

EEP AFRICA PROJECT PORTFOLIO 2019





EEP AFRICA PROJECT PORTFOLIO 2019



Ministry for Foreign
Affairs of Finland



CONTENT

04 **About EEP Africa**

05 **Measuring Impact**

06 **Burundi**
Songa Energy

08 **Kenya**
Acacia Innovations
EcoZoom East Africa
Micro Energy Credits Corp
Tiny Totos Kenya
Village Industrial Power

18 **Lesotho**
African Clean Energy
NALA PayGo

22 **Malawi**
Kumudzi Kuwale
Practical Action
SolarWorks!

28 **Mozambique**
Pamoja Cleantech

30 **Namibia**
Doranova

32 **Regional**
Agsol

34 **Rwanda**
BBOX
East African Power
Empower New Energy
OffGridBox

42 **Seychelles**
Swimsol

44 **South Africa**
Talbot & Talbot
Windlab Developments South Africa

48 **Uganda**
Greenlight Planet Uganda
Sunmoyo
VAC Solar UK
Zembo

56 **Zambia**
Emerging Cooking Solutions Zambia

58 **Zimbabwe**
Celfre Energy
Zonful Enterprises

62 **Index of Projects by Sector**

64 **NDF and Funding Partners**

67 **Contact Information**



About EEP Africa

The Energy and Environment Partnership (EEP Africa) is a multi-donor fund providing early stage grant and catalytic financing to innovative clean energy projects, technologies and business models in 15 countries across Southern and East Africa. EEP Africa aims to support countries in the region towards the realisation of a climate resilient, zero-carbon future.

The immediate objective is to enhance clean energy access, development and investment across the region, with a particular focus on benefiting poor, vulnerable and underserved groups. EEP Africa achieves this through direct financing of a diversified portfolio of clean energy projects, investment facilitation and business development support, as well as knowledge exchange, policy and partnerships.

EEP Africa's project portfolio is chosen through a competitive process. Applications are evaluated based on concept innovation, development impact, business model and financial sustainability. A total of 530 applications were received in the 14th Call for Proposals. The 28 projects presented in this booklet were selected for financing and began implementation in 2019.

Since 2010, EEP Africa has channeled more than EUR 70 million to 250 pioneering projects. These projects have created over 10,000 jobs, improved clean energy access for over 5 million people, and reduced 1.6 million tonnes of CO₂e.

EEP Africa is currently hosted and managed by the Nordic Development Fund (NDF) with funding from Austria, Finland and NDF.



Measuring Impact

The overall goal of the EEP Africa Trust Fund is to contribute to sustainable and inclusive green growth and to the achievement of the Paris Climate Agreement and the Sustainable Development Goals (SDGs).

EEP Africa focuses in particular on five of the global goals: SDG 1: No Poverty; SDG 5: Gender Equality; SDG 7: Affordable and Clean Energy; SDG 8: Decent Work and Economic Growth; and SDG 13: Climate Action.

Approaches to monitoring and evaluation have evolved in recent years to reflect rapid developments in business models and technologies in the clean energy sector. However, measuring the impact of a project can still be challenging for private sector implementers.

The EEP Africa monitoring and evaluation (M&E) framework integrates innovative approaches to measuring impact. The Theory of Change and Results Framework aim to encompass the wide diversity of technologies, business models, markets and stages of business development in the Fund's portfolio. It is devised to take into consideration the ESMAP Multi-Tier Framework, Gogla Impact Metrics and other standards being adopted across the sector.

EEP Africa projects are monitored and evaluated based on six key Impact Indicators that reflect our core goals: **Savings on energy-related expenditure; Women in leadership; People with enhanced energy access; Direct job creation; Mobilised climate finance; and CO₂e emissions reduced or avoided.**



RUN-OF-RIVER HYDROPOWER IN RURAL BURUNDI

Project Developer
Songa Energy

Songa Energy develops run-of-river hydropower projects in Burundi, focusing primarily on 1-10 MW grid-connected hydropower plants and large mini-grids.



Sector
Hydropower

This project will support the construction of the first independent power producer (IPP) hydropower plant in Burundi. The 1.1 MW run-of-the-river grid-connected plant will be built on the Ruvyironza River in the centre of an unelectrified part of Gitega Province. The project is being developed in close collaboration with the national energy utility, government officials at all levels, and the local communities. This is the first of several hydropower projects that Songa Energy intends to implement in Burundi. EEP Africa financing will help de-risk the overall investment and support the development of a connected mini-grid to electrify local communities.

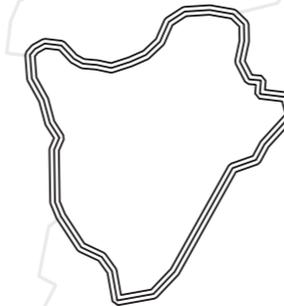
Total Project Budget
EUR 3 761 640

EEP Africa Financing
EUR 1 000 000

Type
Pilot project
Mini-grid connected

Project Code
BUR14243

Location
Burundi



Outcome and Impact

The project will create over 100 jobs and bring electricity to more than 20,000 rural residents in south-central Burundi. The hydropower plant will produce 6.5 GWh of renewable electricity annually, which will mitigate 3,200 tons of CO₂e

emissions. By providing power to the local area through a connected mini-grid, as well as to the national grid, the project will significantly improve economic development and productivity in the region.



INNOVATIVE CLEAN COOKING FUEL DISTRIBUTION

Project Developer
Acacia Innovations

Acacia Innovations is a women-led Kenyan start-up specializing in the manufacturing and sale of biomass briquettes, under the brand name Kuni Safi.



Sector
Solid biomass

This project will scale up the production and distribution of innovative, non-carbonised biomass briquettes that replace charcoal and firewood for clean cooking. Acacia Innovations targets small and medium-sized institutions in Kenya, such as schools, restaurants, children's homes and hotels. This is an underserved market segment that has a multiplier effect on health and the environment. Acacia has become the largest supplier of clean cooking fuels for schools and small businesses in Kenya, but demand exceeds existing production capacity. With EEP Africa financing, Acacia will expand its briquette production and pilot an innovative new cookstove that can be sold at a discounted rate as part of a subscription bundle.

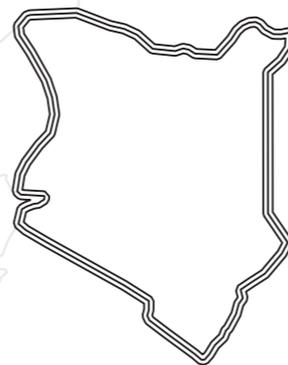
Total Project Budget
EUR 684 365

EEP Africa Financing
EUR 350 000

Type
Scale-up project
Stand-alone

Project Code
KEN14168

Location
Kenya



Outcome and Impact

The project will contribute significantly to reducing carbon emissions and improving health in Kenya. Acacia aims to sell 1,800 cookstoves and 8,400 tonnes of clean briquettes. Each tonne of briquettes saves 25 trees, resulting in a reduction of 42,000 tonnes of CO₂e during the life of the project. Each school or children's home that

switches from charcoal to briquettes will save EUR 750 per year, while also leading to better health, resources and quality of life for children in low-income slums and rural areas.



INNOVATIVE CUSTOMER FINANCING FOR CLEAN ENERGY PRODUCTS

Project Developer
EcoZoom East Africa

EcoZoom East Africa produces and sells clean cookstoves and flexible solar lighting solutions.



