Materials for Public Consultation

Public Consultation on the Carbon Project and Stakeholders Engagement for the Sustainable Biogas Energy Access Carbon Programme in Rural Districts 'Uganda Biogas initiative - Empowering Communities and Schools for Sustainable Growth'

Introduction

In Uganda, the demand for sustainable energy solutions is urgent, particularly in rural areas where traditional cooking methods rely heavily on firewood and charcoal, causing significant environmental and health impacts. Currently, over 90% of Ugandan households use solid biomass as their primary cooking fuel, resulting in widespread deforestation, indoor air pollution, and greenhouse gas (GHG) emissions. This dependency on unsustainable fuels not only exposes millions, especially women and children, to harmful smoke, increasing the risk of respiratory diseases and other health issues, but also consumes substantial time and labour in gathering firewood. This limits economic and educational opportunities, particularly for women and girls. Addressing the need for sustainable cooking options aligns with the United Nations Sustainable Development Goals (UN SDGs) and supports climate change mitigation by reducing GHG emissions.

The impacts of traditional cooking methods extend beyond health concerns, affecting the environment, livelihoods, and education. Unsustainable firewood collection drives deforestation, exacerbating climate change and biodiversity loss. The time spent gathering fuel also reduces the opportunities for education and productive activities, especially among women and children, reinforcing cycles of poverty. Biogas technology, based on globally recognised sustainable energy standards, offers a solution to these challenges. Unlike firewood or charcoal, biogas provides a clean, renewable energy source derived from organic waste. Not only is it a safer alternative, but it is also highly sustainable, offering a dependable energy supply for cooking that could last decades.

In a country like Uganda, where farming is widespread and livestock production is common, biogas production aligns naturally with rural practices and meets international environmental standards. Farms and schools with livestock, plantations, and agricultural areas generate large amounts of organic waste, which releases methane—a potent greenhouse gas—during decomposition. Capturing this methane for biogas production offers a dual benefit: it turns waste into a valuable energy resource and mitigates methane emissions, reducing the carbon footprint and improving local air quality. This approach is recognised under methodologies for emissions reduction, as it directly addresses methane and CO2 emissions.

Developing carbon projects pose a significant opportunity to channel environmental financing to fund the deployment of biogas solutions in Uganda. By registering the activities to be carried out by EK as official carbon projects, it will be possible to issue carbon credits, carbon certificates, carbon offsets. These represent the right of the holder to claim the achievement of GHG reduction or removal equivalent to one metric ton of CO_2 and are utilized by corporations, institutions, and even individuals for their climate change mitigation claims.

By providing biogas systems that channel animal waste into digesters producing clean fuel, the carbon programme Uganda Biogas Initiative: Empowering Farmers and Schools for Sustainable Growth will reduce GHG emissions from unsustainable practices like wood-based cooking and methane release from manure.

This expansion will foster sustainable energy access, reduce deforestation, promote better health outcomes, enhance soil quality through nutrient-rich digestate, and significantly contribute to climate change mitigation. It will also create positive socio-economic changes, including opportunities for rural communities, improved health conditions for school staff and students.

The present material outlines the proposed plan to promote biogas systems across farms, schools, and communities in a comprehensive way. The goal is to establish a sustainable solution that, through the use of carbon finance, not only fulfils immediate energy needs but also contributes to broader environmental protection, community development, and agricultural resilience.

BioFarmers is responsible for all project executions with assistance of EK. BioFarmers EK is responsible for all communication and project development task for EK manages the development of carbon offset projects from inception to successful certification. EK ensures that each project meets regulatory requirements, optimizes carbon sequestration potential, and maximizes environmental impact.

A. Objectives of the Programme and Locations

The proposed biogas programme aims to collaborate with rural communities in Uganda to install biogas digesters that transform organic waste, such as agricultural residue and animal manure, into clean biogas for cooking, ii) support the maintenance and upkeep of these systems, ensuring long-term sustainability, iii) provide training to households and communities on using and managing biogas technology, iv) and raise awareness about the environmental and health benefits of biogas over traditional cooking fuels. This initiative seeks to provide a sustainable, local energy source for cooking, reduce methane emissions, reduce dependency on firewood, improve

indoor air quality, and mitigate deforestation, thereby promoting environmental conservation and better health outcomes for rural households.

