



**Country:** Uganda  
**Sector:** Agriculture  
**Project:** Upscaling Generation, Commercialization and Utilization of Biomass Waste-Based Green Energy Sources in Uganda  
**Grantee:** Afribanana Products Ltd  
**Partner:** Centre for Research in Energy and Conservation (CREEC)

## Acknowledgements

The SWITCH Africa Green programme was developed by the European Commission to support African countries in their transition to an inclusive green economy, the main objective being to promote sustainable development. This is based on sustainable consumption and production (SCP) patterns, while generating growth, creating decent jobs and reducing poverty.

This impact sheet on *Upscaling Generation, Commercialization and Utilization of Biomass Waste-Based Green Energy Sources in Uganda* provides a snapshot of results and achievements of the project under the Green Business Development Component of Phase I (2014-2019) of the SWITCH Africa Green Programme. This component supported micro, small and medium-sized enterprises (MSMEs) to apply and adopt SCP practices in their business operations.

The project was implemented by Afribanana Products Ltd in partnership with Centre for Research in Energy and Conservation (CREEC) with the support of the SWITCH Africa Green National Focal Point Tom Okurut, National Environment Management Authority (NEMA), Uganda and National Coordinator Twine Teddy Nsubuga, United Nations Development Programme (UNDP), Uganda. The grants were managed by United Nations Office for Project Services (UNOPS) and coordinated by Celia Marquez with support from Mercy Gatobu.

Supervision and coordination for development of the impact sheet was done by Rhoda Wachira and Patrick Mwesigye and programme support was provided by Carolyn Kilel and Sylvia Munuhe, Africa Office, United Nations Environment Programme (UNEP).

The impact sheet was compiled by UNEP consultants, Sheila Karue and Mercy Mumo. Editing, layout and design was coordinated Communications Division, UNEP.

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## BACKGROUND

Uganda is the second largest producer of bananas after India with more than 75% of the farmers growing bananas. Annually, the country generates 9.8 million tons of waste of which 3 million tons is from banana waste<sup>1</sup>. This has led to associated high costs in waste management and negative environmental impacts like land degradation, soil contamination, high emission of ethanol gas from the banana stock that causes depletion of the ozone layer.

The demand for charcoal and firewood as a source of energy for cooking lies at 85% per annum. This has led accelerated deforestation rates and wood fuel deficit in many parts of Uganda<sup>2</sup> which has led to increased demand for charcoal briquettes especially in the Western region. There is an opportunity for clean energy production from the biomass waste generated in large quantities in the rural areas.

1 <http://www.promusa.org/Uganda>  
 2 [https://www.researchgate.net/publication/322854014\\_FIREWOOD\\_AND\\_CHARCOAL\\_PRODUCTION\\_IN\\_UGANDA](https://www.researchgate.net/publication/322854014_FIREWOOD_AND_CHARCOAL_PRODUCTION_IN_UGANDA)

The Switch Africa Green Programme grantee, Afribanana Products Limited (ABP Ltd) an agribusiness banana value chain incubator based in Uganda, collaborated with the Makerere University-based Centre for Research in Energy and Energy Conservation (CREEC) to implement the Project on *upscaling generation, commercialization and utilization of biomass waste-based green energy sources in Uganda*. Implementation of the project involved the capacity building on biogas production, training and skills development on briquette fabrication, and awareness raising and outreach activities.

The project provided an alternative to wood fuel used for cooking by promoting the utilization and production of environmentally friendly energy sources. This was mainly done by turning waste-to-energy through

the production of charcoal briquettes and biogas as a source of energy to meet the high demand for charcoal.

## OBJECTIVES

The main objective was to promote sustainable production and consumption of cleaner and fuel-efficient products.

Specific objectives were to:

- Establish a single window system to promote entrepreneurs in the Banana value chain.
- Guide entrepreneurs through incubation and provide services that include technology transfer to turn the MSMEs into successful agripreneurs.





## BENEFICIARIES

A total of 33 MSMEs benefited from the project, out of which 15 were trained on biogas production and 18 on charcoal briquette making. The project also involved members of the community who acquired income generating skills.

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## OUTPUTS

### Improved stakeholder participation in green economy policy development

#### Policy brief developed

A policy brief<sup>3</sup> on up-scaling consumption and production of green energy technologies in Uganda was developed and submitted to stakeholders. Key issues highlighted

3 ABP Limited Policy Brief No. 1, on Up-scaling Consumption and Production of Green Energy Technologies in Uganda: Opportunities, Challenges & Way Forward.



**A policy brief on up-scaling consumption and production of green energy technologies in Uganda was developed and submitted to stakeholders.**

include those associated with consumption and production of green energy technologies, emphasizing on briquettes and biogas production from agricultural and municipal wastes. The policy brief proposes ways of attaining the priority targets of SDG 7 on energy, including universal energy access, increase share of renewable energy and improve energy efficiency.

### Increased networking among green businesses

#### Networking events and Workshops

Interventions such as conferences, radio announcements, public gatherings, and road shows were carried out and communities were sensitized and trained in green energy sources and usage reaching over 3.4 million people.

Through SWITCH Africa Green Programme, capacity building and awareness raising forums on the promotion of biogas use were organized. The workshops

and seminars benefited over 355 participants.

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The community members were sensitized on the inherent benefits of using green energy technologies and in identifying, developing and up-scaling business opportunities along biomass value chains.