Sector
Solar systems and cookstoves

This project will pilot a layaway (savings) customer financing scheme for clean energy products, implemented through a business-to-consumer (B2C) retail channel. For low-income households, purchasing clean cookstoves and solar lighting through layaway and flexible (M-PESA) payments reduces risk margins and rates compared to other financing options. EcoZoom aims to reach 15,300 households at the bottom of the pyramid (BoP) and open 15 retail stores, with a focus on underserved peri-urban regions in northern and coastal Kenya. EEP Africa financing enables EcoZoom to test and refine its savings scheme to best fit customer preferences and ability to pay, while also proving the B2C retail business model.

Outcome and Impact

The project will increase access to affordable clean energy products for low-income households in underserved regions, while proving the viability of a layaway business model through retail stores. The target sales volume will reduce 2,946 tonnes of CO₂e, improve household health, and save families about EUR 200 per year on energy-related expenditure. The network of retail stores will hire and train local sales staff, creating new jobs and economic opportunities.

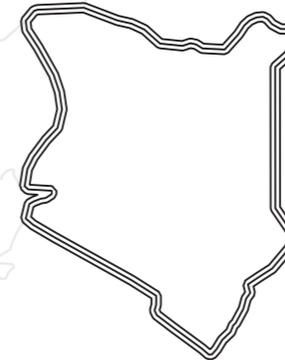
Total Project Budget
EUR 324 350

EEP Africa Financing
EUR 214 000

Type
Pilot project
Stand-alone

Project Code
KEN14287

Location
Kenya





MOBILE TECHNOLOGY ADVANCING LAST-MILE ACCESS TO CLEAN ENERGY

Project Developer
Micro Energy Credits
Corp (MEC)

MEC is a women-led US social enterprise that works with financial institutions and manufacturers to start clean energy lending programs.



Sector
Solar PV

This project will increase access to clean energy financing for low-income consumers by utilising mobile technology to remove barriers such as high loan transaction costs and difficulty in vetting customers and predicting their repayment risk. MEC's unique mobile platform, Chaguzi, uses big data, predictive statistics and machine learning to build risk profiles for energy loan customers. The Chaguzi solution creates a marketplace in which clean energy suppliers and finance providers can tailor product offerings to a customer's risk profile. With EEP Africa financing, MEC will fine-tune the technology based on its successful market trial, then launch it on a commercial scale.

Outcome and Impact

The project will roll out an innovative tool that will expand access to clean energy products for low-income consumers in Kenya, particularly women. MEC aims to reach 200,000 households through Chaguzi, which will significantly increase financial inclusion and stimulate income-earning potential. This will have a positive impact on family budgets, health and well-being, while also promoting carbon reducing behaviour. The project is expected to mobilise EUR 3 million in climate financing.

Total Project Budget
EUR 590 753

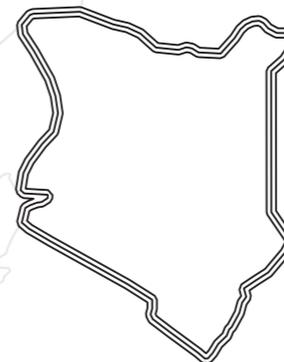
Location
Kenya

EEP Africa Financing
EUR 374 871

Project Partners
MEC Kenya

Type
Scale-up project
Stand-alone

Project Code
KEN14312





CLEAN ENERGY FINANCING THROUGH SLUMS DAYCARE BUSINESS PARTNERSHIPS

Project Developer
Tiny Totos Kenya

Tiny Totos is a Kenyan social enterprise that is improving quality of services and access to finance for working mothers in the slums of Nairobi.



Sector
Cookstoves

This project aims to pilot the distribution and financing of cookstoves and other clean energy products through business partnerships with daycare centres. Over 3,500 informal daycare centres operate in the slums of Nairobi, serving as daily hubs for working mothers from a wide range of professional and personal backgrounds. These women lack access to distribution networks and financial credit. Tiny Totos' innovative solution is to tap into this network to reach marginalised but credit-worthy women. The daycare centres will also serve as knowledge conduits about better health and nutrition. EEP Africa financing will enable Tiny Totos to take higher risks in offering low-income women access to clean energy financing.

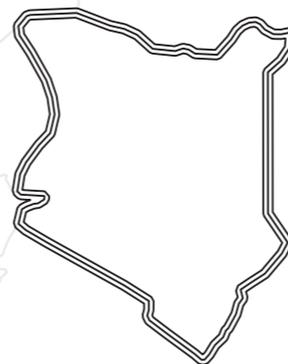
Total Project Budget
EUR 500 000

EEP Africa Financing
EUR 350 000

Type
Pilot project
Stand-alone

Project Code
KEN14077

Location
Kenya



Outcome and Impact

The project provides daycare centres and low-income working women with access to clean energy products and financing, thus creating healthier environments for children and families in the Nairobi slums. The aim is to build business partnerships with 200 daycare centres and sell 5,000 clean cookstoves.

The transition away from charcoal stoves is expected to result in clean energy access for 16,000 people, cost savings of over EUR 900,000, and an estimated reduction of 9,723 tonnes of CO₂e emissions.



Project Developer
Village Industrial Power

Village Industrial Power is a social enterprise that focuses on biomass energy and agricultural machinery innovations for Africa, with a mission to create societal impact in rural communities.



Sector
Solid biomass

RENEWABLE OFF-GRID POWER FOR AGRICULTURAL PROCESSING

This project will install 10 steam-powered plants that recycle water and transform agricultural waste into energy for on-farm processing. These flexible and innovative green energy platforms produce three-phase power and heat from crop residue biomass. This enables off-grid productive use such as agricultural processing, water pumping and power for village micro-grids. The units will incorporate ancillary equipment that demonstrates the full utility of the platforms, such as battery/device charging, dairy processing and chilling, grain milling, and dryers for fruits, vegetables and cereals. EEP Africa financing will address the key barrier of access to asset financing and support market development for this new technology.

Total Project Budget
EUR 485 699

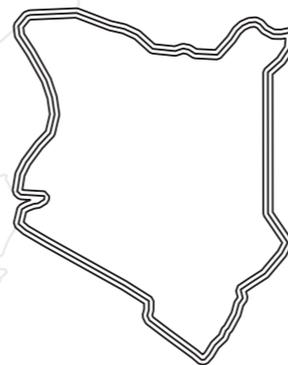
EEP Africa Financing
EUR 309 599

Project Partners
Shell Foundation

Type
Pilot project
Stand-alone

Project Code
KEN14531

Location
Kenya



Outcome and Impact

The project will install VIP 10-40 units (10 kW of electricity and 40 kW of thermal energy) in 10 locations. Each unit can serve 30-300 farming households or agribusinesses depending upon the application. The agricultural processing made possible by the units will reduce post-harvest loss, improve food security, increase in-

come earning opportunities, and enable year-round processing. The project is expected to generate up to EUR 800,000 in savings on energy-related expenditure and reduce 88 tonnes of CO₂e emissions by generating clean energy from crop residues that would otherwise be burned or dumped in waterways.



Project Developer
African Clean Energy
(ACE)

ACE is a Dutch-South African social enterprise that produces and distributes solar-biomass hybrid cookstoves in developing countries.