1. *Stakeholder Consultation:*
    - Engage with relevant stakeholders through consultations to present and discuss the Uganda Biogas initiative.
    - Seek input, opinions, and insights from community members, local authorities, and other key stakeholders to ensure their active involvement in the biogas programme.
2. *Programme Development:*
    - Gather valuable input and feedback from stakeholders to inform the development of the Uganda Biogas initiative.
    - Utilize the gathered information to design a biogas programme that effectively addresses the specific energy needs and challenges faced by the community, promoting sustainable and clean energy access.
3. *Issue Evaluation and Mitigation:*
    - Conduct a thorough evaluation to identify potential issues or obstacles that may hinder the successful implementation of the Uganda Biogas initiative.
    - Develop strategies to mitigate identified challenges, ensuring a more seamless and effective execution of the Uganda Biogas initiative.

B. Date and Locations of Consultation Process

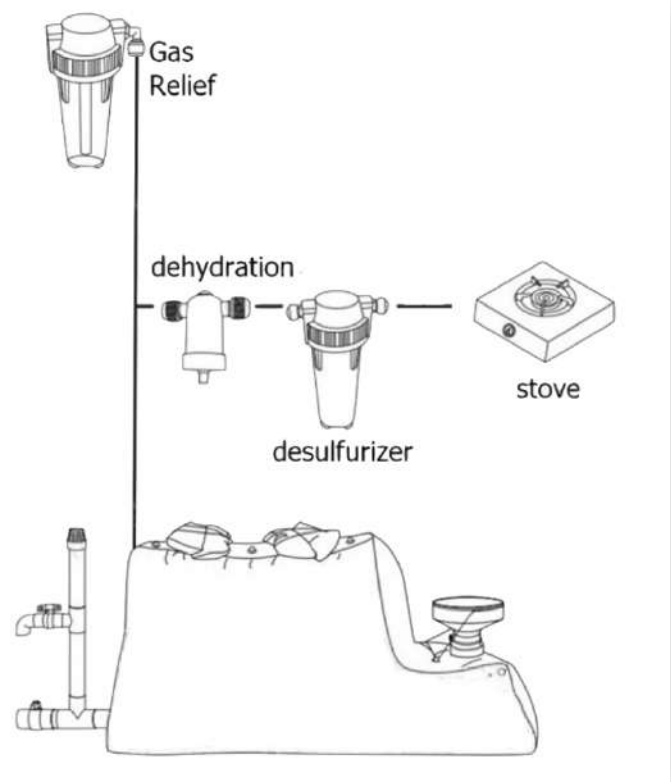
1. District Level in the District of Kamuli – December 19th 2024
    - 09:00 – 13:00 – Meeting with Local Government, Stakeholders, Community experts, Community Leaders, Schools, local NGO's and local Officials
2. Ground Level in the District of Jinja – December 19th 2024
    - 14:00 – 17:00 – Meeting with Stakeholders, Farmers, Communities, Schools, local NGO's and local Officials
3. National Level (Kampala) – December 20th 2024
    - 10:30 – 17:00 – Conference with National Officials, NGOs and Stakeholders

C. Description of Solution and Technologies

The provision of sustainable energy will be facilitated through the deployment of various types of biogas digesters, each tailored to meet specific environmental and infrastructural needs. These systems primarily include biogas digesters with flexible bags installed on hard soil, trench-based designs with dug-in bags, and more permanent structures constructed using cement. Each type of digester plays a significant role in converting organic waste into renewable energy while addressing unique challenges related to installation, durability, and maintenance. This approach ensures a sustainable and efficient solution to energy generation that can be adapted to diverse contexts and requirements.

