, a four-year intervention funded by the Netherlands Ministry of Foreign Affairs. Its aims at boosting access to bio-digesters for circular agriculture and renewable energy. The project will support installation of about 8 000 small-scale bio digesters across Uganda, providing energy access for at least 40 000 people.

While launching the project, Honorable Peter Lokeris- State Minister for Mineral Development, noted that the project would reinforce government's efforts to increase access to clean cooking while creating employment for Ugandans, as indicated in the National Development Plan (NDP) III targets.

The African Biodigester Component (ABC) consortium includes GIZ and Biogas Solutions Uganda Limited (BSUL), supported by the Netherlands Enterprise Agency (RVO). SNV is also implementing the following projects in the renewable energy sector: Inclusive Markets for Energy Efficiency in Uganda and Sustainable Energy for Smallholder Farmers.



Demonstrating the use of an improved kiln at Kijani Forestry in Gulu City.

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**BETTER
PRODUCTION**



**BETTER
NUTRITION**



**BETTER
ENVIRONMENT**



**BETTER
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