Sector
Cookstoves

CREDIT-BASED ENERGY ACCESS THROUGH SMART TECH

This project will launch a new pay-as-you-go (PAYG) cooking solution in Lesotho. The new ACE 1 cookstove has a built-in microprocessor, allowing it to communicate with smartphones, and it will be sold in a bundle with phones that have the ACE app pre-installed. The company is building a network of 25 shops across Lesotho to increase access to energy products in off-grid areas and is offering customer discounts on sustainable fuel pellets based on their payment history and credit rating. The goal is to galvanise the clean fuel sector and create long-term demand. With EEP Africa financing, ACE will roll out the first 2,500 cookstove bundles within this network of energy hubs.

Outcome and Impact

The project will increase clean energy access and bring the benefits of smartphones to 2,500 households, reaching an estimated 12,500 people. This project will produce strong development impact through improving household health and income, creating 22 new permanent jobs and reducing 14,332 tonnes CO₂e emissions.

Total Project Budget
EUR 895 931

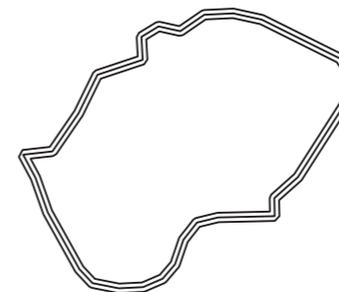
EEP Africa Financing
EUR 499 457

Project Partners
Alflex Technologies,
Signify, TNO

Type
Pilot project
Stand-alone

Project Code
LES14200

Location
Lesotho





Project Developer
NALA PayGo

NALA is a woman-owned local start-up focused on the distribution of solar home systems.



Sector
Solar PV

PILOTING PAYG SOLAR HOME SYSTEM SALES

This project is piloting pay-as-you-go (PAYG) sales of solar home systems (SHS) in Lesotho to improve access to clean, renewable energy products. Lesotho's main energy sources are disposable batteries, paraffin, and firewood, all of which are damaging to health and the environment. There is a significant gap in the market regarding rural last mile distribution of SHS and other high impact and affordable products and services. With EEP Africa financing, NALA will establish a national distribution and service support network in an underdeveloped market.

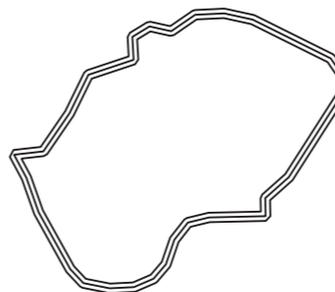
Total Project Budget
EUR 500 000

EEP Africa Financing
EUR 300 000

Type
Pilot project
Stand-alone

Project Code
LES14176

Location
Lesotho



Outcome and Impact

The project will enhance access to modern energy for over 20,000 people through the establishment of a national distribution network for PAYG SHS. Nala's locally-driven sales approach will create 130 new jobs and have a broad socio-economic impact by increasing opportu-

nities for entrepreneurs and small businesses. Within the next five years, Nala aims to establish a last mile distribution and service presence in all rural areas of Lesotho, reaching over 250,000 people.



**Kumudzi
Kuwale
Limited**

Project Developer
Kumudzi Kuwale

Kumudzi Kuwale is a for-profit social enterprise operating in the poorest area of Malawi with the objective of bringing renewable energy to off-grid local communities.



Sector
Solar PV

NO ONE SHOULD BE LEFT IN THE DARK

This project will provide affordable, renewable electricity and light to the most marginalised, rural population in Malawi. More than 15 million people in the country live in areas without access to stable electricity and a large portion cannot afford solar home systems. Through Kumudzi Kuwale's charging stations, villagers can rent rechargeable lamps for just over one US Dollar per month. The solar charging stations are established in a centrally-located house and operated by the homeowner on a commission basis. Kumudzi Kuwale currently operates 34 stations serving 17,000 people in the Central District. With EEP Africa financing, this successful business model will be scaled up and expanded to new regions across Malawi.

Outcome and Impact

The project aims to build 295 new solar charging stations that will provide affordable light to 107,000 rural Malawians who live outside the national electricity grid. The service will enable customers to switch from kerosene light (Tier 0) to electrical light (Tier 1), leading to numerous benefits, including increased health and productivity. Since the charging stations are operated by local residents, the project will create over 300 direct jobs and significantly contribute to local productivity and empowerment through stable incomes.

Total Project Budget
EUR 342 034

EEP Africa Financing
EUR 200 000

Type
Scale-up
Stand-alone

Project Code
MWI14036

Location
Malawi





Project Developer
Practical Action

Practical Action is an international NGO with 50 years of experience in using decentralised renewable energy to improve the livelihoods and well-being of poor and marginalised communities.



Sector
Hydropower

PILOTING A MICRO-HYDRO MINI-GRID ANCHORED BY COFFEE PROCESSING

This project will establish a community-owned 300 kW micro-hydro mini-grid along the Zulunkhuni river in northern Malawi. This pro-poor mini-grid, managed by a social enterprise, the Usingini Power Generation Company (UPGC), will provide electricity to local coffee growers, small businesses and households. The UPGC majority shareholders will be the Mzuzu Coffee Cooperative and a Community Trust. By serving as a reliable anchor load, Mzuzu Coffee supports the financial viability and the potential for other productive uses of energy. The Community Trust will represent non-commercial voices in decision making. EEP Africa financing ensures that the community engagement aspects of the project are fully implemented.

Outcome and Impact

The mini-grid will replace diesel generators currently being used for coffee processing and provide clean energy to local households and businesses. The 300 kW generated electricity will result in EUR 37,000 in household savings and support productive uses such as agro-processing, fish farming and tourism. This will have a wider impact on community livelihoods and improve quality of life in terms of household activities, security, education and health. The project will demonstrate the financial viability of a micro-hydro scheme with a reliable anchor customer and community ownership.

Total Project Budget

EUR 1 240 031

EEP Africa Financing

EUR 500 000

Project Partners

Mzuzu coffee

Type

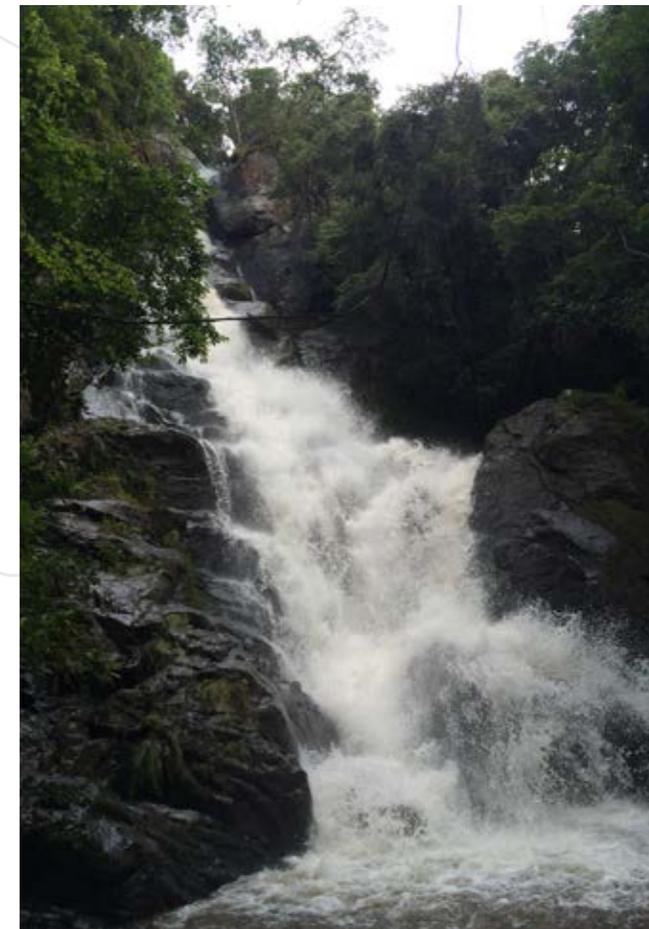
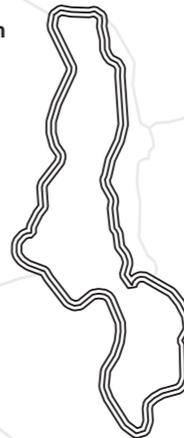
Demonstration project
Mini-grid

Project Code

MWI14469

Location

Malawi





Project Developer
SolarWorks!