Biogas digester

The biogas digester is a sustainable and efficient system designed to convert organic waste into biogas through anaerobic digestion. This process takes place in a sealed, oxygen-free environment, where microorganisms break down organic matter such as food waste, agricultural residues, and animal manure. The resulting biogas, primarily composed of methane, can be used as a renewable energy source for cooking, heating, or electricity generation. The digested organic material (digestate) also produces valuable byproducts that can be used as organic fertilizer for agricultural purposes. Here are some key biodigester technologies and advancements:



1. Anaerobic Digestion Technology

- Basic Process: Biodigesters rely on anaerobic digestion, where microorganisms break down organic matter in an oxygen-free environment. This process generates biogas and organic slurry.
- Stages: Typically, anaerobic digestion has four stages—hydrolysis, acidogenesis, acetogenesis, and methanogenesis—each contributing to the breakdown of complex organic molecules into methane and CO_2

2. Continuous vs. Batch-Feed Systems

- Continuous Feed: Material is constantly fed into the digester, allowing for continuous biogas production. These systems are suited for large-scale facilities handling consistent organic waste.
- Batch Feed: The digester is loaded in batches, which allows a single cycle of decomposition before it is emptied. This is simpler and often used in small-scale applications.4

Strategic Placement:

The initiative focuses on three distinct categories of users: schools, communities, and farmers. An effective approach to maximizing the impact of clean energy access involves tailoring biogas digester solutions to meet the unique needs of each group. By addressing the specific energy requirements and operational contexts of these users, the project ensures a sustainable and efficient energy provision strategy.

A dedicated team of data analysts evaluates the entire landscape, mapping energy demand, waste availability, and the potential for biogas utilization. Through detailed analysis, they identify areas with limited access to sustainable energy, assess the feasibility of biogas adoption, and prioritize the needs of target users. The process involves:

- **Needs Assessment:** Comprehensive research is conducted to identify schools, communities, and farmers who lack access to affordable and sustainable energy sources and who can benefit most from biogas technology.
- **User Engagement:** Active participation from schools, community members, and farmers ensures that the specific requirements and expectations of each user group are integrated into the design and implementation process.
- **Site Selection:** Locations are strategically chosen based on their potential to maximize the social, environmental, and economic impact of biogas digesters. This includes social factors, where schools are always prioritsed over other users, considering the social, health and educational benefits the digesters offer in school settings.

By tailoring biogas solutions to the specific needs of schools, communities, and farmers, the initiative achieves both energy and environmental benefits. Schools gain reliable energy for their operations, communities strengthen their infrastructure and cohesion, and farmers enhance their productivity and sustainability. The combined efforts of precise planning, community collaboration, and robust technical implementation ensure the project delivers lasting positive impacts across diverse user groups.

D. Emission Reductions

Biogas digesters deliver a dual environmental benefit by capturing methane emissions from organic waste and replacing firewood as a primary fuel source. In doing so, they not only mitigate climate change but also enhance the quality of life for households, schools, and communities. By prioritizing this sustainable technology, large-scale reductions in greenhouse gas emissions can be achieved, alongside improved health outcomes and preserved natural resources. Together, these mechanisms substantially lower greenhouse gas emissions, conserve natural resources, and improve air quality.

Methane Capture and Combustion

Organic waste, such as animal manure, food scraps, and agricultural residues, decomposes naturally, releasing methane (CH_4) into the atmosphere. Methane is a potent greenhouse gas, with a warming potential greater than carbon dioxide (CO_2). Biogas digesters intercept this waste decomposition process, capturing the methane and using it as a clean fuel source. When methane is burned in a biogas system, it is converted into carbon dioxide and water vapor. While this process still produces CO_2, it is significantly less harmful to the climate than allowing methane to escape unchecked. The CO_2 released during combustion is considered part of the natural carbon cycle because it originates from organic materials, unlike CO_2 from fossil fuels, which adds new carbon to the atmosphere. This conversion allows for substantial net emission reductions.