ABP and their partner CREEC helped create market linkages between the MSMEs they supported and various institutions, households, and farmers in generation, commercialization, and utilization of biomass green technologies in Uganda.

The project has enabled many youths to take up eco-friendly charcoal briquette production who have started their own small-scale enterprises in their respective towns.





## Improved capacities of workers in green sectors

### Training and Skills Development

Through the project, 355 community members were trained in the construction of biogas digesters and in the fabrication of charcoal briquettes. Other skills imparted included improved product design, eco-labelling and book-keeping.

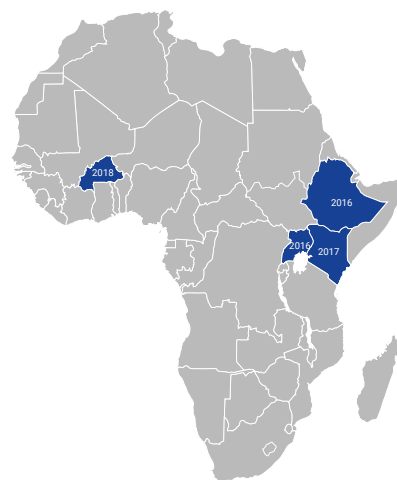


Through the project, 355 community members were trained in the construction of biogas digesters and in the fabrication of charcoal briquettes.

Fifteen (15) enterprises were trained in construction of biogas digesters and had access to

opportunities to build biogas plants across Uganda.

Sixty-five (65) MSMEs were trained on basic skills in the production of charcoal briquettes including demonstrations on constructing briquette machines and other accessories using locally available building materials like traditional bricks.



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Over 200 community members were sensitized to use charcoal briquettes as a source of energy.

### Training modules developed

The project supported development of four (4) toolkits to help improve capacities of MSMEs to uptake SCP practices. The toolkits were used to train beneficiary MSMEs and can be used to scale-up green business practices. The toolkits included a charcoal briquette making curriculum, a training manual for briquettes making, a technical training on biogas production and a toolkit in business development under product design, marketing and eco-labelling.

### OUTCOMES

#### Uptake of SCP practices by MSMEs supported

##### Adoption of SCP practices

The 33 MSMEs engaged through the project adopted sustainable consumption and production practices. The enterprises started producing charcoal briquettes from biomass waste. The use of charcoal briquettes as a source of energy for both commercial and domestic purposes was promoted.



Most of the biogas and charcoal briquette producers started harvesting rainwater to support their production processes and using solar driers for biomass to support production in the rainy seasons. Improvements in the equipment were also made. For instance, improved briquetting machines and improved carbonizing drums that make use of biodegradable waste to carbonize and produce charcoal briquettes.

### Improved business performance of MSMEs supported

#### Creation of green jobs

The intervention created 1,031 direct jobs through the biogas (554) and briquettes (477) projects. For the direct jobs, 60% went to the youth who were 621, with 419 working in briquette production and 202 in biogas production. The total number of jobs created for women and men above 35 years were 183 and 227 respectively. A total of 1,253 indirect jobs were created with 70% benefiting the youth and women.

#### Increased turnover

The MSMEs were trained on available opportunities for



**Sisal farmers doubled their income after they started using sisal waste in the production of charcoal briquettes.**

commercializing the surplus charcoal briquettes; this led to additional income streams to all actors along the value chain.

Sisal farmers doubled their income after they started using sisal waste in the production of charcoal briquettes.

### Increased market demand for environmental goods and services

#### Increased demand for biodegradable bags:

After receiving training on eco-labelling, MSMEs started using bio-degradable bags for packaging the charcoal briquettes.

## IMPACTS

### Environmental Impacts

#### Waste reduction

Intervention by SWITCH Africa Green Programme increased charcoal briquettes production from 2 to 108 tons annually. A total of 6 cottage industries reduced dependence on firewood for their energy source.

One of the MSMEs supported by Afribanana reduced the amount of power wastage in their cottages through the installation of improved electrical wiring systems.

Following the uptake of the practice of rain water harvesting, Masupa Enterprises, one of the MSMEs supported by Afribanana Products Limited recorded a saving of 24,000 litres of water per annum. This was after partnering with Uganda Cleaner Production Centre (UCPC) in promoting the adoption of cleaner production practices.

The project promoted the use of banana waste as raw material in the production of biogas and charcoal briquettes, thereby contributed towards addressing the challenge of waste management in Uganda.

### Economic Impacts

#### Increase in revenues

The 33 MSMEs engaged reported an increase in production which translated into increased average revenue from 720 to 144,000 US Dollars per annum. Those MSMEs involved in briquette production increased their annual average revenues from 720 to 129,600 US Dollars.

## LESSONS LEARNT

- Uptake of SCP practices is enhanced when the stakeholders have access to the improved technology being introduced as demonstrated by the Project where training was provided on how to fabricate the machines locally.
- Green business incubation and mentorship of entrepreneurs is key in commercializing clean energy technologies, through eco-labeling and improving the quality of products produced.
- Improved marketing strategies will open-up new markets and create sustainable trade.

*“ Before Switch Africa Green we were using hands to make briquettes and now we are using machines to make our products. We are also manufacturing fabricating machines for producing charcoal briquettes and supply them to the community.”*

says Aidah Tumuheirwe  
a beneficiary of the program.



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