SolarWorks! is an international company that develops, markets and sells solar home systems for rural households in Sub-Saharan Africa.



Sector
Solar PV

CONNECT MALAWI

This project will establish a distribution and sales network of solar home systems (SHS) in Malawi to serve rural, low and middle income households that currently lack access to a reliable source of electricity. SolarWorks! will recruit and train local sales agents and technicians in rural regions. The target is to sell 15,000 systems that can support lighting, mobile-phone charging, televisions, and refrigeration. By using proven PAYG technology and smart monitoring, low-income households can purchase the systems with a pay-back period of up to 36 months. EEP Africa financing will support last mile distribution, enabling the project to reach the most remote and financially constrained households.

Outcome and Impact

The project aims to reach 15,000 households with (Tier 2) systems that create a clean energy capacity of 260 kW. This carbon neutral electricity will mitigate 24,300 tons of CO₂e and improve household health and productivity. The total household savings on energy-related expenditures will be close to EUR 450,000. The project will create almost 600 jobs, with sales agents earning a base salary and sales commission, as well as valuable training and experience.

Total Project Budget
EUR 493 000

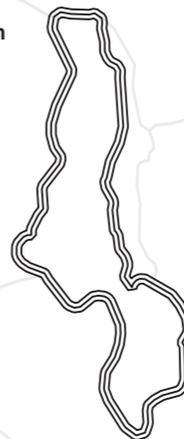
EEP Africa Financing
EUR 310 590

Project Partners
Solar Works Malawi,
Solar Works Africa

Type
Replication project
Stand-alone

Project Code
MWI14404

Location
Malawi





LAUNCH OF A SMART COOKSTOVE IN MOZAMBIQUE

Project Developer
Pamoja Cleantech

Pamoja Cleantech is a for-profit social enterprise that provides affordable renewable-energy solutions to empower local entrepreneurs in rural communities.



Sector
Cookstoves

This project will scale up a clean cooking business that uses locally-available cashew shells as cooking fuel through the launch of a fan-assisted smart cookstove that includes solar-powered lighting and phone charging (Tier 4). The project will integrate PAYG and sensor technology into the stove and sell it as a package with a basic smartphone, solar panel, battery and LED light. Customers will pay a monthly subscription fee for the stove package and the fuel, which is made from pressed cashew shells and sold under the brand name Moro Wakoroxo. EEP Africa financing will enable Pamoja to further develop its fuel preparation and distribution infrastructure and scale-up its fuel sales network and micro-financing platform.

Total Project Budget
EUR 629 569

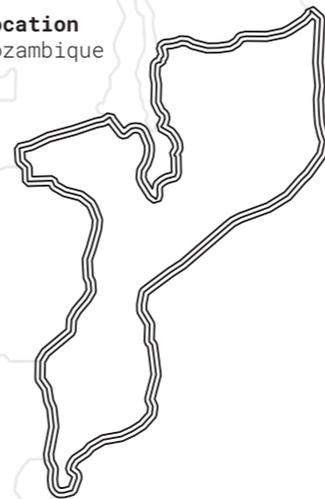
EEP Africa Financing
EUR 307 598

Project Partners
Pamoja Mocambique

Type
Scale-up project
Stand-alone

Project Code
MOZ14529

Location
Mozambique



Outcome and Impact

The project aims to reach 3,000 households in Nampula with portable, solar PV-integrated clean cookstoves. Fuel made from locally-abundant cashew shells will replace the use of charcoal and firewood, which will reduce indoor pollution and mitigate climate change. This will also lead to significant household savings on

the cost of fuel, lighting and phone charging. By including smartphones in the stove sales package, Pamoja Cleantech will enable a reliable PAYG system and increase the spread of modern communications technology in an underserved market, which will contribute to overall economic development.



Project Developer
Doranova

Doranova is a Finnish environmental engineering company that specializes in renewable energies and soil remediation. It develops turn-key biogas and landfill gas power plants that convert waste into electricity, heat and fuel.



Sector
Biogas
Waste to Energy

ONDANGWA W2E

This project will build a recently-developed and patented Hardferm biogas plant in Ondangwe that will provide green electricity to the national grid. In this waste-to-energy concept, sewage water will be combined with local plant biomass to reduce waste, generate electricity and produce fertilizer. The local substrates, such as impure organic waste, king grass and dried waste water sludge, are not suitable for traditional biogas plants. This mid-sized biogas plant will utilise their energy value, with an annual substrate volume of 12-14,000 tons and a constant electricity production capacity of 400 kW. EEP Africa financing will demonstrate this energy solution on an industrial scale and encourage further investments in such plants.

Total Project Budget

EUR 2 555 000

EEP Africa Financing

EUR 500 000

Project Partners

Ark Industries Namibia

Type

Demonstration project

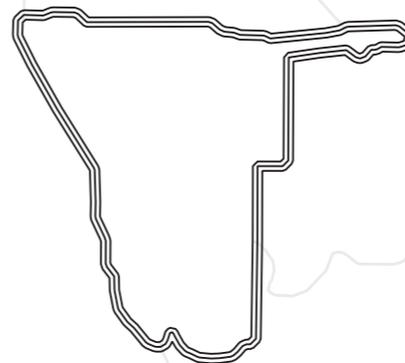
On-grid

Project Code

NAM14360

Location

Namibia



Outcome and Impact

The biogas plant will produce 3.4 GWh of carbon-neutral electricity annually, which will mitigate 2,330 tons of CO₂e. The project will create 30 direct jobs and increase economic development in the whole community by enabling industrial scale production. The city of Ondangwe has dedicated land for the biomass

farming and harvesting required for the plant, which will provide employment opportunities for the local low-skilled labor force. The project is the first of its kind in Namibia that will process city sewage water and produce low-cost organic fertilizers to local farmers.



A G S O L

Project Developer
Agsol

Agsol is a start-up company that manufactures leading-edge, solar-powered, agro-processing machines for off-grid farming communities.



Sector
Solar PV

SOLAR MILLS: POWERING RURAL PRODUCTIVITY

This project will develop and distribute a network of solar mills in rural areas to provide access to renewable energy for milling and other productive uses. Agsol's Gen2 solar mills are purpose built to meet the staple food processing needs of African farms, while also incorporating the Internet of Things (IoT) technology and cloud computing that allows for remote monitoring. Linking productive agricultural machines to solar power offers off-grid communities a solution for income generation, food processing and access to meaningful and scalable energy. With EEP Africa financing, Agsol will develop new markets and distribute mills through local partners in Kenya, Tanzania, Uganda and Zambia.