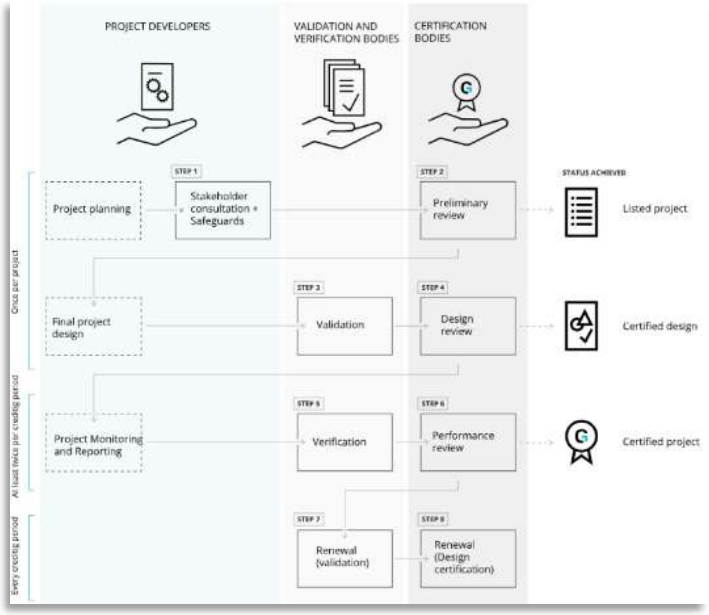
CO_2 Mitigation by Reducing Firewood Use

In many schools and communities, cooking is done on inefficient three-stone fires that rely heavily on firewood or charcoal. The scale of firewood consumption in these settings can be staggering. Schools often cook meals for hundreds, sometimes even thousands, of children daily, requiring enormous amounts of wood. Communities also burn substantial quantities of wood for communal cooking and heating. This widespread practice not only drives deforestation but also generates large amounts of carbon dioxide, particulate matter, and other pollutants. Switching to biogas

systems eliminates the need for firewood, directly reducing CO_2 emissions from wood combustion. Unlike wood, which releases stored carbon that takes decades to re-sequester through reforestation, biogas relies on the immediate recycling of organic waste. Additionally, biogas burns more cleanly and efficiently, releasing fewer pollutants and reducing the overall carbon footprint of cooking operations.

E. Role of the Carbon Market

The carbon market plays a vital role in funding environmental initiatives like the Uganda Renewable Energy Initiative: Empowering Communities for a Greener Future. This project will generate verified carbon credits by reducing greenhouse gas (GHG) emissions through the adoption of biogas technology. These carbon credits, each representing the reduction or removal of one metric ton of CO_2 equivalent emissions, can be traded on carbon markets, helping organizations, governments, and other stakeholders achieve their climate objectives.



The project focuses on replacing traditional, polluting energy sources with clean, renewable energy from biogas. By providing an alternative to the burning of wood and other unsustainable fuels for cooking and heating, the project prevents harmful emissions and reduces deforestation. Additionally, biogas systems help capture methane from organic waste, preventing this potent greenhouse gas from being released into the atmosphere. This approach not only helps mitigate climate change but also improves public health by reducing indoor air pollution and supporting local sustainability.

The initiative adheres to established methodologies for measuring, verifying, and reporting emission reductions. This ensures that the carbon credits issued reflect real and measurable climate action. Stakeholder consultation is a critical component of the project, ensuring that local communities' perspectives and needs are considered in both the planning and implementation phases. By engaging the carbon markets, the project channels necessary funds into the development of biogas systems, fostering cleaner energy solutions while contributing to global climate change mitigation efforts.

Benefits and Safeguards

Benefits:

1.Reduced GHG Emissions:

- The use of biogas as a renewable energy source decreases greenhouse gas (GHG) emissions by reducing reliance on fossil fuels and firewood, helping to combat climate change.

2.Improved Livelihoods:

- Biogas adoption directly benefits women and children, who often bear the responsibility of gathering firewood and cooking. Reduced dependency on traditional fuels alleviates their daily burdens and health risks.
- Enhanced indoor air quality from biogas usage leads to lower respiratory issues and reduces the risk of burns associated with traditional cooking practices.