Outcome and Impact

The project aims to sell 570 solar mills in four countries, providing 45,000 rural households with access to renewable energy and a tool for economic growth. The machines improve agricultural processing and enable other commercial activities. This generates income savings and boosts labour efficiency, which has broad socio-economic benefits for rural communities, especially for women and girls. Overall the project expects to reduce 90,684 tonnes of CO₂e emissions and generate 390 MWh of clean energy per year.

Total Project Budget
EUR 1 612 176

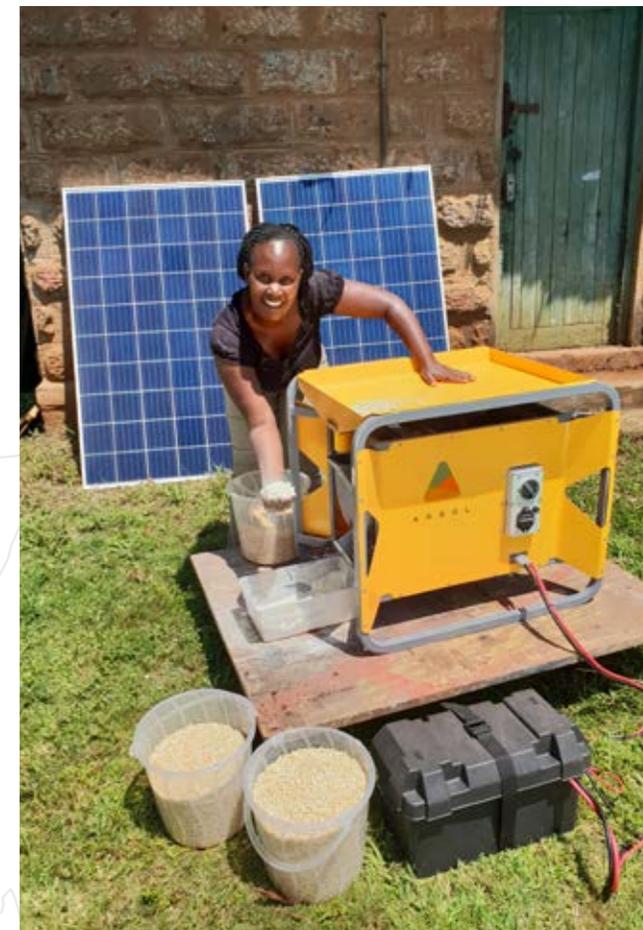
EEP Africa Financing
EUR 787 192

Project Partners
Rent to Own, Mwezi, SolarGen, SimuSolar, RISE/PCL, SolarNow, Power Trust

Type
Pilot project
Stand-alone

Project Code
REG14320

Location
Kenya, Tanzania,
Uganda, Zambia





Project Developer
BBOXX

BBOXX is a next-generation utility company that is expanding beyond solar home systems to develop biogas and other new applications to provide off-grid consumers with a complete set of products and services.



Sector
Biogas

PAYG BIOGAS

This project will promote biogas as a clean, convenient and affordable cooking solution. Although the long-term costs of biogas are often less than charcoal, the high upfront costs of biodigester installation is a barrier for poor households. BBOXX will leverage its experience with pay-as-you-go (PAYG) and remote monitoring technology, as well as its existing software, distribution and service network in Rwanda, to distribute equipment capable of converting bio-waste into biogas. Customers will get a biodigester, cookstove and smart valve that allows them to pay-as-they-cook. EEP Africa financing will support the development of the smart valve and pilot installations of the biodigesters before commercial launch.

34

Total Project Budget
EUR 770 330

EEP Africa Financing
EUR 414 350

Project Partners
HomeBiogas

Type
Pilot project
Stand-alone

Project Code
RWA14436

Location
Rwanda



Outcome and Impact

The project will develop a smart valve connected to remote monitoring software that will enable biodigesters to be sold on a PAYG basis. BBOXX will pilot 100 biodigesters before beginning mass production, and then aims to distribute an additional 500 during the project. Rural households that switch from firewood or charcoal to biogas

will benefit in terms of health, safety and cost savings on energy. Each system produces about 800 liters of biogas per day or 4.4 kWh of heat energy. This will mitigate over 20 tonnes of CO₂e per system during the product lifetime and will contribute to local development.

35



Project Developer
East African Power (EAP)

EAP is a Rwandan-based energy company focused on developing a renewable energy platform of 1000 MW across Sub-Saharan Africa by 2030.



Sector
Hydropower

BIHONGORA MULTI-PURPOSE HYDROPOWER PROJECT

This project will combine a hydropower plant with a sustainable aquaculture business and a local mini-grid in the Rubavu District of Rwanda. The 5.5 MW run-of-the-river plant will have a hybrid intake structure that includes a women's aquaculture business, which will grow and process fish in the intake headpond. The project also includes a 150 kW mini-grid that will supply affordable energy to a Micro-Industrial Park and an Empowering Villages Centre, which will include a multipurpose community building, a library and learning centre, and an agricultural centre of excellence. EEP Africa financing will ensure that the community empowerment and growth aspects are fully realised and integrated into the project.

Total Project Budget
EUR 13 984 750

EEP Africa Financing
EUR 950 000

Project Partners
Frontier Fund II,
Lakeside Fish Farms,
Viability Africa

Type
Demonstration project
On Grid

Project Code
RWA14260

Location
Rwanda



Outcome and Impact

The project brings an inclusive and community-based approach to hydropower planning and development. The hydropower plant will produce 27.2 GWh of electricity annually, which will mitigate 17,300 tonnes of CO₂e. The project will provide 2,100 direct jobs and have a large impact on socio-economic development. The

Women's Aquaculture Cooperative Program will create jobs and stimulate women's economic empowerment. The mini-grid will provide energy to over 500 local micro-businesses and households, and the community centre will develop social and educational initiatives.



Project Developer
Empower New Energy

Empower is a Norwegian start-up that invests in small and medium-scale renewable energy projects in Sub-Saharan Africa and raises long-term climate finance on a portfolio level.



Sector
Hydropower

RUCANZOGERA SMALL HYDROPOWER PLANT

This project will pilot a new business model to deliver a 1.9 MW grid-connected hydropower plant and efficient irrigation for farmers in one of the poorest areas in Rwanda. Empower’s model employs a portfolio ownership approach to deliver the benefits of Green Bonds and other financing instruments to small and medium-scale projects. The Triple Bottom Line model reduces costs and risks for local partners and enhances development impact. With EEP Africa financing, Empower will test and refine its model and tools to deliver high-grade technology, reduce costs, and maximise impact, with the goal of showing proof of concept and integrating lessons learned in future projects.

Total Project Budget
EUR 6 718 870

EEP Africa Financing
EUR 499 980

Project Partners
Malthe Winje
Travaux d’Ingenierie
Generale du Rwanda Ltd
(TIGER)

Type
Pilot project / On Grid

Project Code
RWA14286

Location
Rwanda



Outcome and Impact

The project will deliver the 1,9 MW (Tier 5) Rucanzogera hydropower plant, which will produce 9.2 GWh of electricity annually. This carbon neutral electricity will mitigate 5,000 tons of CO₂e. The project will create short-term jobs during construction and long-term jobs for plant operation and maintenance. It will increase local power capacity, enhancing energy access for an estimated 10,000 people and electrifying streets, schools and medical facilities. This will stimulate economic growth and facilitate socio-economic development.