3.Time Saved:

- Households save significant time previously spent on gathering firewood, allowing individuals to focus on education, farming, and other productive activities. This can translate to hundreds of hours saved each year, improving overall quality of life.

4.Reduced Resource Consumption:

- Biogas systems lessen the demand for firewood and other non-renewable fuel sources, promoting sustainable energy use.

5.Reduced Environmental Impact:

- By decreasing firewood consumption, biogas helps reduce deforestation, protecting local ecosystems and biodiversity.
- This sustainable energy solution enhances community well-being and environmental health, aligning with broader climate action goals.

Safeguards:

To facilitate the successful implementation of biogas programs and project activities, safeguards must be established to identify, prevent, and address any potential negative or unintended consequences. These safeguards play a critical role in ensuring that the intended developmental and environmental benefits are preserved, while also fostering public trust and support for biogas and related sustainability initiatives.

Some outline of safeguards principles that might be relevant to meet the entire project cycle are as follows:

Social Aspects	Principle 1	Human Rights
	Principle 2	Gender Equality and Women's Empowerment
	Principle 3	Community Health & Safety
	Principle 4	Cultural Heritage, Indigenous Peoples, Displacement and Resettlement
	Principle 5	Corruption
Economic	Principle 6	Economic Impacts
Environmental and Ecological	Principle 7	Climate and Energy
	Principle 8	Water
	Principle 9	Environment

Further details and mechanism of these principle will be further explained under section **0** of this document.

F Transfer of Carbon Rights

Any rights to the VERs generated by the beneficiaries of the biogas solutions provided by the 'Uganda Biogas initiative will be transferred from them to EK and BioFarmers. Beneficiaries will receive access to the biogas systems free of charge in exchange for the rights over the Carbon Emission Reductions. This transfer will be formalised through signed agreements between the beneficiaries and EK and BioFarmers. Proceeds from the sale of VERs on the carbon market will predominantly be reinvested into the programme, supporting the maintenance of current activities and expanding access to biogas solutions for more beneficiaries.

G Alignment with UN Sustainable Development Goals

The *Uganda Renewable Energy Initiative* aligns with several UN Sustainable Development Goals (SDGs), including:

- SDG 3 – Good Health and Well-being: By reducing indoor air pollution from biomass cooking, biogas minimizes respiratory issues and burn risks, directly improving health outcomes.
- SDG 4 – Quality Education: Schools are our main focus and primary users, and as such, the biogas project is dedicated to supporting them with both educational materials and valuable learning experiences. With the project's profits and the expertise of our team, we provide schools with essential resources, including books and tools, to enhance their educational offerings. Additionally, our staff and guest lecturers bring renewable energy and sustainability to life through engaging talks and hands-on learning, ensuring students gain crucial knowledge for a greener future. By focusing on schools, we aim to empower the next generation of environmental leaders while fostering sustainable practices in the classroom and beyond.
- SDG 5 – Gender Equality: Biogas reduces the time women and girls spend gathering firewood, decreasing their workload and the risk of exposure to unsafe environments.
- SDG 7 – Affordable and Clean Energy: Biogas provides an affordable and renewable energy source for rural communities, reducing dependence on unsustainable fuel sources.
- SDG 8 – Decent Work and Economic Growth: The program supports local job creation in biogas system installation and maintenance, providing employment opportunities and fostering economic growth.
- SDG 12 – Responsible Consumption and Production: By converting organic waste into energy, the program promotes sustainable waste management practices and energy production.
- SDG 13 – Climate Action: Biogas reduces greenhouse gas emissions by limiting the need for fossil fuels and firewood, contributing to climate change mitigation efforts.

Through biogas system installation, maintenance support, and community awareness efforts, this program addresses the urgent need for sustainable energy while advancing community well-being, environmental sustainability, and global development goals.