CONTAINER-BASED HUBS FOR SOLAR ENERGY AND CLEAN WATER

Project Developer
OffGridBox

OffGridBox is a for-profit social enterprise that produces a unique solar PV hub that charges batteries and purifies water for off-grid communities.



Sector
Solar PV

This project will provide off-grid communities with affordable renewable energy and clean water. OffGridBox produces small containers (1.8 cubic meters) with solar panels on top and a water purification system inside. Each box can service 400 households, supplying them with clean water (up to 20 liter per charge) and a rechargeable battery pack that can be used for home lighting, phone charging and small appliances. The OffGridBox also serves as a solar-powered WiFi hotspot and can be used to support a small mini-grid for local businesses. With EEP Africa financing, the project will prove the business on a commercial scale by installing 30 OffGridBox's in Rwanda with customer rates of EUR 0.16 per charge.

Total Project Budget
EUR 630 000

EEP Africa Financing
EUR 441 000

Project Partners
Innotech Ltd.

Type
Replication project
Stand-alone

Project Code
RWA14040

Location
Rwanda



Outcome and Impact

The project will reach 12,000 remote and underserved households with affordable renewable energy and clean water. This will improve health and well-being, create new income opportunities, and positively impact educational capabilities in these poor communities. The project is expected to save households a total of EUR

93,000 in energy-related expenditure and generate 131 MWh of clean energy per year. This will significantly contribute to emission reduction by replacing kerosene and other non-renewable energy sources.



CAPACITY BUILDING FOR OFFSHORE PHOTOVOLTAICS IN THE SEYCHELLES

Project Developer
Swimsol

Swimsol is an Austrian company that is the global leader in marine floating solar system development. It designs specialized solar PV systems for extreme climatic conditions in tropical island nations.



Sector
Solar PV (off-shore)

This project will install a grid-connected 355 kW solar plant located partially or entirely at sea. Currently, only 2.3% of electricity in Seychelles is renewable due to regulatory issues, high upfront cost and limited space on land. Swimsol's innovative SolarSea technology will demonstrate the large offshore solar power plant potential in this island nation. Swimsol aims to obtain the first IPP license (above 100 kW) in Seychelles and will promote social impact by establishing a Clean Energy Fund. A percentage of the project's revenue will be transferred to this fund to finance local social and economic development projects. EEP Africa financing will support capacity building activities to secure the licensing for this first of its kind system and will enable the creation of the development fund.

Total Project Budget
EUR 700 930

EEP Africa Financing
EUR 490 651

Project Partners
Energy Solutions Seychelles, Eco-Sol Consulting Seychelles, Ashoka Austria

Type
Demonstration project
On Grid

Project Code
SEY14472

Location
Seychelles



Outcome and Impact

The project is expected to catalyse the development of solar power in Seychelles through knowledge transfer on offshore solar installations. The solar plant will save 119,175 liters of diesel annually, reducing 315 tonnes of CO₂e. The development impact of the project will be strengthened by the establishment and finan-

cing of a Clean Energy Fund, which can support educational projects, renewable energy public workshops, small-scale renewable solutions for disadvantaged remote areas, and other social support.

Project Developer
Talbot & Talbot

Talbot & Talbot is a privately owned, pan-African company specialising in anaerobic digestion, water and wastewater treatment solutions.



Sector
Biogas
Waste to Energy

WASTEWATER-TO-ENERGY PROJECT

This project is a feasibility study that aims to bring stand-alone, off-grid wastewater-to-energy plants to financial close at two sites of a fast-moving consumer goods (FMCG) manufacturer. The host company will supply the wastewater and be the off-taker under a build-own-operate-transfer (BOOT) model. The combination of proposed technologies (anaerobic digestion, membrane bioreactor and reverse osmosis) is highly innovative in the FMCG sector and offers the opportunity to generate biogas energy and recover water. With EEP Africa financing, Talbot & Talbot will conduct a bankable feasibility study and development process to reach financial close for two wastewater treatment and energy generation plants.

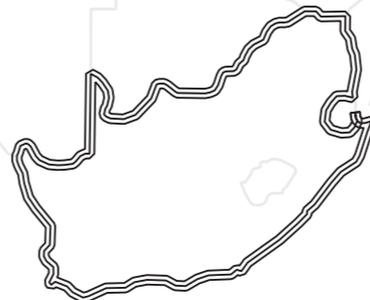
Total Project Budget
EUR 364 295

EEP Africa Financing
EUR 239 524

Type
Feasibility study

Project Code
SA14201

Location
South Africa



Outcome and Impact

The project is expected to lead the way for energy and water recovery in the fast-moving consumer goods (FMCG) sector in Africa. Once implemented, the two plants will add 3.3 MW renewable energy generation capacity, resulting in 4,186 tonnes in avoided CO₂e emissions and over 850 million litres of recovered water per year.

During construction and implementation, the full project will also have a substantial impact in terms of job creation. The completed project will strengthen the reliability and security of water and energy supply at the host company's facilities.



Project Developer
Windlab Developments
South Africa

Windlab is a global renewable energy developer with projects under development in six African countries, including 230MW installed capacity in South Africa.



Sector
Hybrid

CAPE TOWN HYBRID RENEWABLE ENERGY STUDY

This project will assess the feasibility of building an innovative multi-technology hybrid renewable energy system, with nameplate capacity up to 20 MW, within the Cape Town metropolitan area. The proposed grid-connected plant combines wind, solar PV and a battery storage system. In addition to incorporating modern technology optimization and energy storage, the project has a strong focus on community ownership and socio-economic development. Multi-technology energy facilities of this size are new in Africa. EEP Africa financing will help establish this technology and community involvement approach to renewable energy development.

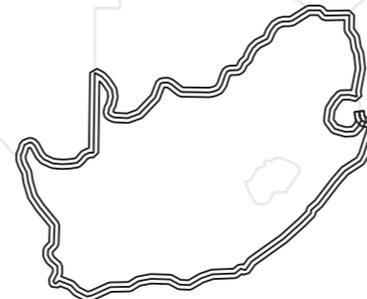
Total Project Budget
EUR 296 760

EEP Africa Financing
EUR 207 732

Type
Feasibility study

Project Code
SA14180

Location
South Africa



Outcome and Impact

The project will make the business case for clean energy facilities of this size in urban areas and help Cape Town become a green economic hub and centre for innovation. Once the system is approved and built, it will generate 20 MW of clean energy resulting in an annual reduction of 81,205 tonnes of CO₂e emission. In addition to feeding

reliable electricity into the national grid, the proposed facility will create up to 325 direct jobs and focus on stimulating indirect job creation and other positive benefits in the community. Windlab aims to have at least 60% of the project's leadership positions occupied by women by the end of the project.



BRINGING AFFORDABLE AND ACCESSIBLE PAYG SOLAR TO NEGLECTED REGIONS OF UGANDA

Project Developer
Greenlight Planet (GLP)
Uganda

GLP Uganda was established in 2014 and has been providing PAYG solar products since 2017.