H Safeguarding Principles Assessment and Mitigation Plan

Prior to the implementation plan, it is important to undertake some principles that will be used to develop the programme and activities. Below are some considerations relevant for the Uganda Biogas initiative - Empowering Communities and Schools for Sustainable Growth:

a. Undertakes upfront assessment against the Safeguarding Principles & Requirements (Social, Economic and Environmental Aspects)
   In order to undertake this process, the stakeholders are required to identify what are the potential impacts in the design of the projects, both positive and negative impacts. Some conditions such any impacts to social conditions, economic influence and environmental change are potential to be identified and raised.
b. Implements the activity in accordance with the Safeguarding Principles and relevant requirements.
c. Includes measures, corresponding to the identified risks and adverse outcomes, to minimize and address negative impacts, in validated design documents prior to design certification,
d. Provides information on measures implemented to address the identified risks and status of risk in the monitoring report at each verification.
e. Report any grievances related to compliance and safeguarding principles that are registered at any point during the project cycle.

I Continuous Input / Grievance Mechanisms

Feedback and grievance mechanisms can be demonstrated and formalized to address disputes with communities and other stakeholders that may arise during project planning, implementation and evaluation with respects but not limited to, free, prior, and informed consent (FPIC), rights to lands, territories and resources, benefit sharing and participation.

The process of receiving, hearing, responding to and attempting to resolve grievance can be described as follows:

1. The public consultation is held to collect and gather input and feedback from the community prior to the implementation of the programme.
2. The consultation includes a process for receiving, hearing, responding to and attempting to resolve grievances.
3. The contact information for submitting inputs or grievances is disseminated during the consultation (see table below). A physical grievance logbook will be available at an EK and BioFarmers office for submitting grievances in person.
4. When there are grievances, some steps to resolve as procedure are as follows:

- The Coordinating and Managing Entity (CME) will attempt to amicably resolve all grievances and will provide a written response to the grievances in a manner that is culturally appropriate.
- Any grievance that are not resolved by negotiations will be referred to mediation by a neutral third party.
- If the grievance is not resolved through mediation, it will be referred to arbitration or legal action, to the extent allowed by the laws of the relevant jurisdiction or competent courts in the relevant jurisdiction, without prejudice to a party's ability to submit the grievance to a competent body or court if any.

5. The feedback and grievance redress procedure will be publicized and accessible to communities and other stakeholders.
6. Grievance and programme responses, including any redress, will be documented.

Below are the address and contact details if there are any grievances submitted.

If you have any grievances, please access the following ways to do:	**Address / Contact**
Report submitted in Person (Please come to the addresses provided)	Kamuli Office, Lubaga road, Buwenge Empy Kamuli Town, Kamuli (from 9:00 to 17:00) Buwenge Office, Kyerinda village-Kasalina ward-Buwenge Towncouncil-Jinja district (from 9.00 to 17.00)
Local Office Telephone access	+256 766 124 430
Internet/email access (optional)	https://ek.eco/grievance-ug / Uganda@ek.eco
Contact of Independent Mediator (if any)	

J. Project Developer and Project Owner

About BioFarmers

BioFarmers is an innovative ecological organization focused on revolutionizing agriculture through carbon-conscious farming projects. With a strong emphasis on sustainability, BioFarmers designs and implements farming solutions that not only reduce carbon footprints but actively contribute to carbon capture. By integrating cutting-edge practices with natural farming techniques, BioFarmers works towards creating a more sustainable and climate-resilient future for agriculture, communities, and the planet.

About EK

EK is an expert project developer specializing in carbon-related initiatives, with a focus on project design, implementation, and registration. With extensive knowledge in carbon markets and environmental standards, EK manages the development of carbon offset projects from inception to successful certification. EK ensures that each project meets regulatory requirements, optimizes carbon sequestration potential, and maximizes environmental impact, providing sustainable solutions that help organizations achieve their carbon reduction goals.

Contact information

Below are the contact details if you have any questions and would like a further information about the details of agenda or related issues to:

- BioFarmers contact: Info@biofarmers.eco
- EK VER Projects: Projects@ek.eco