Sector
Solar PV

This project will bring affordable and accessible energy to neglected regions of Uganda, thus demonstrating the feasibility of conducting business in these areas. Northern districts are characterized by poor infrastructure, low income levels and low population density, which all lead to a high cost of doing business. GLP Uganda will bring its SunKing range of clean energy lighting and household appliances to neglected off-grid villages and introduce PAYG infrastructure in this challenging market. EEP Africa financing will de-risk GLP Uganda's expansion and prove that PAYG solar can operate sustainably in the region as a means to catalysing commercial capital.

Total Project Budget
EUR 3 459 509

EEP Africa Financing
EUR 1 000 000

Type
Scale-up project
Stand-alone

Project Code
UGA14093

Location
Uganda



Outcome and Impact

The project aims to sell 64,000 units in Uganda, bringing first-time electricity to 48,000 households and improving energy access in an additional 16,000 households. Close to 900 jobs will be created, including permanent staff and opportunities for rural entrepreneurs to work as PAYG agents. The PAYG model will also provide

approximately 75% of customers, mainly women, with their first access to financial credit, thus enabling financial inclusion in rural, unbanked areas. The switch from kerosene lamps will lower household costs, improve health and reduce carbon emissions.

SUNMOYO



Project Developer
Sunmoyo

Sunmoyo is an Australian renewable energy development company operating in Uganda and Nigeria.



Sector
Hybrid

HYBRID SOLAR POWER SOLUTION FOR COMMUNITY MARKETS

This project aims to provide reliable and affordable power to the Lira Main Market, which has a capacity of over 2,330 vendors, and enable effective revenue collection. Sunmoyo will install a grid-integrated solar hybrid system to meet the market's daily energy requirement of 1.7 MWh. The project will be implemented through a Build, Own, Operate, Transfer (BOOT) model, resulting in the Lira Municipal Council eventually owning the power asset. Vendors will pay for their electricity through an automated mobile platform developed in partnership with the Bank of Africa. EEP Africa financing enables a demonstration project to prove the model, which can then be replicated in similar markets across Uganda and other countries.

50

Total Project Budget
EUR 1 032 000

EEP Africa Financing
EUR 482 460

Project Partners
Balance Services Group

Type
Demonstration project
Mini-grid connected

Project Code
UGA14280

Location
Uganda



Outcome and Impact

The project will supply clean energy and improve business opportunities for over 2,330 market vendors. Access to affordable and reliable energy will enable vendors to store perishable products, extend their operating hours into the evening, and improve their security and sanitation. The resulting increase in vendor income

will reduce poverty and improve health and well-being for an estimated 12,000 vendor family members and dependents. Based on a successful demonstration of this model, it is planned to replicate this project in 17 other municipal markets across Uganda.

51



Project Developer
VAC Solar UK

VAC was established in 2017 in the United Kingdom. It aims to commercialize solar generation and enable the poorest households in off-grid rural communities to access affordable solar power.



Sector
Solar PV

COMMUNITY SOLAR HUBS

This project will bring solar power to 100 poor, off-grid communities in the West Nile region of Uganda through a Community Solar Hub (CSH) model. Electricity is generated at the CSH and distributed to local households and small businesses through a smart battery PAYG system using mobile money. The CSH can charge 300 batteries daily, with sufficient capacity to power basic appliances and low voltage machinery. The project empowers women by enabling them to establish a credit record and start a micro-business with surplus battery capacity. The CSH will serve as a business hub and provide secure power to local healthcare providers. EEP Africa financing is needed to roll out the project.

52

Total Project Budget
EUR 2 100 000

EEP Africa Financing
EUR 875 000

Project Partners
United Healthcare Distributors, Mobile Power UK, Medical Teams International, Aptech Ltd, Quality Medicines for All, Airtel Uganda

Type
Replication project
Stand-alone

Project Code
UGA14118

Location
Uganda



Outcome and Impact

The project's core aim is to support inclusive socio-economic development amongst the poorest quarter of the Ugandan population (10+ million people). Through the Community Solar Hub model, the project will provide access to clean solar energy in 100 communities, and enable 20,000 women to create micro-businesses and engage in

productive economic activity. By locating the CSH alongside local health centres and partnering with health companies, the project will enable e-health diagnostic and treatment devices to be used in these communities. The project will improve rural health and financial inclusion, while reducing CO₂e emissions by an estimated 3,300 tonnes annually.

53



Project Developer
Zembo

Zembo (Zero Emission Motorcycle Boda) is a French start-up specializing in innovative and sustainable mobility solutions for Africa.



Sector
Solar PV and clean electric mobility

SUSTAINABLE AND PRODUCTIVE SOLAR MOTORCYCLES

This project aims to replace polluting taxi motorcycles with solar-powered electric models with PayGo charging stations. Zembo designs and sells innovative electric motorcycles and operates solar re-charging stations using a battery swap business model. The motorcycles with lithium-ion batteries are low cost to run and operate, and are sold as rent-to-own, thus increasing the drivers' revenue. But the battery swap model and solar re-charging stations are innovations that need support to reach market scale. With EEP Africa financing, Zembo will launch 200 electric moto prototypes and construct 10 solar charging/battery swap stations in Kampala to pilot and validate the technology and payment solutions.

54

Total Project Budget
EUR 1 100 000

EEP Africa Financing
EUR 400 000

Project Partners
Zembo Uganda

Type
Pilot project
Stand alone

Project Code
UGA14457

Location
Uganda



Outcome and Impact

The project provides an alternative to the large fossil fuel-based "boda-boda" market, which is a major contributor to pollution in African cities. During the pilot phase, the switch from fuel to battery power will reduce 350 tonnes of CO₂e emissions and decrease fine particle emissions and noise pollution. The battery swap model will

maximise the use of each battery and ensure they are properly recycled at the end of their life. The project will bring significant cost savings and revenue creation to taxi drivers. It will also create new jobs, especially for youth, as the motorcycles are assembled in Uganda.

55



Project Developer
Emerging Cooking Solutions Zambia

Emerging Cooking Solutions is a high-impact social enterprise that develops and sells Tier 4 pellet cookstoves and small-scale renewable energy solutions under the brand name SupaMoto.



Sector
Cookstoves

TIER-4 CLEAN COOKING WITH PAYGO

This project will take clean cooking to scale in Zambia by switching 50,000 households from charcoal to waste biomass pellets. Clean cooking subscriptions for the domestically-produced pellets will be sold together with high-end, Tier-4 Mimi Moto cooking stoves. SupaMoto's best-in class Z-stove will be offered as an alternative for lower-end customers. The stoves have an integrated, cloud-connected smart card, allowing subscriptions to be pay-as-you-go (PAYG) with mobile money. The company's current pellet production factory will be upgraded substantially to meet increased demand. EEP Africa financing will de-risk the project and prove the commercial model at scale.

Total Project Budget
EUR 6 087 920
EEP Africa Financing
EUR 1 000 000
Project Partners
Mimi Moto
Type
Scale-up project
Stand-alone
Project Code
ZAM14494

Location
Zambia



Outcome and Impact

The project will provide peri-urban households with a high-performing and affordable alternative to charcoal. Production capacity of the biomass pellets will increase to 1,500 tonnes per month. Each stove that replaces charcoal with sustainably-produced biomass pellets mitigates 4 tonnes of CO₂e per year, resulting in a total of

more than 210,000 tonnes of CO₂e emissions avoided annually. Customers with a 24-month subscription will save approximately EUR 50 per year and significantly improve household health. The project will also create over 600 new jobs.



Project Developer
Celfre Energy

Celfre Energy is a locally-owned distributor of high-quality and affordable renewable energy solutions. It started operations in 2017.



Sector
Solar PV

SOLAR PUMP DISTRIBUTION TO SMALLHOLDER FARMERS

This project will offer farmers a robust solar-powered surface water pump that will enable them to sustainably farm cash crops throughout the year. Electrification rates in rural areas of Zimbabwe are below 20%, leading most farmers to depend on rain-fed crop production using manual watering cans or polluting generators for irrigation. The Celfre unit is powered by clean energy and can pump one liter of water per second. It is also portable, easy to use and maintain, and has a USB port for phone charging. A PAYG model is being introduced to enhance accessibility, particularly for women and youth. EEP Africa financing will enable Celfre to test this new product in a difficult market and serve as a catalyst for other funders.

58

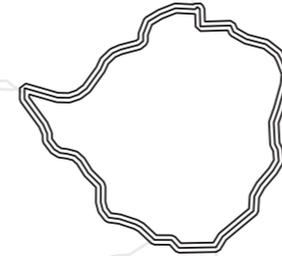
Total Project Budget
EUR 300 000

EEP Africa Financing
EUR 210 000

Type
Scale-up project
Stand-alone

Project Code
ZWE14513

Location
Zimbabwe



Outcome and Impact

The project aims to sell 570 solar water pump units to rural customers bringing enhanced energy access to over 2,500 people. This will increase economic opportunities for women and youth and directly create 46 new jobs.

The project will result in total energy savings of EUR 500,000 per year and generate 0.5 MW renewable energy capacity.

59



Project Developer
Zonful Enterprises

Zonful is a locally owned for-profit social enterprise that sells and distributes modular solar home systems (SHS) through a PAYG business model to rural off-grid households in Zimbabwe.



Sector
Solar PV

PAYG CLEAN ENERGY SOLUTIONS FOR RURAL HOUSEHOLDS

This project will enable Zonful to reach 32 districts across all eight rural provinces of Zimbabwe, becoming the first national PAYG solar company with a focus on rural communities. The company currently sells PAYG solar home systems (SHS) in 10 districts and targets low-income, rural households, 80% of which are headed by women. For many such households, this SHS is their first-time electricity connection. With EEP Africa financing, Zonful will scale up its successful customer acquisition and distribution strategy to a national level and attract private investment.

Total Project Budget
EUR 1 501 727

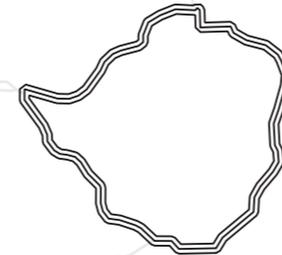
EEP Africa Financing
EUR 500 000

Project Partners
Greenlight Planet

Type
Scale-up project
Stand-alone

Project Code
ZWE14101

Location
Zimbabwe



Outcome and Impact

The project will provide 62,180 people with first-time or enhanced energy access. Each household that uses SHS will benefit from annual energy savings of EUR 80. The project will also create a total of 322 new jobs. These will be predominantly for women as Zonful utilises a women-led distribution network. Furthermore, the

successful scale up of the project is expected to mobilise over EUR 4 million in climate finance.

Projects by Sector

Biogas

BBOX: PAYG Biogas [34]

Doranova: Ondangwa W2E [30]

Talbot & Talbot: Wastewater-to-Energy Project [44]

Cookstoves

African Clean Energy: Credit-Based Energy Access Through Smart Tech [18]

EcoZoom: Innovative Customer Financing for Clean Energy Products [10]

Emerging Cooking Solutions: Tier-4 Clean Cooking with PAYGO [56]

Pamoja Cleantech: Launch of a Smart Cookstove in Mozambique [28]

Tiny Totos: Clean Energy Financing through Slums Daycare Business Partnerships [14]

Hybrid

Sunmoyo: Hybrid Solar Power Solution for Community Markets [50]

Windlab: Cape Town Hybrid Renewable Energy Study [46]

Hydropower

East African Power: Bihongora Multi-purpose Hydropower Project [36]

Empower New Energy: Rucanzogera Small Hydropower Plant [38]

Practical Action: Piloting a Micro-hydro Mini-grid Anchored by Coffee Processing [24]

Songa Energy: Run-of-River Hydropower in Rural Burundi [06]

Solar PV

Agsol: Solar Mills: Powering Rural Productivity [32]

Celfre Energy: Solar Pump Distribution to Smallholder Farmers [58]

EcoZoom: Innovative Customer Financing for Clean Energy Products [10]

Greenlight Planet: Bringing Affordable and Accessible PAYG Solar to Neglected Regions of Uganda [48]

Kumudzi Kuwale: No One Should be Left in the Dark [22]

Micro Energy Credits: Mobile Technology Advancing Last-Mile Access to Clean Energy [12]

NALA PayGo: Piloting PAYG Solar Home System Sales [20]

OffGridBox: Container-Based Hubs for Solar Energy and Clean Water [40]

SolarWorks!: Connect Malawi [26]

Swimsol: Capacity Building for Offshore Photovoltaics in the Seychelles [42]

VAC Solar: Community Solar Hubs [52]

Zembo: Sustainable and Productive Solar Motorcycles [54]

Zonful: PAYG Clean Energy Solutions for Rural Households [60]

Solid Biomass

Acacia Innovations: Innovative Clean Cooking Fuel Distribution [08]

Village Industrial Power: Renewable Off-grid Power for Agricultural Processing [16]

Waste to Energy

Doranova: Ondangwa W2E [30]

Talbot & Talbot: Wastewater-to-Energy Project [44]



Host Institution

The Nordic Development Fund (NDF) is a multilateral development finance institution established by the governments of Denmark, Finland, Iceland, Norway and Sweden and focusing exclusively on climate change and development in low and middle income countries. Headquartered in Helsinki, NDF deploys flexible, catalytic financing for climate change mitigation and adaptation in Africa, Asia and Latin America.

NDF is both Fund Manager and funding partner for EEP Africa and led the relaunch of the initiative as a multi-donor trust fund in 2018.

Funding Partners

The Austrian Development Agency (ADA) is the operational unit of Austrian Development Cooperation and has supported EEP Africa since 2010. ADA's goals prioritise reducing poverty, ensuring peace and contributing towards conservation of the environment with particular emphasis on gender equality and climate protection. ADA's focus themes, such as the water-energy-food security nexus and private sector development, are strongly supported by EEP Africa.



Ministry for Foreign
Affairs of Finland

The Ministry for Foreign Affairs of Finland administers Finland's ODA budget and led EEP Africa until 2018. Finland's development policy supports eradication of poverty and inequality and the promotion of sustainable development with particular focus on strengthening the rights of the most vulnerable, promoting gender equality and improving climate change preparedness and mitigation. Enhancing energy access is a key component in reaching these goals.

Contact Information

Questions can be directed to:
info@eepafrica.org

EEP Africa Coordination Office
Cnr. The Hillside St. and Klarinet Rd.
Lynwood, Pretoria 0081
South Africa

www.eepafrica.org

Disclaimer

This material has been funded by Austria, Finland, and NDF. The views expressed in this publication do not necessarily reflect the donor governments' official policies.

Implementation support for EEP Africa is provided by KPMG.

Copyright © EEP Africa 2019



IT IS POSSIBLE

www.eepafrica.org